

**Fargesia acuticontracta** T.P. Yi. *J. Bamboo Res.*, 7(2): 98 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Weixi Xian, 2500–3200 m. 18 Oct. 1977, *T.P. Yi 77249* (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 116).

**Derivation** (Clifford & Bostock 2007): *L. acutus*, acute; *contraho*, draw together.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 300–700 cm long, 10–50 mm diam., woody. Culm-internodes terete, solid, 8–60 cm long. Lateral branches dendroid. Bud complement 1. Branch complement several, in a horizontal line, thinner than stem. Culm-sheaths present, persistent, 12–25 cm long, 2–4 times as long as wide, coriaceous, hispid, with tawny hairs, without auricles, setose on shoulders, shoulders with straight hairs, shoulders with 5–8 mm long hairs. Culm-sheath ligule 1 mm high, ciliate. Culm-sheath blade linear or lanceolate, reflexed, 1.3–15 cm long, 2–5.5 mm wide. Leaves 3–6 per branch. Leaf-sheaths 4.5–7 cm long. Leaf-sheath oral hairs scanty, 1–2 mm long. Leaf-sheath auricles absent. Ligule an eciliate membrane, 1 mm long, lacerate, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.4–0.5 cm long, petiole pubescent. Leaf-blades lanceolate, 12–21 cm long, 11–21 mm wide, fleshy. Leaf-blade venation with 8–12 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**TDWG4.** Yunnan.

**Fargesia adpressa** T.P. Yi. *J. Bamboo Res.*, 4(2): 26 (1985).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Sichuan: Jiulong Xian, 2600 m, 5 Aug. 1980, *T.P. Yi 80075* (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 118).

**Derivation** (Clifford & Bostock 2007): *L. ad-*, towards; *presso*, press. Culm-sheaths closely adpressed to culms.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms 40 cm long, 3 mm diam., woody. Culm-internodes terete, estriate, distally glabrous. Lateral branches dendroid. Culm-sheaths present, hispid, with appressed hairs, with dark brown hairs, setose on shoulders. Leaf-sheaths glabrous on surface. Leaf-sheath oral hairs setose. Ligule an eciliate membrane, truncate. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 1–3 cm long, 3–6 mm wide. Leaf-blade venation with 6–10 secondary veins, with distinct cross veins. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**TDWG4.** Sichuan.

**Fargesia albocerea** J.R. Xue & T.P. Yi. *J. Bamboo Res.* 7(2): 45–47, f. 11 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Lushui Xian, 2860 m, 2 May 1978, *Yunnan For. Coll. 006* (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 109).

**Derivation** (Clifford & Bostock 2007): *L. albus*, white; *ceres*, wax. Culms densely farinose.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose, clumped densely. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 300–400 cm long, 8–20 mm diam., woody, without nodal roots. Culm-internodes terete, thick-walled or solid, 8–14 cm long, striate, distally mealy. Culm-nodes swollen. Lateral branches dendroid. Bud complement 1. Branch complement several. Culm-sheaths present, tardily deciduous,

15–20 cm long, 3 times as long as wide, coriaceous, yellow, hispid, with tawny hairs, glabrous on margins, without auricles, setose on shoulders, shoulders with straight hairs, shoulders with 1.5–4 mm long hairs. Culm-sheath ligule 1–1.5 mm high. Culm-sheath blade linear or lanceolate, narrower than sheath, deciduous, reflexed, 2 cm long, 2–3 mm wide. Leaves 3–4 per branch. Leaf-sheaths 2.8–4 cm long, outer margin glabrous. Leaf-sheath oral hairs scanty or lacking, 1–2 mm long. Ligule an eciliate membrane, 1 mm long, brown or purple, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1–0.15 cm long. Leaf-blades lanceolate, 3.5–8 cm long, 5–12 mm wide, fleshy. Leaf-blade venation with 6–10 secondary veins, with obscure cross veins. Leaf-blade surface glabrous. Leaf-blade margins scaberulous. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**TDWG4.** Yunnan.

### **Fargesia alpina** J.R. Xue & C.M. Hui. *Bull. Bot. Res., Harbin* 18(3): 271–274, f. 10. 1998.

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Gongshan, Dandan Habai Shan, 2700–2900 m, 23 June 1989, C.M. Hui & Z.Z. Wang 89044 (HT: SWFC).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. alpes*, high mountain; *-ina*, indicating possession. Species growing at high altitudes.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**TDWG4.** Yunnan.

### **Fargesia altior** T.P. Yi. *J. Bamboo Res.*, 7(2): 65 (1988).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online, U. Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Tengshong Xian: 2300–2500 m, 25 Aug. 1983, T.P. Yi 83146 (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 113).

**Derivation** (Clifford & Bostock 2007): *L.* taller. Taller than related species.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 400–1500 cm long, 13–60 mm diam., woody. Culm-internodes terete, thick-walled, 22–45 cm long, estriate, distally mealy. Lateral branches dendroid. Bud complement 1. Branch complement several, in a horizontal line, thinner than stem. Culm-sheaths present, deciduous, 22–51 cm long, 4–5 times as long as wide, coriaceous, brown and purple, concolorous or obscurely mottled with last colour, hispid, with appressed hairs, with tawny hairs, glabrous on margins, without auricles, setose on shoulders, shoulders with straight hairs, shoulders with 3–4 mm long hairs. Culm-sheath ligule 1–1.5 mm high, purple. Culm-sheath blade linear or lanceolate, narrower than sheath, reflexed, 1.5–11 cm long, 2.5–4 mm wide. Leaves 3–6 per branch. Leaf-sheaths 2.3–4 cm long, outer margin glabrous. Leaf-sheath oral hairs scanty or lacking. Leaf-sheath auricles erect. Ligule an eciliate membrane, 0.5 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1–0.2 cm long. Leaf-blades lanceolate, 6–14 cm long, 5.5–11 mm wide, fleshy. Leaf-blade venation with 6–8 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**TDWG4.** Yunnan.

### **Fargesia ampullaris** T.P. Yi. *J. Bamboo Res.*, 2(2): 18 (1983).

**Accepted by:** U. Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Xizang: Zhangmu, ca. 2200 m, 4 Nov. 1979, M.L. Zhou 4 (HT: SIFS).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. ampulla*, flask; *-aris*, pertaining to. Culm-sheaths in upper part contracted into the shape of a bottle neck.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.  
**Distribution (TDWG). Continent.** Temperate Asia.  
**Country /Province /State. China.** Tibet.

**Fargesia angustissima** T.P. Yi. *J. Bamboo Res.*, 4(2): 21 (1985).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China, Wenchuan Xian: Yi Tong-pei 74450.

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 110).

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short (neck 1–3cm), pachymorph. Butt sheaths absent. Culms 400–700 cm long, 10–20 mm diam., woody. Culm-internodes terete, thin-walled, 28–35 cm long, ridged, distally mealy. Culm-nodes with distinct supra-nodal ridge. Lateral branches dendroid. Branch complement several, in a horizontal line. Culm-sheaths present, persistent, coriaceous, hispid, with dark brown hairs, hairy on margins, without auricles, setose on shoulders, shoulders with straight hairs or curved hairs. Culm-sheath ligule 1 mm high. Culm-sheath blade linear, deciduous, reflexed. Leaves 3–5 per branch. Leaf-sheaths glabrous on surface or pilose. Leaf-sheath oral hairs scanty, erect or spreading, 2–3 mm long, pale. Leaf-sheath auricles absent. Ligule an eciliate membrane. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 3.4–9.5 cm long, 3–7 mm wide. Leaf-blade venation with 4–6 secondary veins, with distinct cross veins. Leaf-blade surface pubescent, hairy abaxially. Leaf-blade margins serrulate. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**Fargesia apicirubens** Sida 22(1):331–332 (2996). Stapleton.

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms pendulous at the tip, 200–400 cm long, 6–10 mm diam., woody. Culm-internodes terete, thin-walled, 5–18 cm long, dark green, mottled (purple), smooth. Culm-nodes with distinct supra-nodal ridge. Lateral branches dendroid. Branch complement several, with subequal branches, thinner than stem. Culm-sheaths present, tardily deciduous, coriaceous, smooth, glabrous, hairy on margins, asymmetrical at apex, without auricles, glabrous on shoulders. Culm-sheath ligule 1 mm high, ciliolate. Culm-sheath blade lanceolate, erect or reflexed, glabrous on surface and with ciliate margins. Leaves 3–7 per branch. Leaf-sheaths glabrous on surface. Leaf-sheath oral hairs lacking. Ligule an eciliate membrane, 1 mm long, purple, truncate. Collar without external ligule. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 7–10 cm long, 6–15 mm wide. Leaf-blade venation with 8–10 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate.

**Inflorescence.** Synflorescence compound, with principal spatheoles embracing a compact fascicle of racemes, each subtended by a subsidiary bract.

Inflorescence composed of racemes, bracteate at pedicel base, subtended by a spatheole, embraced at base by subtending leaf. Racemes 1, single, unilateral. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets laterally compressed, breaking up at maturity, disarticulating below each fertile floret.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.**

**Fargesia brevipes** (McClure) T.P. Yi. *J. Bamboo Res.*, 7(2): 113: (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. **Basionym or Replaced Name:** *Arundinaria brevipes* McClure, *Sunyatsenia* 6(1): 28–32, pl. 7 (1941)

. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Without precise date or locality, *E.E. Maire* 292/1913.

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms woody. Culm-internodes terete, 8 cm long, distally glabrous. Culm-nodes glabrous. Lateral branches dendroid. Branch complement several, in a horizontal line, with subequal branches, thinner than stem. Culm-sheaths present. Leaf-sheaths hispid. Leaf-sheath oral hairs ciliate, erect and deciduous, 2–3 mm long, dark. Leaf-sheath auricles absent. Ligule an eciliate membrane, truncate. Leaf-blade base with a brief petiole-like connection to sheath, petiole pubescent. Leaf-blades lanceolate, 2.5–5.5 cm long, 3–4.5 mm wide. Leaf-blade venation with 4–6 secondary veins, with obscure cross veins. Leaf-blade surface glabrous. Leaf-blade margins scaberulous. Leaf-blade apex attenuate, filiform.

**Inflorescence.** Inflorescence composed of racemes, subtended by a spatheole, embraced at base by subtending leaf. Spatheole 2.5 cm long. Racemes 1, single, bearing 4–6 fertile spikelets on each. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 15–20 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes flattened, clavate, 4.5 mm long, pilose.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume ovate, 6 mm long, 0.75 length of upper glume, chartaceous, without keels. Lower glume apex attenuate. Upper glume lanceolate, 8 mm long, chartaceous, 1-keeled. Upper glume surface hispid, hairy above. Upper glume apex attenuate.

**Florets.** Fertile lemma lanceolate, 10 mm long, chartaceous, purple, without keel, 9–11 -veined, more than 3-veined. Lemma surface pubescent, hairy at base. Lemma margins ciliolate. Lemma apex setaceous acuminate. Palea 9 mm long. Palea keels ciliolate. Palea surface pilose, hairy on back, hairy above. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 3, 2.5 mm long, veined, ciliate. Anthers 3, 4 mm long. Stigmas 3. Ovary glabrous. Caryopsis with adherent pericarp.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**TDWG4.** Yunnan.

**Fargesia brevissima** T.P. Yi. *Bull. Bot. Res. North-East. Forest. Inst.*, 5(4): 128 (1985).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China 22* (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Sichuan: Wuxi Xian, 2000–2400 m, 30 Aug. 1975, T.P. Yi 75450 (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 125).

**Derivation** (Clifford & Bostock 2007): *L. brevis*, short; *-issima*, most. Leaf-blades very short.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short (7–14cm), pachymorph. Butt sheaths absent. Culms 300–500 cm long, 10–30 mm diam., woody. Culm-internodes terete, thin-walled, 10–15 cm long, glaucous, ridged, distally mealy. Culm-nodes with distinct supra-nodal ridge. Lateral branches dendroid, reflexed. Branch complement several, with subequal branches. Culm-sheaths present, persistent or deciduous but leaving a persistent girdle, coriaceous, convex at apex, without auricles, glabrous on shoulders. Culm-sheath ligule 1 mm high, entire. Culm-sheath blade linear or lanceolate or triangular, erect, glabrous on surface. Leaves 2–4 per branch. Leaf-sheaths outer margin hairy. Leaf-sheath oral hairs lacking. Ligule an eciliate membrane, 1 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 5–11 cm long, 7–15 mm wide, fleshy. Leaf-blade venation with 6–8 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**TDWG4.** Sichuan.

**Fargesia caduca** T.P. Yi. *J. Bamboo Res.*, 7(2): 108 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China 22* (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Jingu Xian, 1830 m, 8 Sept. 1983, T.P. Yi 83156 (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 123).

**Derivation** (Clifford & Bostock 2007): L. dropping off early. Florets or spikelets shed shortly after anthesis.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 300–500 cm long, 10–15 mm diam., woody. Culm-internodes terete, thick-walled, 21–25 cm long, distally mealy. Lateral branches dendroid. Bud complement 1. Branch complement several, in a horizontal line, thinner than stem. Culm-sheaths present, deciduous, 14–27.5 cm long, 6 times as long as wide, coriaceous, hispid, with appressed hairs, with yellow hairs, glabrous on margins, without auricles, glabrous on shoulders or setose on shoulders, shoulders with straight hairs, shoulders with 3–6 mm long hairs. Culm-sheath ligule 0.5 mm high. Culm-sheath blade linear or lanceolate, erect, 1–6 cm long, 2–3 mm wide. Leaves 3–9 per branch. Leaf-sheaths 2–4.3 cm long. Leaf-sheath oral hairs setose, erect, 2–5 mm long. Leaf-sheath auricles absent. Ligule an eciliate membrane, 0.5 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.15–0.2 cm long. Leaf-blades lanceolate, 6.5–13 cm long, 6.5–11 mm wide, fleshy. Leaf-blade venation with 6–8 secondary veins, with obscure cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

**Fargesia canaliculata** T.P. Yi. *J. Bamboo Res.*, 4(1): 19 (1985).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China 22* (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Sichuan: Jiulong Xian, 2650 m, 5 Aug. 1980, T.P. Yi 80074 (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 127).

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms 300–420 cm long, 6–13 mm diam., woody. Culm-internodes solid, 15–30 cm long, distally mealy. Lateral branches dendroid, ascending. Bud complement 1. Branch complement many, with subequal branches. Culm-sheaths present, 12–20 cm long, coriaceous, glabrous, without auricles, glabrous on shoulders. Culm-sheath ligule 1–4 mm high, entire. Culm-sheath blade linear, reflexed, 2–5.5 cm long, 1.5–2 mm wide. Leaves 2–3 per branch. Leaf-sheaths glabrous on surface. Leaf-sheath oral hairs lacking. Ligule a ciliate membrane, 1 mm long, pubescent on abaxial surface. Leaf-blade base with a brief petiole-like connection to sheath, petiole 0.1 cm long. Leaf-blades lanceolate, 2–10 cm long, 4–5 mm wide, fleshy. Leaf-blade venation with 4–6 secondary veins, with obscure cross veins. Leaf-blade surface glabrous. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Sichuan.

**Fargesia circinata** Hsueh & T.P. Yi. *J. Bamboo Res.*, 7(2): 81 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China 22* (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: without precise locality, J.R. Xue 1197 (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 115).

**Derivation** (Clifford & Bostock 2007): L. *circino*, form into a circle. Leaf-blades coiled.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 300–500 cm long, 15 mm diam., woody. Culm-internodes terete, thick-walled to solid, 24 cm long, distally glabrous. Culm-nodes flush with internodes. Lateral branches dendroid. Bud complement 1. Branch complement several, in a horizontal line, thinner than stem. Culm-sheaths present, persistent, 15–37 cm long, 3 times as long as wide, coriaceous, yellow or brown, hispid, with tawny hairs, hairy on margins, auriculate, setose on shoulders, shoulders with curved hairs, shoulders with 4–25 mm long hairs. Culm-sheath ligule 1–2 mm high, ciliate. Culm-sheath blade linear or lanceolate, deciduous, reflexed, 2.3–10 cm long, 1.5–3.5 mm wide, flat or wrinkled. Leaves 2–4 per branch. Leaf-sheaths 2.8–4.2 cm long, outer margin hairy. Leaf-sheath oral hairs setose, erect or curly, 3–11 mm long, pale. Leaf-sheath auricles absent. Ligule an

eciliate membrane, 0.5 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1–0.2 cm long. Leaf-blades lanceolate, 5.5–14 cm long, 8–15 mm wide, fleshy. Leaf-blade venation with 6–10 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

**Fargesia communis** T.P. Yi. *J. Bamboo Res.*, 7(2): 51 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Weixi Xian, 2600–3250 m, 23 Oct. 1977, *T.P. Yi 77260* (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 110).

**Derivation** (Clifford & Bostock 2007): *L. ordinary*. Commonly encountered species.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, erect at the tip, 400–800 cm long, 10–30 mm diam., woody. Culm-internodes terete, thick-walled, 20–25 cm long, striate, distally mealy. Lateral branches dendroid. Bud complement 1. Branch complement several, in a horizontal line, thinner than stem. Culm-sheaths present, persistent, 23–48 cm long, 6 times as long as wide, coriaceous, red, hispid, with appressed hairs, with dark brown hairs, hairy on margins, without auricles, setose on shoulders, shoulders with straight hairs, shoulders with 3–5 mm long hairs. Culm-sheath ligule 1 mm high. Culm-sheath blade linear or lanceolate, deciduous, reflexed, 2–13 cm long, 1.5–3 mm wide. Leaves 4–5 per branch. Leaf-sheaths 3–5 cm long, pilose. Leaf-sheath oral hairs setose, erect, 2–4 mm long, dark. Leaf-sheath auricles absent. Ligule an eciliate membrane, 0.6 mm long, purple, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.2–0.3 cm long, petiole glabrous. Leaf-blades lanceolate, 8.5–16 cm long, 5–14 mm wide, fleshy. Leaf-blade venation with 6 secondary veins, with obscure cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

**Fargesia concinna** T.P. Yi. *Acta Bot. Yunnanica*, 10(4): 437 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Jingdong Xian, Wuliang Shan, 2900–3100 m, 10 Feb. 1987, *T.P. Yi 87007* (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 113).

**Derivation** (Clifford & Bostock 2007): *L. elegant*. Panicles or habit attractive.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose, clumped densely. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 600–1000 cm long, 20–50 mm diam., woody. Culm-internodes terete, thin-walled, 28–33 cm long, mid-green or grey, distally pubescent. Culm-nodes glabrous. Lateral branches dendroid, erect or ascending. Bud complement 1. Branch complement several, in a horizontal line, thinner than stem. Culm-sheaths present, persistent, 30–50 cm long, 4–5 times as long as wide, coriaceous, brown, hispid, with appressed hairs, with yellow hairs or tawny hairs, hairy on margins, without auricles, glabrous on shoulders. Culm-sheath ligule 1–6 mm high. Culm-sheath blade linear or lanceolate, reflexed, 1–9 cm long, 2–3 mm wide, glabrous on surface. Leaves 3–6 per branch. Leaf-sheaths 4–4.7 cm long, glabrous on surface, outer margin glabrous. Leaf-sheath oral hairs scanty or lacking, 1–4 mm long. Leaf-sheath auricles absent. Ligule an eciliate membrane, 1 mm long, purple, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.3–0.4 cm long, petiole glabrous. Leaf-blades lanceolate, 6–12 cm long, 13–22 mm wide, fleshy. Leaf-blade venation with 8–10 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

**Fargesia conferta** T.P. Yi. *Bull. Bot. Res. North-East. Forest. Inst.*, 5(4): 123 (1985).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China 22* (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Sichuan: Hejiang Xian, 1100–1600 m, 16 Jan. 1981, *T.P. Yi 81010* (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 123).

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short (3–6cm), pachymorph. Butt sheaths absent. Culms 300–500 cm long, 10–20 mm diam., woody. Culm-internodes terete, thick-walled, 23–35 cm long. Culm-nodes with distinct supra-nodal ridge, glabrous or pubescent. Lateral branches dendroid, reflexed. Branch complement many, with subequal branches. Culm-sheaths present, persistent, coriaceous, brown or red, hispid, with appressed hairs, with tawny hairs or dark brown hairs, hairy on margins, triangular at apex, without auricles or auriculate, setose on shoulders, shoulders with 2–5 mm long hairs. Culm-sheath ligule 2–6 mm high, ciliate. Culm-sheath blade linear or lanceolate, erect, glabrous on surface. Leaves 2–6 per branch. Leaf-sheaths inner surface puberulous. Leaf-sheath oral hairs scanty, 3–5 mm long, pale. Ligule an eciliate membrane, 1 mm long, brown, truncate or obtuse. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 9–11 cm long, 5–10 mm wide, fleshy. Leaf-blade venation with 8 secondary veins, with obscure cross veins. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Guizhou, Sichuan.

**Fargesia contracta** T.P. Yi. *J. Bamboo Res.*, 7(2): 60 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China 22* (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Baoshan Xian, 2340–3000 m, 10 Aug. 1983, *T.P. Yi 83131* (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 112).

**Derivation** (Clifford & Bostock 2007): L. contracted. Inflorescence a narrow panicle.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 300–500 cm long, 10–25 mm diam., woody. Culm-internodes terete, solid, 18–22 cm long, estriate or striate, distally mealy. Lateral branches dendroid. Bud complement 1. Branch complement several, in a horizontal line, thinner than stem. Culm-sheaths present, persistent, 25–50 cm long, 5–6 times as long as wide, coriaceous, yellow and brown, obscurely mottled with last colour, hispid, with tawny hairs, glabrous on margins, without auricles, setose on shoulders, shoulders with straight hairs, shoulders with 1–3 mm long hairs. Culm-sheath ligule 1 mm high. Culm-sheath blade linear or lanceolate, erect, 1–5 cm long, 1–1.5 mm wide. Leaves 4–8 per branch. Leaf-sheaths 2.8–4.5 cm long, outer margin hairy. Leaf-sheath oral hairs setose, curly, 2–5 mm long, pale. Leaf-sheath auricles absent. Ligule a ciliolate membrane, 1 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1–0.2 cm long, petiole pubescent. Leaf-blades lanceolate, 5–13 cm long, 5–9 mm wide, fleshy. Leaf-blade venation with 6 secondary veins, with obscure cross veins. Leaf-blade surface pilose, hairy abaxially. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

**Fargesia cuspidata** (Keng) Z.P. Wang & G.H. Ye. *J. Nanjing Univ., Nat. Sci.*, 1981(1): 95: (1981).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China 22* (Poaceae) (2006).

**TYPE** from China. **Basionym or Replaced Name:** *Arundinaria cuspidata* Keng, *Sinensia* 7(3): 410, f. 3 (1936)

. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Guangxi: collected in woods, Yeo Mar Shan, N. Lin Yen, 1600 m, 27 Aug. 1928, *R.C. Ching 7180* (HT: ?; IT: US-58980 & 2808844).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 118).

**Derivation** (Clifford & Bostock 2007): L. *cuspis*, head of a spear; *-ata*, possessing. Glumes. lemmas or leaf-blades long tapering or terminating in a sharp tip.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo. Butt sheaths absent. Culms 500 cm long, 20 mm diam., woody. Culm-internodes terete, 14–19 cm long. Lateral branches dendroid. Branch complement several. Culm-sheaths present. Leaves 1–3 per branch. Leaf-sheath oral hairs ciliate, deciduous, 3 mm long. Ligule an eciliate membrane, 1 mm long, truncate. Leaf-blade base without a false petiole or with a brief petiole-like connection to sheath, petiole 0.2 cm long. Leaf-blades oblong, 3.5–12 cm long, 5–10 mm wide. Leaf-blade venation with 6–10 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scaberulous. Leaf-blade apex acuminate.

**Inflorescence.** Synflorescence compound, with principal spatheoles embracing a compact fascicle of racemes, each subtended by a subsidiary bract.

Inflorescence composed of racemes, subtended by a spatheole, embraced at base by subtending leaf. Racemes 1, single. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 4–10 mm long, pubescent.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 25–30 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 4–6 mm long, pubescent. Floret callus pilose. Floret callus hairs 1–1.5 mm long.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 10–14 mm long, chartaceous, without keels. Lower glume surface puberulous. Lower glume apex cuspidate. Upper glume lanceolate, 18–26 mm long, chartaceous, without keels, 7–9 -veined. Upper glume apex cuspidate.

**Florets.** Fertile lemma lanceolate, 16–25 mm long, chartaceous, without keel, 9–13 -veined, more than 3-veined. Lemma surface puberulous, hairy above. Lemma margins eciliate or ciliolate. Lemma apex cuspidate. Palea 11–15 mm long. Palea keels ciliate, adorned above. Palea surface puberulous, hairy on back. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 3, 2.5 mm long, veined, ciliate. Anthers 3, 7–9 mm long. Stigmas 2. Ovary glabrous. Caryopsis with adherent pericarp, sulcate on hilar side, 10 mm long, dark brown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China Southeast.

**TDWG4.** Guangxi.

**Fargesia daminiu** T.P. Yi & J.Y. Shi. *Bull. Bot. Res., Harbin* 27(5): 515–516, f. 1 (2007).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 160–200 cm long, 5–10 mm diam., woody. Culm-internodes terete, thick-walled, 5–20 cm long, distally mealy. Culm-nodes swollen. Lateral branches dendroid, erect or ascending. Bud complement 1. Branch complement three or several. Culm-sheaths present, persistent or tardily deciduous, coriaceous, glabrous, without auricles, glabrous on shoulders. Culm-sheath ligule 0.5 mm high. Culm-sheath blade linear or triangular, erect or reflexed, 0.5–1.5 cm long, 1.5–3 mm wide, glabrous on surface. Leaves 2–4 per branch. Leaf-sheaths glabrous on surface. Leaf-sheath oral hairs lacking. Ligule an eciliate membrane, purple, truncate. Leaf-blade base with a brief petiole-like connection to sheath, petiole 0.1–0.2 cm long. Leaf-blades lanceolate or ovate, 3–7.5 cm long, 4–10 mm wide. Leaf-blade venation with 4–6 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** Tibet.

**Fargesia declivis** T.P. Yi. *J. Bamboo Res.*, 7(2): 101 (1988).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online, U. Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Gongshan Xian, 2450 m, 22 Nov. 1977, T.P. Yi 77315 (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 116).

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 300–400 cm long, 5–10 mm diam., woody. Culm-internodes terete, solid, 5–33 cm long, striate, distally mealy and pubescent. Culm-nodes swollen, glabrous. Lateral branches dendroid. Bud complement 1. Branch complement several, in a horizontal line, thinner than stem. Culm-sheaths present,



persistent, 10–18 cm long, 7 times as long as wide, coriaceous, yellow or brown, glabrous or pubescent, hairy on margins, without auricles, setose on shoulders, shoulders with straight hairs, shoulders with 1–3 mm long hairs. Culm-sheath ligule 1–2 mm high, lacerate. Culm-sheath blade linear, reflexed, 2–6 cm long, 1–2 mm wide. Leaves 3–5 per branch. Leaf-sheaths 3–5 cm long, outer margin hairy. Leaf-sheath oral hairs ciliate, deciduous, 1–1.5 mm long, pale. Leaf-sheath auricles absent. Ligule an eciliate membrane, 1 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1 cm long, petiole pubescent. Leaf-blades lanceolate, 8–12 cm long, 7–10 mm wide, fleshy. Leaf-blade venation with 6–8 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**TDWG4.** Yunnan.

### **Fargesia decurvata** J.L. Lu. *J. Henan Agric. Coll.* 1981(1): 74, f. 6 (1981).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Hubei: Changyang, 1100–1700 m, *J.L. Lu et al. 78120* (HT: HNAC).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 122).

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short (10–15cm), pachymorph. Butt sheaths absent. Culms 150–350 cm long, 5–15 mm diam., woody. Culm-internodes terete, thick-walled, 15–20 cm long, distally glabrous. Culm-nodes with distinct supra-nodal ridge. Lateral branches dendroid, reflexed. Branch complement several. Culm-sheaths present, deciduous, chartaceous, brown, hispid, with tawny hairs, glabrous on margins, triangular at apex, without auricles, glabrous on shoulders. Culm-sheath ligule 1 mm high, purple, ciliolate. Culm-sheath blade triangular, glabrous on surface. Leaves 2–5 per branch. Leaf-sheaths inner surface puberulous. Leaf-sheath oral hairs scanty, 2–5 mm long, pale. Leaf-sheath auricles erect. Ligule an eciliate membrane, 1 mm long, obtuse. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 7–14.5 cm long, 6–16 mm wide, fleshy. Leaf-blade venation with 6–8 secondary veins, with distinct cross veins. Leaf-blade surface smooth. Leaf-blade margins scabrous. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central, China North-Central, China Southeast.

**TDWG4.** Shaanxi. Hunan. Hubei, Sichuan.

### **Fargesia demissa** T.P. Yi. *J. Bamboo Res.*, 7(2): 93 (1988).

**Accepted by:** U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Gansu: Lanzhou, 2050 m, 8 Sept. 1979, *T.P. Yi 79212* (HT: SFS).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. drooping. Culms bent.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. Caucasus, China.** Transcaucasus. China South Central, Inner Mongolia, China North-Central.

### **Fargesia denudata** T.P. Yi. *J. Bamboo Res.*, 4(1): 20 (1985).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Sichuan: Qingchuan Xian, 1920 m, 23 Sept. 1975, *T.P. Yi 75556* (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 103).

**Derivation** (Clifford & Bostock 2007): L. lacking in hairs. Foliage of spikelets glabrous or weakly hairy.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms 300–420 cm long, 6–13 mm diam., woody. Culm-internodes thick-walled, 15–30 cm long, distally mealy. Lateral branches dendroid, ascending. Bud complement 1. Branch complement many, with

subequal branches. Culm-sheaths present, 12–20 cm long, coriaceous, glabrous, without auricles, glabrous on shoulders. Culm-sheath ligule 0.7 mm high, ciliate. Culm-sheath blade linear, reflexed, 0.8–1.8 cm long, 1.5–3 mm wide. Leaves 2–5 per branch. Leaf-sheaths glabrous on surface. Leaf-sheath oral hairs lacking. Ligule a ciliolate membrane, 1 mm long, pubescent on abaxial surface. Leaf-blade base with a brief petiole-like connection to sheath, petiole 0.1 cm long. Leaf-blades lanceolate, 3–7 cm long, 4–5 mm wide, fleshy. Leaf-blade venation with 4–6 secondary veins, with obscure cross veins. Leaf-blade surface glabrous. Flowering specimens unknown.

**Distribution (TDWG).** **Continent.** Temperate Asia.

**Country /Province /State.** **China.** China South Central, China North-Central.

**TDWG4.** Gansu. Sichuan.

### **Fargesia dracocephala** T.P. Yi. *Bull. Bot. Res. North-East. Forest. Inst.*, 5(4): 127 (1985).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Sichuan: Nanjiang Xian, 1880 m, 15 Sept. 1975, T.P. Yi 75540 (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 122).

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms woody. Culm-internodes terete, solid. Lateral branches dendroid. Branch complement several, in a horizontal line, with subequal branches, thinner than stem. Culm-sheaths present, glabrous or pubescent, with tawny hairs. Leaf-sheath auricles falcate. Ligule an eciliate membrane. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 6–9 cm long, 8–11 mm wide. Leaf-blade venation with 6–8 secondary veins. Flowering specimens unknown.

**Distribution (TDWG).** **Continent.** Temperate Asia.

**Country /Province /State.** **China.** China South Central, China North-Central.

**TDWG4.** Gansu, Shaanxi. Hubei, Sichuan.

### **Fargesia dulcicula** T.P. Yi. *J. Bamboo Res.*, 11(2): 9 (1992).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Sichuan: Mian'ning, about 3500 m.,

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 300–400 cm long, 10–18 mm diam., woody. Culm-internodes terete, thick-walled, 7–10 cm long, estriate, distally glabrous. Culm-nodes flush with internodes. Lateral branches dendroid, erect or ascending. Bud complement 1. Branch complement several, in a horizontal line, thinner than stem. Culm-sheaths present, tardily deciduous, 10–20 cm long, 0.33 length of internode, 2.5 times as long as wide, coriaceous, green and yellow, distinctly mottled with last colour, pilose, with appressed hairs, with grey hairs or yellow hairs, glabrous on margins, without auricles, setose on shoulders, shoulders with straight hairs, shoulders with 5–7 mm long hairs. Culm-sheath ligule 1–2 mm high, ciliolate. Culm-sheath blade linear or lanceolate, reflexed, 1.5–9 cm long, 2–3 mm wide, glabrous on surface. Leaves 4–5 per branch. Leaf-sheaths 3–8 cm long, glabrous on surface, outer margin glabrous. Leaf-sheath oral hairs setose. Leaf-sheath auricles absent. Ligule an eciliate membrane, 1–1.5 mm long, entire or lacerate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1–0.2 cm long. Leaf-blades lanceolate, 4.5–10.5 cm long, 6–11 mm wide, fleshy. Leaf-blade venation with 6–8 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG).** **Continent.** Temperate Asia.

**Country /Province /State.** **China.** China South Central.

**TDWG4.** Sichuan.

### **Fargesia dura** T.P. Yi. *J. Bamboo Res.*, 7(2): 34 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Weixi Xian, 3200 m, 23 Oct. 1977, T.P. Yi 77259 (HT: Herb. Forestry School of Sichuan Prov.).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 105).

**Derivation** (Clifford & Bostock 2007): L. hard. Culms tough.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, erect at the tip, 300–400 cm long, 10–20 mm diam., woody. Culm-internodes terete, solid, 8–27 cm long, striate, distally mealy and hispid. Lateral branches dendroid. Bud complement 1. Branch complement several, in a horizontal line, thinner than stem. Culm-sheaths present, persistent, 21–36 cm long, 5–6 times as long as wide, coriaceous, yellow, hispid, with dark brown hairs, hairy on margins, without auricles, glabrous on shoulders. Culm-sheath ligule 1–2 mm high. Culm-sheath blade linear or lanceolate, deciduous, reflexed, 2–12 cm long, 1.5–2 mm wide. Leaves 2–6 per branch. Leaf-sheaths 3–5.5 cm long, outer margin hairy. Leaf-sheath oral hairs setose, erect, 2–4 mm long, dark. Leaf-sheath auricles absent. Ligule an eciliate membrane, 1 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.15–0.2 cm long, petiole pubescent. Leaf-blades lanceolate, 4.5–12 cm long, 4–9.5 mm wide, fleshy. Leaf-blade venation with 4–6 secondary veins, with distinct cross veins. Leaf-blade surface pilose, sparsely hairy, hairy adaxially. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

**Fargesia edulis** Hsueh & T.P. Yi. *J. Bamboo Res.*, 7(2): 53 (1988).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online, U. Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Kunming City, 1900 m, cult., 20 June 1972, J.R. Xue s.n. (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 110).

**Derivation** (Clifford & Bostock 2007): L. edible. Young shoots edible.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms 500–800 cm long, 20–40 mm diam., woody. Culm-internodes terete, thick-walled, 12–40 cm long, distally mealy. Culm-nodes flush with internodes or swollen. Lateral branches dendroid. Bud complement 1. Branch complement several, in a horizontal line, with subequal branches, thinner than stem. Culm-sheaths present, deciduous, 34–45 cm long, 4–6 times as long as wide, coriaceous, pilose, hairy throughout, with dark brown hairs, hairy on margins, without auricles, setose on shoulders, shoulders with 2–3 mm long hairs. Culm-sheath ligule 1 mm high, dentate. Culm-sheath blade lanceolate, erect, 1–9 cm long, 1–3 mm wide. Leaves 5–7 per branch. Leaf-sheaths 4.5–6 cm long. Leaf-sheath oral hairs scanty or lacking, 2–6 mm long. Ligule an eciliate membrane, 1 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.2–0.3 cm long. Leaf-blades lanceolate, 10–15 cm long, 10–14 mm wide. Leaf-blade venation with 8–10 secondary veins. Leaf-blade surface glabrous or pilose, sparsely hairy, hairy abaxially.

**Inflorescence.** Inflorescence composed of racemes, subtended by a spatheole, embraced at base by subtending leaf. Racemes 1, single, 4.5–7 cm long, bearing 3–4 fertile spikelets on each. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 1.5–2 mm long.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 2.5–3.2 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 4–5 mm long, glabrous or pubescent, hairy above.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 10–20 mm long, chartaceous, without keels, 3–5 -veined. Lower glume apex setaceously acuminate. Upper glume lanceolate, 18–25 mm long, chartaceous, without keels. Upper glume apex setaceously acuminate.

**Florets.** Fertile lemma lanceolate, 18–26 mm long, chartaceous, without keel, 9–11 -veined, more than 3-veined. Lemma surface pubescent, hairy above or at base or at base. Lemma margins eciliate or ciliolate. Lemma apex attenuate. Palea 11–13 mm long, 4 -veined. Palea keels ciliolate. Palea surface pubescent, hairy on back, hairy above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 3, 2 mm long, ciliate. Anthers 3, 7–9 mm long. Stigmas 3. Ovary glabrous. Caryopsis with adherent pericarp.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

TDWG4. Yunnan.

**Fargesia elegans** T.P. Yi. *Acta Bot. Yunnanica*, 14(2): 136 (1992).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Sichuan: Mian'ning Xian, 2740 m, 6 Nov. 1990, T.P. Yi 90170 (HT: SFS).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. elegant*. Inflorescence attractive.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 200–350 cm long, 5–10 mm diam., woody. Culm-internodes terete, thick-walled or solid, 10–12 cm long, striate, distally mealy. Lateral branches dendroid, erect or ascending. Bud complement 1. Branch complement several, in a horizontal line, thinner than stem. Culm-sheaths present, persistent, 13–18 cm long, 6 times as long as wide, coriaceous, purple, glabrous, glabrous on margins, without auricles, glabrous on shoulders. Culm-sheath ligule 0.6–1 mm high. Culm-sheath blade linear or lanceolate, spreading or reflexed, 1.5–5.5 cm long, 1.2–3.5 mm wide, glabrous on surface. Leaves 3–5 per branch. Leaf-sheaths 1.7–2.2 cm long, indistinctly veined, outer margin glabrous. Leaf-sheath oral hairs lacking. Leaf-sheath auricles absent. Ligule an eciliate membrane, 0.6 mm long. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 3.2–6 cm long, 3.8–6 mm wide, fleshy. Leaf-blade venation with 4–6 secondary veins, without cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

TDWG4. Sichuan.

**Fargesia emaculata** T.P. Yi. *J. Bamboo Res.*, 4(2): 29 (1985).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China, Kangding Xian: Yi Tong-pei 80072.

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 124).

**Derivation** (Clifford & Bostock 2007): *L. -e*, without; *macula*, spot; *-ata*, possessing. Culm-sheaths without spots.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short (neck 7–14cm), pachymorph. Butt sheaths absent. Culms 250–350 cm long, 8–12 mm diam., woody. Culm-internodes terete, thin-walled, 18–25 cm long, distally mealy. Culm-nodes without obvious supra-nodal ridge or with distinct supra-nodal ridge. Lateral branches dendroid. Branch complement several, in a horizontal line. Culm-sheaths present, persistent, coriaceous, hispid, with dark brown hairs, hairy on margins, without auricles, glabrous on shoulders or setose on shoulders, shoulders with 3–4 mm long hairs. Culm-sheath ligule 1 mm high, ciliolate. Culm-sheath blade linear or lanceolate, erect or reflexed. Leaves 3–4 per branch. Leaf-sheaths outer margin glabrous. Leaf-sheath oral hairs lacking. Leaf-sheath auricles absent. Ligule an eciliate membrane, truncate or obtuse. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 1.5–7 cm long, 3–7.5 mm wide. Leaf-blade venation with 4–6 secondary veins, with obscure cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

**Fargesia exposita** T.P. Yi. *J. Bamboo Res.*, 11(2): 12 (1992).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Sichuan: Mian'ning, 2700–2800 m.,

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 300–500 cm long, 8–25 mm diam., woody. Culm-internodes terete, thick-walled, 20–23 cm long, striate, distally mealy. Lateral branches dendroid, ascending. Bud complement 1. Branch complement several, thinner than stem. Culm-sheaths present, deciduous, 10–18 cm long, 0.6 length of internode, 5 times as long as wide, coriaceous, hispid, with reflexed hairs, hairy on margins, without auricles, glabrous on shoulders. Culm-sheath ligule 0.5–1 mm high, entire. Culm-sheath blade triangular, erect or spreading, 1.5–4.5 cm long, 1.2–2.3 mm wide. Leaves 3–6 per branch. Leaf-sheaths 2.3–3.6 cm long, glabrous on surface, outer margin glabrous. Leaf-sheath oral hairs lacking. Leaf-sheath auricles absent. Ligule an eciliate membrane, 0.5 mm long, truncate or obtuse. Collar with external ligule. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1–0.15 cm long. Leaf-blades linear or lanceolate, 4–9.5 cm long, 4–8 mm wide, fleshy. Leaf-blade venation with (4–)6 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**TDWG4.** Sichuan.

**Fargesia extensa** T.P. Yi. *Journal of Bamboo Research* 2(2): 27, f. 4 (1983).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China.

**Recent Synonyms:** *Borinda extensa* (T.P. Yi) C.M.A.Stapleton, *Edinburgh J. Bot.*, 51(2): 288 (1994).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007).

**Derivation** (Clifford & Bostock 2007): L. widespread. Culms widely separated on the rhizome.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose, clumped densely. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, drooping at the tip, 400–650 cm long, 10–28 mm diam., woody, without nodal roots. Culm-internodes terete, thick-walled, 10–32 cm long, distally mealy. Lateral branches dendroid. Branch complement several. Culm-sheaths present, 11–14 cm long, without auricles, glabrous on shoulders. Culm-sheath ligule 1 mm high. Culm-sheath blade triangular, erect, 0.6–1.3 cm long, 2–3 mm wide, glabrous on surface. Leaves 3–4(–8) per branch. Leaf-sheaths glabrous on surface. Leaf-sheath oral hairs lacking. Ligule an eciliate membrane, 2 mm long, purple. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.2 cm long. Leaf-blades lanceolate, 5.5–16.5 cm long, 7–14 mm wide, fleshy. Leaf-blade venation with 4–8 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** Tibet.

**Fargesia farcta** F.S. Yi. *J. Bamboo Res.* 2(2): 29 (1983).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Xizang: Cona Xian, about 2300 m, 25 March 1980, A. Zha 1 (HT: SFS).

**Recent Synonyms:** *Borinda farcta* (T.P. Yi) C.M.A.Stapleton, *Edinburgh J. Bot.*, 51(2): 288 (1994).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 117).

**Derivation** (Clifford & Bostock 2007): L. solid with centre softer than outside. Culms solid except in the very centre.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose, clumped densely. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, drooping at the tip, 200–350 cm long, 5–15 mm diam., woody, without nodal roots. Culm-internodes terete, 25–50 cm long, distally mealy and pubescent. Culm-nodes swollen, brown, glabrous. Lateral branches dendroid, erect or ascending. Branch complement several. Culm-sheaths present, tardily deciduous, coriaceous, brown, puberulous, without auricles, setose on shoulders, shoulders with straight hairs, shoulders with 3–5 mm long hairs. Culm-sheath ligule 1 mm high. Culm-sheath blade triangular, deciduous, reflexed. Leaves 2–5 per branch. Leaf-sheaths glabrous on surface. Leaf-sheath oral hairs ciliate, erect or curly, 1–4 mm long, pale. Ligule an eciliate membrane, 1 mm long, truncate. Leaf-blade base cuneate or broadly rounded, with a brief petiole-like connection to sheath, petiole 0.1–0.2 cm long, petiole pubescent. Leaf-blades lanceolate, 4–7.5 cm long, 5–8 mm wide, fleshy. Leaf-blade venation with 4–6 secondary veins, with distinct cross veins. Leaf-blade surface pubescent, hairy on both sides. Flowering specimens unknown.

**Distribution (TDWG).** Continent. Temperate Asia.  
**Country /Province /State.** China. Tibet.

**Fargesia ferax** (Keng) T.P. Yi. *J. Bamboo Res.*, 2(1): 39: (1983).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. **Basionym or Replaced Name:** *Arundinaria ferax* Keng, *Sinensia* 7(3): 408, f. 1 (1936). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Sichuan: collected along roadside by a stream, 20 li S.E. of Daqianlu, 2400 m, 24 April 1930, W.C. Cheng 737 (HT: US 2808858).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 111).

**Derivation** (Clifford & Bostock 2007): L. fruitful. Readily setting grain.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo. Butt sheaths absent. Culms 260 cm long, 10 mm diam., woody. Culm-internodes terete. Lateral branches dendroid. Branch complement several. Culm-sheaths present. Leaf-sheaths 2.5–4 cm long. Leaf-sheath oral hairs ciliate, 1.5–3.5 mm long. Ligule an eciliate membrane, 1 mm long, truncate. Leaf-blade base with a brief petiole-like connection to sheath, petiole 0.1–0.2 cm long. Leaf-blades lanceolate, 2–6 cm long, 3–5 mm wide. Leaf-blade venation with 4–6 secondary veins, with distinct cross veins. Leaf-blade margins scaberulous.

**Inflorescence.** Inflorescence composed of racemes, embraced at base by subtending leaf. Racemes 1, single, bearing 3–6 fertile spikelets on each. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 10–22 mm long, glabrous.

**Fertile Spikelets.** Spikelets comprising 2–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 14–28 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 2–3 mm long, glabrous or sparsely hairy, hairy at tip. Floret callus pilose. Floret callus hairs 1 mm long.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 5–11 mm long, chartaceous, without keels, 3–5 -veined. Lower glume apex acute or acuminate. Upper glume lanceolate, 9–15 mm long, chartaceous, without keels, 9 -veined. Upper glume margins pubescent. Upper glume apex acute or acuminate.

**Florets.** Fertile lemma lanceolate or ovate, 11–16 mm long, chartaceous, without keel, 9 -veined, more than 3-veined. Lemma lateral veins with cross-veins. Lemma surface puberulous. Lemma apex acuminate or rostrate. Palea 9–10 mm long. Palea keels ciliate, adorned above. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 3, 2 mm long, veined, ciliate. Anthers 3, 7 mm long. Stigmas 2. Ovary glabrous. Caryopsis with adherent pericarp.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** China. China South Central, China North-Central.

**TDWG4.** Gansu. Sichuan.

**Fargesia frigidis** T.P. Yi. *J. Bamboo Res.* 7(2): 17–20, f. 1 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Yanbi Xian, 3100–3700 m, 13 Feb. 1984, T.P. Yi 84007 (Herb. Forestry School of Sichuan Province).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 100).

**Derivation** (Clifford & Bostock 2007): L. cold. Growing at high altitudes.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose, clumped densely. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, drooping at the tip, 50–400 cm long, 5–17 mm diam., woody, without nodal roots. Culm-internodes terete, thick-walled or solid, 6–32 cm long, distally mealy and pubescent. Lateral branches dendroid. Branch complement several. Culm-sheaths present, tardily deciduous, 11–23.5 cm long, 3–4 times as long as wide, coriaceous, yellow, pubescent, hairy on margins, concave at apex, without auricles, glabrous on shoulders. Culm-sheath ligule 1–1.5 mm high. Culm-sheath blade linear or lanceolate, narrower than sheath, deciduous, reflexed, 2.5–4.5 cm long, 3.5–12 mm wide, wrinkled, glabrous on surface. Leaves 1(–2) per branch. Leaf-sheaths 1.5–2 cm long, glabrous on surface. Leaf-sheath oral hairs scanty or lacking. Ligule an eciliate membrane, 0.5 mm long, purple, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1 cm long, petiole glabrous. Leaf-blades lanceolate, 2.3–5.2 cm long,

4.5–9 mm wide, fleshy. Leaf-blade venation with 4–6 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Flowering specimens unknown.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

**Fargesia fungosa** T.P. Yi. *Bulletin of Botanical Research* 5(4): 121–123, f. 1 (1985).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Dongchuan Shi, 2200–2600 m, April 1980, Y.L. Li s.n. (HT: SCFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007).

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo. Butt sheaths absent. Culms 500 cm long, 20 mm diam., woody. Culm-internodes terete. Lateral branches dendroid. Branch complement several. Culm-sheaths present, green and purple, distinctly mottled with last colour. Leaf-sheaths 4–7.5 cm long. Leaf-sheath oral hairs ciliate, deciduous, 3 mm long. Ligule a ciliolate membrane. Leaf-blade base without a false petiole or with a brief petiole-like connection to sheath. Leaf-blades oblong, 7–16 cm long, 10–17 mm wide. Leaf-blade venation with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade apex acuminate.

**Inflorescence.** Synflorescence compound, with principal spatheoles embracing a compact fascicle of racemes, each subtended by a subsidiary bract.

Inflorescence composed of racemes, subtended by a spatheole, embraced at base by subtending leaf. Racemes 1, single. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 1–5 mm long.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 25–30 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes pubescent.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 11–15 mm long, chartaceous, without keels. Upper glume lanceolate, 14–18 mm long, chartaceous, without keels.

**Florets.** Fertile lemma lanceolate, 12–20 mm long, chartaceous, without keel, more than 3-veined. Lemma surface hispidulous. Lemma hairs grey. Palea 9–14 mm long. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 3. Anthers 3. Stigmas 2. Caryopsis with adherent pericarp.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** China. China South Central.

**Fargesia funiushanensis** T.P. Yi. *Acta Bot. Yunnanica*, 13(4): 375 (1991).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Henan: Luanchuan Xian, Laojun Shan, Mulou, 1450–2100 m, 16 Sept. 1990, T.P. Yi 90100 (HT: SFS).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. *-ensis*, denoting origin. From Mt Yunjushan, Hunan Province, China.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 120–250 cm long, 3–12 mm diam., woody. Culm-internodes terete, thick-walled, 3–15 cm long, estriate, distally glabrous. Lateral branches dendroid, erect or ascending. Bud complement 1. Branch complement several, in a horizontal line, thinner than stem. Culm-sheaths present, persistent, coriaceous, glabrous, glabrous on margins, without auricles, glabrous on shoulders. Culm-sheath ligule 0.5–0.7 mm high, entire or ciliolate. Culm-sheath blade linear, erect or spreading, 1–5 cm long, 1.5–3.5 mm wide. Leaves 3–5 per branch. Leaf-sheaths 2.5–4 cm long, glabrous on surface, outer margin glabrous. Leaf-sheath oral hairs scanty or lacking. Leaf-sheath auricles absent. Ligule an eciliate membrane or a ciliolate membrane, 0.5–1 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1–0.15 cm long. Leaf-blades lanceolate, 4–8 cm long, 6–12 mm wide, fleshy. Leaf-blade venation with 6–8 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** China. China Southeast.  
**TDWG4.** Henan.

**Fargesia glabrifolia** T.P. Yi. *J. Bamboo Res.*, 2(2): 32 (1983).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Xizang: Cona Xian, 3100–3500 m, 24 Sept. 1978, C.G. Jiang 3 (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 119).

**Derivation** (Clifford & Bostock 2007): L. *glaber*, smooth; *folium*, leaf. Leaf-blades glabrous.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose, clumped densely. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, drooping at the tip, 400–600 cm long, 8–20 mm diam., woody, without nodal roots. Culm-internodes terete, thin-walled, 30–35 cm long, distally mealy. Lateral branches dendroid, ascending. Branch complement several, with subequal branches. Culm-sheaths present, tardily deciduous, 18–23 cm long, coriaceous, pubescent, with tawny hairs, without auricles, setose on shoulders, shoulders with straight hairs. Culm-sheath ligule 1–4 mm high, dentate. Culm-sheath blade linear or lanceolate, reflexed, 2–5.5 cm long, 2–5 mm wide, glabrous on surface. Leaves 2–3 per branch. Leaf-sheaths glabrous on surface. Leaf-sheath oral hairs setose, dark. Ligule a ciliolate membrane, 1 mm long, pubescent on abaxial surface, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1 cm long. Leaf-blades lanceolate, 3–9 cm long, 4–5 mm wide, fleshy. Leaf-blade venation with 4 secondary veins, with obscure cross veins. Leaf-blade surface glabrous. Leaf-blade margins smooth. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. Tibet.

**Fargesia gongshanensis** T.P. Yi. *J. Bamboo Res.*, 7(2): 57 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China, Gongshan Xian: Yi Tong-pei 77304.

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007).

**Derivation** (Clifford & Bostock 2007): L. *-ensis*, denoting origin. From Gongshan Xian, Yunnan Province, China.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, erect at the tip, 300–400 cm long, 10–20 mm diam., woody. Culm-internodes terete, thick-walled, 8–32 cm long, estriate or striate, distally mealy. Lateral branches dendroid. Branch complement many, in an irregular line. Culm-sheaths present, persistent or tardily deciduous, 20–26 cm long, 4–5 times as long as wide, coriaceous, glabrous or hispid, with dark brown hairs, glabrous on margins, without auricles, glabrous on shoulders. Culm-sheath ligule 1 mm high. Culm-sheath blade linear or lanceolate, narrower than sheath, deciduous, reflexed, 2.5–4 cm long, 1.5–2 mm wide. Leaves 4–7 per branch. Leaf-sheaths 2.2–3 cm long, glabrous on surface, outer margin glabrous. Leaf-sheath oral hairs setose, erect, 2–3 mm long, dark. Ligule a ciliolate membrane, 1 mm long, truncate. Leaf-blade base with a brief petiole-like connection to sheath, petiole 0.1–0.15 cm long, petiole glabrous. Leaf-blades deciduous at the ligule, lanceolate, 10–12.5 cm long, 6.5–8.5 mm wide, fleshy. Leaf-blade venation with 6–8 secondary veins, with distinct cross veins. Leaf-blade margins scaberulous. Leaf-blade apex attenuate. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

**Fargesia grossa** T.P. Yi. *J. Bamboo Res.*, 2(2): 35 (1983).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China, Xizang, Cona Xian: Jiang Changgui 2.

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007).

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.



**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose, clumped densely. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, drooping at the tip, 500–1000 cm long, 20–45 mm diam., woody, without nodal roots. Culm-internodes terete, thin-walled, 25–50 cm long, ridged, distally pruinose or glabrous. Culm-nodes flush with internodes. Lateral branches dendroid. Bud prophyll 1-keeled. Branch complement three, subtended by a bare patch above the node, with subequal branches, thinner than stem. Culm-sheaths present, persistent, 26 cm long, 2 times as long as wide, hispid, with dark brown hairs, without auricles, setose on shoulders, shoulders with straight hairs, shoulders with 3–8 mm long hairs. Culm-sheath ligule 1–2 mm high, ciliolate. Culm-sheath blade lanceolate, deciduous, erect, 3.5–7 cm long, 20 mm wide, hispid. Leaf-sheaths glabrous on surface or pubescent. Leaf-sheath oral hairs setose, 3–5 mm long. Ligule an eciliate membrane, 15–25 mm long, truncate. Collar pilose. Leaf-blade base with a brief petiole-like connection to sheath, petiole pubescent. Leaf-blades lanceolate, 4.5–18 cm long, 5–20 mm wide. Leaf-blade venation with distinct cross veins. Leaf-blade surface glabrous or pilose, sparsely hairy, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle branches bearded in axils, with insignificant pulvini. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 20–30 mm long.

**Fertile Spikelets.** Spikelets comprising 5–10 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 30–55 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 4–6 mm long, pubescent and pilose, hairy all along but hairs longer above.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 9–15 mm long, chartaceous, without keels. Lower glume apex acute, awned. Upper glume elliptic, 13–17 mm long, 0.8–0.9 length of adjacent fertile lemma, chartaceous, without keels. Upper glume apex acute, awned.

**Florets.** Fertile lemma 15–20 mm long, chartaceous, without keel, more than 3-veined. Lemma surface scabrous, rough above, puberulous. Lemma margins ciliolate. Palea 10–12 mm long, 2 -veined. Palea keels ciliate, adorned above, with 0.5 of their length adorned, with hairs 3 mm long. Palea apex entire or dentate, 2 -fid, ciliate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 3, ciliate. Anthers 3, 9 mm long, yellow, anther tip smooth or penicillate. Stigmas 2–3. Caryopsis with adherent pericarp, apex unappendaged.

**Distribution (TDWG). Continent.** Temperate Asia, Tropical Asia.

**Country /Province /State.** China. Tibet. **Indian Subcontinent.** Eastern Himalaya.

**Fargesia hackelii** D.Ohrnberger. *Bamboos of the World* Intro. 2: 10 (1996).

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

**Fargesia hainanensis** T.P. Yi. *Bull. Bot. Res. North-East. Forest. Inst.*, 3(3): 151 (1983).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Hainan: Qiongzong Xian, summit of Wuzhi Shan, under hardwood forest, 1560–1800 m, 28 Aug. 1982, T.P. Yi 82175 (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 120).

**Derivation** (Clifford & Bostock 2007): L. *-ense*, denoting origin. From Hainan Province, China.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo. Butt sheaths absent. Culms 500 cm long, 20 mm diam., woody. Culm-internodes terete, antrorsely scabrous. Lateral branches dendroid. Branch complement several. Culm-sheaths present. Leaf-sheaths 1.2–3 cm long. Leaf-sheath oral hairs ciliate, deciduous, 3 mm long. Ligule an eciliate membrane. Leaf-blade base without a false petiole or with a brief petiole-like connection to sheath. Leaf-blades oblong, 3.5–12 cm long, 5–10 mm wide. Leaf-blade venation with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade apex acuminate.

**Inflorescence.** Synflorescence compound, with principal spatheoles embracing a compact fascicle of racemes, each subtended by a subsidiary bract.

Inflorescence composed of racemes, subtended by a spatheole, embraced at base by subtending leaf. Racemes 1, single, bearing 4–7 fertile spikelets on each. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, glabrous or puberulous.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 25–30 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 10–14 mm long, chartaceous, without keels. Upper glume lanceolate, 18–26 mm long, chartaceous, without keels.

**Florets.** Fertile lemma lanceolate, 8–16 mm long, chartaceous, without keel, 7–9 -veined, more than 3-veined. Palea 7–10 mm long. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 3. Anthers 3, 4–6 mm long. Stigmas 2. Caryopsis with adherent pericarp.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. Hainan.

### **Fargesia hsuehiana** T.P. Yi. *J. Bamboo Res.*, 7(2): 104 (1988).

**Accepted by:** U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Jinping Xian, 2000 m, 23 Sept. 1983, T.P. Yi 83183 (HT: SFS).

**Recent Synonyms:** *Borinda hsuehiana* (T.P. Yi) C.M.A. Stapleton, *Kew Bull.*, 53 (2): 456 (1998).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 117).

**Derivation** (Clifford & Bostock 2007): In honor of Chi-Ju Hsueh (1921-) Chinese botanist.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms 300–700 cm long, 10–30 mm diam., woody. Culm-internodes terete, thick-walled, 18–25 cm long, ridged, distally pubescent. Culm-nodes swollen. Lateral branches dendroid. Branch complement several, in a horizontal line, with subequal branches, thinner than stem. Culm-sheaths present, persistent, 15–27 cm long, 4–5 times as long as wide, coriaceous, hispid, with dark brown hairs, without auricles, setose on shoulders. Culm-sheath ligule 0.7 mm high. Culm-sheath blade linear or lanceolate, deciduous, reflexed, 2–4 cm long, 1–2 mm wide. Leaves 4–8 per branch. Leaf-sheaths 2.8–4.2 cm long. Leaf-sheath oral hairs setose, 3–10 mm long. Ligule an eciliate membrane, 1 mm long, truncate or obtuse. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.15–0.2 cm long, petiole glabrous or pubescent. Leaf-blades lanceolate, 6–14 cm long, 7–12 mm wide. Leaf-blade venation with 6–8 secondary veins, with obscure cross veins. Leaf-blade surface glabrous or pubescent, hairy adaxially. Leaf-blade margins serrulate.

**Inflorescence.** Inflorescence composed of racemes, bracteate at pedicel base, subtended by a spatheole, embraced at base by subtending leaf. Racemes 1, single, unilateral, 4.5–7.5 cm long, bearing 5–11 fertile spikelets on each. Rhachis pilose on surface. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 2–6 mm long, ciliate.

**Fertile Spikelets.** Spikelets comprising 5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 25–34 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes flattened, 2.5–5 mm long, pilose.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear or lanceolate, 0.75 length of upper glume, chartaceous, without keels, 5 -veined. Lower glume apex setaceously acuminate. Upper glume lanceolate, 18–23 mm long, chartaceous, without keels, 7 -veined. Upper glume apex setaceously acuminate.

**Florets.** Fertile lemma lanceolate, 17–27 mm long, chartaceous, without keel, 9–11 -veined, more than 3-veined. Lemma lateral veins with cross-veins. Lemma surface pubescent, hairy at base. Lemma margins ciliolate. Lemma apex attenuate. Palea 9–16 mm long, 4 -veined. Palea keels pubescent. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 3, 1.2 mm long, ciliate. Anthers 3, 4.5–6 mm long, yellow. Stigmas 3. Ovary glabrous. Caryopsis with adherent pericarp, ellipsoid, sulcate on hilar side, 9–10 mm long, dark brown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

### **Fargesia hygrophila** Hsueh & T.P. Yi. *J. Bamboo Res.*, 7(2): 74 (1988).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online, U. Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Dayao Xian, 1600–3000 m, 20 Feb. 1984, T.P. Yi 84103 (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 114).

**Derivation** (Clifford & Bostock 2007): Gk *hygros*, moisture; *phileo*, love. Swamp or stream bank plants.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 300–500 cm long, 10–25 mm diam., woody. Culm-internodes terete, thick-walled, 15–18 cm long, striate, distally mealy. Culm-nodes flush with internodes. Lateral branches dendroid. Bud complement 1. Branch complement several, thinner than stem. Culm-sheaths present, persistent, 26–47 cm long, 4–5 times as long as wide, coriaceous, yellow, hispid, with yellow hairs or tawny hairs, glabrous on margins, without auricles, glabrous on shoulders. Culm-sheath ligule 1 mm high. Culm-sheath blade linear or lanceolate, reflexed, 2.5–7 cm long, 1.5–2.5 mm wide. Leaves 2–9 per branch. Leaf-sheaths 2.8–7.1 cm long, outer margin glabrous. Leaf-sheath oral hairs scanty or setose, erect and deciduous, 1–2.5 mm long, dark. Leaf-sheath auricles absent. Ligule an eciliate membrane, 0.5 mm long, obtuse. Collar with external ligule. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1–0.3 cm long. Leaf-blades lanceolate, 6–14 cm long, 6–14 mm wide, fleshy. Leaf-blade venation with 6–8 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**TDWG4.** Yunnan.

### **Fargesia jiulongensis** T.P. Yi. *J. Bamboo Res.*, 4(2): 22 (1985).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Sichuan: Jiulong Xian, 2800–3400 m, 6 Aug. 1980, *T.P. Yi 80081* (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 112).

**Derivation** (Clifford & Bostock 2007): *L. -ensis*, denoting origin. From Jiulong Xian, Sichuan Province, China.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short (4–6.5cm), pachymorph. Butt sheaths absent. Culms 300–500 cm long, 10–20 mm diam., woody. Culm-internodes terete, thin-walled, 20–30 cm long, estriate, distally glabrous. Culm-nodes without obvious supra-nodal ridge or with distinct supra-nodal ridge. Lateral branches dendroid. Branch complement several. Culm-sheaths present, deciduous, coriaceous, hispid, with tawny hairs, hairy on margins, without auricles, glabrous on shoulders. Culm-sheath ligule 1.5–7 mm high, ciliolate. Culm-sheath blade linear or lanceolate, deciduous, reflexed. Leaves 3–5 per branch. Leaf-sheaths pubescent, hairs yellow, outer margin hairy. Leaf-sheath oral hairs lacking. Ligule a ciliolate membrane, 1 mm long, purple, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 5.5–13 cm long, 4–9 mm wide, fleshy. Leaf-blade venation with 6–8 secondary veins, with distinct cross veins. Leaf-blade surface pubescent, hairy abaxially. Leaf-blade margins scabrous. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**TDWG4.** Sichuan.

### **Fargesia lincangensis** T.P. Yi. *J. Bamboo Res.* 7(2): 96–98, f. 29 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Lincang Xian, 2960–3200 m, 2 Sept. 1983, *T.P. Yi 83149* (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 119).

**Derivation** (Clifford & Bostock 2007): *L. -ensis*, denoting origin. From Lincang, Yunnan Province, China.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short (5–9cm), pachymorph. Butt sheaths absent. Culms 400–800 cm long, 20–50 mm diam., woody. Culm-internodes terete, thin-walled, 25–45 cm long, distally glabrous. Culm-nodes with distinct supra-nodal ridge. Lateral branches dendroid. Branch complement several. Culm-sheaths present, persistent or deciduous but leaving a persistent girdle, coriaceous, hispid, with yellow hairs or tawny hairs, hairy on margins, without auricles or auriculate, setose on shoulders, shoulders with straight hairs or curved hairs, shoulders with 4–12 mm long hairs. Culm-sheath ligule 1–1.5 mm high, purple, ciliate. Culm-sheath blade linear or lanceolate, deciduous, reflexed, glabrous on surface. Leaves 2–3 per branch. Leaf-sheaths glabrous on surface, outer margin glabrous or hairy. Leaf-sheath oral hairs setose, 3–6 mm long, pale. Ligule an eciliate membrane, 1 mm long, purple, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 7–10 cm long,

12–16 mm wide, fleshy. Leaf-blade venation with 6–10 secondary veins, with obscure cross veins. Leaf-blade surface glabrous. Leaf-blade margins smooth. Flowering specimens unknown.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

**Fargesia longiuscula** (J.R. Xue & Y.Y. Dai) D. Ohrnberger. *Bamboos of the World Intro.* 3: 14 (1996).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. **Basionym or Replaced Name:** *Sinarundinaria longiuscula* J.R. Xue & Y.Y. Dai, *J. Bamboo Res.* 6(2): 19, f. 5 (1987). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Yongshan, 1480 m, 12 April 1985, *Bamboo Exped. J85059* (HT: SWFC).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. longius*, longer; *-ula*, tendency. Somewhat long.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms 450–600 cm long, 16–24 mm diam., woody. Culm-internodes terete, thin-walled, 45–52 cm long, ridged, distally mealy. Culm-nodes without obvious supra-nodal ridge or with distinct supra-nodal ridge, pubescent. Lateral branches dendroid. Branch complement many. Culm-sheaths present, deciduous but leaving a persistent girdle, coriaceous, hispid, with dark brown hairs or black hairs, without auricles, glabrous on shoulders. Culm-sheath ligule 3 mm high, dentate. Leaves 3–4 per branch. Leaf-sheaths glabrous on surface. Leaf-sheath oral hairs lacking. Ligule a ciliolate membrane, 1 mm long, purple. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 17–20 cm long, 18–23 mm wide, fleshy. Leaf-blade venation with 8 secondary veins, with obscure cross veins. Leaf-blade surface glabrous, hairless except near base. Flowering specimens unknown.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

**Fargesia lushuiensis** J.R. Xue & T.P. Yi. *J. Bamboo Res.* 7(2): 111–113, f. 34 (1988).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online, U. Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Lushui Xian: 1780 m, 1 May 1978, *Forestry College of Yunnan 002* (HT: SWFC).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 124).

**Derivation** (Clifford & Bostock 2007): *L. -ensis*, denoting origin. From Luqu County, Gansu Province, China.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose, clumped densely. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 300–500 cm long, 8–10 mm diam., woody, without nodal roots. Culm-internodes terete, thick-walled, 14–32 cm long, estriate, distally mealy. Culm-nodes swollen. Lateral branches dendroid. Bud complement 1. Branch complement several. Culm-sheaths present, deciduous but leaving a persistent girdle, 13.5–21 cm long, 3 times as long as wide, coriaceous, brown, glabrous or pubescent, glabrous on margins, without auricles, glabrous on shoulders. Culm-sheath ligule 1–1.5 mm high. Culm-sheath blade lanceolate or triangular, demarcated but persistent, reflexed, 2.7–5.4 cm long, 2–7 mm wide. Leaves 3–5 per branch. Leaf-sheaths 3–4 cm long. Leaf-sheath oral hairs lacking. Ligule an eciliate membrane, 0.5 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.15–0.25 cm long. Leaf-blades lanceolate, 7.6–11.2 cm long, 6–11 mm wide, fleshy. Leaf-blade venation with 6–8 secondary veins, with obscure cross veins. Leaf-blade surface glabrous. Leaf-blade margins scaberulous. Flowering specimens unknown.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

**Fargesia macrophylla** J.R. Xue & C.M. Hui. *Bull. Bot. Res., Harbin* 18(3): 258–261, f. 2. 1998.

**Accepted by:** S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Fugong, Zhiziluo, 1950 m, 7 April 1992, *Apu & C.M. Hui 92046* (HT: SWFC).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *Gk macros*, large; *phyllon*, leaf. Leaf-blades large.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

**Fargesia macclureana** (Bor) Stapleton. *Bamboo Society Newsletter* 17: 17 (1993).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China.

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007).

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 500 cm long, 50 mm diam., woody. Culm-internodes terete, thin-walled, smooth, distally glabrous. Culm-nodes glabrous. Lateral branches dendroid. Culm-sheaths present. Leaf-sheaths striately veined, smooth, hirsute. Leaf-sheath oral hairs ciliate. Ligule an eciliate membrane. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 5–9 cm long, 5–11 mm wide. Leaf-blade venation with distinct cross veins. Leaf-blade surface pilose, hairy abaxially. Leaf-blade margins scabrous. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 20–25 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 9–9.5 mm long, chartaceous, 1-keeled, 5 -veined. Lower glume primary vein scaberulous. Lower glume surface smooth, glabrous. Lower glume apex acuminate. Upper glume elliptic, 12 mm long, chartaceous, 1-keeled, 7 -veined. Upper glume primary vein scaberulous. Upper glume lateral veins with cross-veins. Upper glume surface smooth, glabrous. Upper glume apex acuminate.

**Florets.** Fertile lemma elliptic, 15 mm long, 5 mm wide, chartaceous, without keel, rounded except near apex, more than 3-veined. Lemma surface puberulous. Lemma margins ciliate, hairy above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2 mm long overall. Palea elliptic, 9–10 mm long. Palea keels ciliolate. Palea apex acute. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 3, 2 mm long, ciliate. Anthers 3, 5.5 mm long. Stigmas 2, plumose. Caryopsis with adherent pericarp, apex unappendaged.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. Tibet.

**Fargesia mairei** (Hack. ex Hand.-Mazz.) T.P. Yi. *J. Bamboo Res.*, 7(2): 50 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. **Basionym or Replaced Name:** *Arundinaria mairei* Hack. ex Hand.-Mazz., *Symb. Sin.* 7: 1273 (1936)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China, Pe-long-tsin: Maire 7524.

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 107).

**Derivation** (Clifford & Bostock 2007): In honor of Edouard-Ernest Maire (1848–1932) French cleric who collected in China.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms woody. Culm-internodes terete. Lateral branches dendroid. Culm-sheaths present. Leaf-sheaths striately veined, pilose. Leaf-sheath oral hairs scanty, dark. Ligule an eciliate membrane, pubescent on abaxial surface, obtuse. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades lanceolate. Leaf-blade surface scabrous, rough adaxially, hirsute, hairy abaxially.

**Inflorescence.** Inflorescence a panicle, comprising 8 fertile spikelets, subtended by a spatheole, embraced at base by subtending leaf. Panicle open, 6–12 cm long, bearing few spikelets. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 10–17 mm long.

**Fertile Spikelets.** Spikelets comprising 5–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 25–30 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes clavate, curved, 11 mm long, pilose.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 7–9 mm long, chartaceous, purple, without keels. Lower glume apex obtuse, awned, 1 -awned. Upper glume lanceolate, 11 mm long, chartaceous, purple, without keels. Upper glume surface scabrous. Upper glume margins ciliolate. Upper glume apex obtuse.

**Florets.** Fertile lemma lanceolate, 11 mm long, chartaceous, without keel, more than 3-veined. Lemma apex attenuate. Palea keels ciliolate. Palea surface scaberulous. Palea apex entire or dentate, 2 -fid, obtuse. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 3. Anthers 3. Stigmas 2. Caryopsis with adherent pericarp.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**TDWG4.** Yunnan.

**Fargesia mali** T.P. Yi. *Acta Bot. Yunnanica*, 11(1): 37 (1989).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Sichuan: Huili Xian, Beimu Shan, 3000–3200 m, 18 May 1987, *Yu Tibgoelu* 87250 (HT: Forestry School of Sichuan Prov.).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 124).

**Derivation** (Clifford & Bostock 2007): Vernacular name of the species in Yi, the language of south west Sichuan Province, China.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose, clumped densely. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, erect at the tip, 300–600 cm long, 12–25 mm diam., woody. Culm-internodes terete, thick-walled, 25–38 cm long, distally pruinose. Lateral branches dendroid, erect or ascending. Bud complement 1. Branch complement many, thinner than stem. Culm-sheaths present, tardily deciduous, 20–30 cm long, 0.8 length of internode, 3 times as long as wide, coriaceous, hispid, with yellow hairs, hairy on margins, without auricles, glabrous on shoulders. Culm-sheath ligule 1 mm high, purple. Culm-sheath blade triangular, as wide as sheath at base, erect, 1.5–12 cm long, 5–7 mm wide, glabrous on surface. Leaves 2–4 per branch. Leaf-sheaths 2.5–3.5 cm long, glabrous on surface, outer margin glabrous. Leaf-sheath oral hairs lacking. Leaf-sheath auricles absent. Ligule an eciliate membrane, 0.5 mm long, purple, truncate. Collar with external ligule. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1–0.15 cm long. Leaf-blades linear or lanceolate, 5–9 cm long, 4–7 mm wide, fleshy. Leaf-blade venation with 4–6 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**TDWG4.** Sichuan.

**Fargesia maluo** T.P. Yi. *J. Bamboo Res.*, 11(2): 6 (1992).

**Accepted by:** U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China, Mianning Co.: Yi Tong-pei 91146.

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**Fargesia melanostachys** (Hand.-Mazz.) T.P. Yi. *J. Bamboo Res.*, 2(1): 39 (1983).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China 22* (Poaceae) (2006).

**TYPE** from China. **Basionym or Replaced Name:** *Arundinaria melanostachys* Hand.-Mazz., *Kaiserl. Akad. Wiss. Wien, Math.-Naturwiss. Kl., Anz.* 61: 23 (1924)

. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: 3100–3800 m, 2 Aug. 1916, *H.F. von Handel-Mazzetti 9614* (HT: US-2809015).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 104).

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 60–240 cm long, woody. Culm-internodes terete, thin-walled, 4–8 cm long. Lateral branches dendroid. Branch complement several. Culm-sheaths present. Ligule an eciliate membrane. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 2–3.5 cm long, 2–4.5 mm wide.

**Inflorescence.** Inflorescence composed of racemes, comprising 3–4 fertile spikelets, embraced at base by subtending leaf. Racemes 1, single. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 6–20 mm long.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 25–35 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 5–6 mm long. Floret callus pubescent. Floret callus hairs 0.8 mm long.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 8–11 mm long, chartaceous, without keels, 3–5 -veined. Lower glume apex cuspidate. Upper glume elliptic, 11–14 mm long, chartaceous, without keels, 3–5 -veined. Upper glume apex cuspidate.

**Florets.** Fertile lemma 15–17 mm long, chartaceous, without keel, 7 -veined, more than 3-veined. Lemma surface smooth or scaberulous, rough on veins, glabrous or puberulous, hairy between veins. Lemma apex cuspidate. Palea 10 mm long, 2 -veined. Palea keels ciliolate, adorned above. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 3. Anthers 3, 5 mm long. Stigmas 3. Caryopsis with adherent pericarp, apex unappendaged.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

**Fargesia murielae** (Gamble) T.P. Yi. *J. Bamboo Res.*, 2(1): 39 (1983).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China 22* (Poaceae) (2006).

**TYPE** from China & UK. **Basionym or Replaced Name:** *Arundinaria murielae* Gamble, *Bull. Misc. Inform. Kew* 1920(10): 344–345 (1920)

. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: LT: *Bean & Gamble 30742*, Aug 1920, United Kingdom, cultivated Royal Botanic Garden, Kew (K). LT designated by Stapleton, *Taxon* 55(1): 227 (200); supersedes Soderstrom's earlier lectotypification because that was in serious conflict with the protologue.

LT: *E.H. Wilson 1462*, China: Hubei: Fang Xian, Shennongjia, uplands at 2000–3000 m (K). LT designated (as holotype) by Soderstrom, *Brittonia* 31: 495 (1979).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 103).

**Derivation** (Clifford & Bostock 2007): in honor of Muriel Wilson, daughter of E.H. Wilson (1876–1930) English botanist who collected in China.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms 200–400 cm long, 7–10 mm diam., woody. Culm-internodes terete, 20 cm long. Lateral branches dendroid. Branch complement several, in a horizontal line, with subequal branches, thinner than stem. Culm-sheaths present, 10–12 cm long, hairy on margins. Culm-sheath blade linear, reflexed, 4–6 cm long. Leaf-sheaths striately veined, glabrous on surface. Leaf-sheath oral hairs scanty, deciduous. Ligule a ciliolate membrane, 1 mm long. Leaf-blade base with a brief petiole-like connection to sheath, petiole 0.3–0.4 cm long. Leaf-blades lanceolate, 7–12 cm long, 10–15 mm wide. Leaf-blade venation with 8–10 secondary veins, with distinct cross veins. Leaf-blade surface smooth or scabrous, rough adaxially. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence composed of racemes, subtended by a spatheole, embraced at base by subtending leaf. Spatheole elliptic, 3–5 cm long. Racemes 1, single, oblong, unilateral, 2–3 cm long. Spikelet packing crowded, irregular. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 12–20 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 10–13 mm long, chartaceous, without keels. Lower glume surface puberulous. Lower glume apex attenuate, awned, 1 -awned, awn 2 mm long. Upper glume lanceolate, 9–11 mm long, chartaceous, without keels, 3 -veined. Upper glume surface puberulous. Upper glume apex attenuate, awned, 1 -awned, awn 4 mm long.

**Florets.** Fertile lemma lanceolate, 8–11 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface puberulous. Lemma apex attenuate, awned, 1 -awned. Principal lemma awn 2 mm long overall. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 3. Anthers 3. Stigmas 3. Caryopsis with adherent pericarp.

**Distribution (TDWG).** Continent. Europe, Temperate Asia.

**Region.** Northern Europe (\*).

**Country /Province /State.** : GB Aliens (Ryves et al). **China.** China South Central.

**TDWG4.** Hubei, Sichuan.

**Fargesia nitida** (Mitford) Keng f. ex T.P. Yi. *J. Bamboo Res.*, 4(2): 30 (1985).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N.Tsvelev, *Grasses of the Soviet Union* (1983) (as *Sinarundinaria*).

**TYPE** from China. **Basionym or Replaced Name:** *Arundinaria nitida* Mitford, *Bull. Misc. Inform. Kew* 109: 20 (1896)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China, Szechuan, cult. in Britain: Potanin.

**Illustrations (Books):** D.Farrelly, *The Book of Bamboo* (1984) (as *Sinarundinaria nitida*), S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 108 ; Fig. 119).

**Derivation** (Clifford & Bostock 2007): L. niteo, shine; Spikelets or lemmas shiny.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms 200–500 cm long, 10–20 mm diam., woody. Culm-internodes terete, thin-walled, 11–20 cm long. Lateral branches dendroid. Branch complement several, in a horizontal line, with subequal branches, thinner than stem. Culm-sheaths present, persistent, glabrous on shoulders. Culm-sheath blade ovate, 1 cm long. Leaf-sheath oral hairs ciliate. Ligule an eciliate membrane. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 3.8–8 cm long, 6–10 mm wide.

**Inflorescence.** Inflorescence composed of racemes, subtended by a spatheole, embraced at base by subtending leaf. Spatheole elliptic, 3 cm long. Racemes 1, single, oblong, unilateral, 2–3 cm long. Spikelet packing crowded, irregular. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 12 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 5 mm long, chartaceous, without keels. Lower glume apex acuminate. Upper glume lanceolate, 6 mm long, chartaceous, without keels. Upper glume apex attenuate.

**Florets.** Fertile lemma lanceolate, 8 mm long, chartaceous, purple, without keel, 7 -veined, more than 3-veined. Lemma apex acuminate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 3. Anthers 3. Stigmas 3. Caryopsis with adherent pericarp.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** **China.** China South Central, Inner Mongolia, China North-Central, Qinghai.

**TDWG4.** Gansu. Sichuan.

**Fargesia nujiangensis** J.R. Xue & C.M. Hui. *Bull. Bot. Res. North-East. Forest. Univ.*, 18(3): 261 (1998).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).



**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Fuugong, Zhiziluo, Biluo Shan, 2800–3100 m, 7 April 1992, H.R. Zhang & C.M. Hui 92041 (HT: SWFC).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose, clumped loosely. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 300–500 cm long, 10–30 mm diam., woody. Culm-internodes terete, solid, 23–30 cm long, striate, distally mealy or pruinose. Culm-nodes glabrous. Lateral branches dendroid. Bud complement 1. Branch complement several, in a horizontal line, with subequal branches, thinner than stem. Culm-sheaths present, persistent or tardily deciduous, coriaceous, hispid, hairy on margins, without auricles, glabrous on shoulders. Culm-sheath ligule 2–5 mm high. Culm-sheath blade linear, narrower than sheath, reflexed. Leaves 2–3 per branch. Leaf-sheaths glabrous on surface. Leaf-sheath oral hairs lacking. Leaf-sheath auricles absent. Ligule an eciliate membrane, 1 mm long. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 5–10 cm long, 5–6 mm wide, fleshy. Leaf-blade venation with 4–6 secondary veins, with obscure cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

**Fargesia obliqua** T.P. Yi. *Acta Bot. Yunnanica*, 8(1): 48 (1986).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online, U. Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Sichuan: Beichuan Xian, 2500–3300(-3700) m, 18 May 1985, T.P. Yi 85050 (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 104).

**Derivation** (Clifford & Bostock 2007): *L. obliqua*. Base of leaf-blade is asymmetric.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short (2.5–5 cm), pachymorph. Butt sheaths absent. Culms 200–400 cm long, 5–12 mm diam., woody. Culm-internodes terete, thin-walled, 18–24 cm long, distally glabrous. Culm-nodes with distinct supra-nodal ridge. Lateral branches dendroid, reflexed. Branch complement one to several. Culm-sheaths present, persistent, 0.5 length of internode, coriaceous, hairy on margins, convex at apex, without auricles, glabrous on shoulders. Culm-sheath ligule 1 mm high, entire. Culm-sheath blade triangular, erect, glabrous on surface. Leaves 2–3(–4) per branch. Leaf-sheaths glabrous on surface. Leaf-sheath oral hairs lacking. Ligule an eciliate membrane, 0.7 mm long, truncate. Leaf-blade base broadly rounded, with a brief petiole-like connection to sheath. Leaf-blades lanceolate or ovate, 6.5–9 cm long, 12–18 mm wide, fleshy. Leaf-blade venation with 8 secondary veins, with obscure cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Sichuan.

**Fargesia orbiculata** T.P. Yi. *J. Bamboo Res.*, 7(2): 22 (1988).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online, U. Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Lijiang Xian, 3850 m, 4 Oct. 1977, T.P. Yi 77230 (HT: Herb. Forestry School of Sichuan Prov.).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 100).

**Derivation** (Clifford & Bostock 2007): *L. orbiculus*, round; *-ata*, possessing. Stem buds circular in outline.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, inclined at the tip, 400–600 cm long, 10–25 mm diam., woody. Culm-internodes terete, thick-walled, 12–40 cm long, striate, distally mealy. Culm-nodes flush with internodes. Lateral branches dendroid. Branch complement several, thinner than stem. Culm-sheaths present, persistent, 11–18 cm long, 3 times as long as wide, coriaceous, yellow, glabrous, glabrous on margins, convex at apex, without auricles, glabrous on shoulders. Culm-sheath ligule 1 mm high, purple, entire. Culm-sheath blade linear or lanceolate, narrower than sheath, deciduous, reflexed, 1.2–8 cm long, 1.5–3.5 mm wide, glabrous on surface. Leaves 2–3 per branch. Leaf-sheaths 1.1–2.2 cm long, glabrous on surface, outer margin glabrous. Leaf-sheath oral hairs

lacking. Leaf-sheath auricles absent. Ligule an eciliate membrane, 1 mm long, purple, truncate or obtuse. Collar with external ligule. Leaf-blade base broadly rounded, with a brief petiole-like connection to sheath, petiole 0.1–0.15 cm long, petiole glabrous. Leaf-blades lanceolate, 5–8 cm long, 8–13 mm wide, fleshy. Leaf-blade venation with 6–8 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**TDWG4.** Yunnan.

**Fargesia ostrina** T.P. Yi. *Acta Bot. Yunnan.* 22(3): 251–254, f. 1, 1–14. 2000.

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Sichuan: Wanyuan, Hu-ae Shan, in thickets, 2100 m, 21 Nov. 1998, T.P. Yi 98823 (HT: SIFS).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. purple. Anthers purple.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**TDWG4.** Sichuan.

**Fargesia papyrifera** T.P. Yi. *J. Bamboo Res.*, 7(2): 42 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Yunlong Xian, 2750–3600 m, 8 Nov. 1977, T.P. Yi 77288 (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 109).

**Derivation** (Clifford & Bostock 2007): L. *papyrus*, paper; *fero*, carry or bear. Useful for making paper.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose, clumped densely. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, drooping at the tip, 600–800 cm long, 20–60 mm diam., woody, without nodal roots. Culm-internodes terete, thick-walled or solid, 10–40 cm long, grey, striate, distally mealy and glabrous. Lateral branches dendroid. Branch complement several. Culm-sheaths present, deciduous but leaving a persistent girdle, 25–45 cm long, 3 times as long as wide, coriaceous, pubescent, with tawny hairs, hairy on margins, without auricles, setose on shoulders, shoulders with straight hairs, shoulders with 3–6 mm long hairs. Culm-sheath ligule 2–3 mm high, ciliate. Culm-sheath blade lanceolate, reflexed, 14–17 cm long, 4–10 mm wide, wrinkled. Leaves 3–5 per branch. Leaf-sheaths 4.5–9.5 cm long, glabrous on surface. Leaf-sheath oral hairs setose, 1–1.5 mm long. Ligule an eciliate membrane or a ciliolate membrane, 1 mm long, truncate or obtuse. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.2–0.4 cm long. Leaf-blades lanceolate, 10–18 cm long, 16–23 mm wide, fleshy. Leaf-blade venation with 10–12 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scaberulous. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**TDWG4.** Yunnan.

**Fargesia parvifolia** T.P. Yi. *J. Bamboo Res.*, 10(2): 15 (1991).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China, Mianning Co.: Yi Tong-pei 90173.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. *parvus*, small; *folium*, leaf. Leaf-blades small.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**Fargesia pauciflora** (Keng) T.P. Yi. *J. Bamboo Res.*, 4(2): 25: (1985).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. **Basionym or Replaced Name:** *Arundinaria pauciflora* Keng, *J. Wash. Acad. Sci.* 26: 397 (1936)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Sichuan: Ningyuan Xian, Shao Shan, 2700 m, 15 April 1914, *Handel-Mazzetti 1365* (HT: US-1128976).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 118).

**Derivation** (Clifford & Bostock 2007): *L. paucus*, few; *flos*, flower. With few florets per spikelet or few spikelets per inflorescence.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo. Butt sheaths absent. Culms 40 cm long, 3 mm diam., woody. Culm-internodes terete, 4.5–9.5 cm long, distally glabrous. Lateral branches dendroid. Culm-sheaths present. Leaves 3–6 per branch. Leaf-sheaths glabrous on surface, outer margin glabrous or hairy. Leaf-sheath oral hairs setose, dark. Ligule an eciliate membrane, 0.5 mm long, truncate. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 1–3 cm long, 3–6 mm wide. Leaf-blade venation with 4–6 secondary veins, with distinct cross veins. Leaf-blade surface pubescent, hairy adaxially. Leaf-blade margins scabrous. Leaf-blade apex acuminate.

**Inflorescence.** Inflorescence composed of racemes, without bracts or bracteate at pedicel base, subtended by a spatheole, embraced at base by subtending leaf. Racemes 1, single, 2–3 cm long, bearing 3 fertile spikelets on each. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 2–4 mm long, smooth.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 16–21 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 2.5–4 mm long, pilose. Floret callus pubescent.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume ovate, 3–4 mm long, chartaceous, without keels, 1–3 -veined. Lower glume lateral veins absent or distinct. Lower glume margins eciliate or ciliolate. Lower glume apex acute. Upper glume ovate, 6–7.5 mm long, chartaceous, without keels, 7–9 -veined. Upper glume margins eciliate or ciliolate. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate or ovate, 8–12 mm long, chartaceous, without keel, 7–9 -veined, more than 3-veined. Lemma lateral veins with cross-veins. Lemma surface glabrous or puberulous, hairy on veins. Lemma apex acuminate. Palea 7–8 mm long. Palea keels ciliolate, adorned above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 3, 1.5–2 mm long, veined, ciliate. Anthers 3, 5 mm long. Stigmas 2–3. Ovary glabrous. Caryopsis with adherent pericarp.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**TDWG4.** Sichuan, Yunnan.

**Fargesia perlonga** Hsueh & T.P. Yi. *J. Bamboo Res.*, 7(2): 79 (1988).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online, U. Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Kunming City, cult., 5 Feb. 1974, *J.R. Xue s.n.* (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 115).

**Derivation** (Clifford & Bostock 2007): *L. per*, very; *longa*, long. Leaf-blades long.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose, clumped densely. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, drooping at the tip, 300–500 cm long, 18–22 mm diam., woody, without nodal roots. Culm-internodes terete, solid, 18–20 cm long, distally glabrous. Lateral branches dendroid. Bud complement 1. Branch complement several. Culm-sheaths present, persistent, 28–50 cm long, coriaceous, hispid, without auricles, setose on shoulders, shoulders with straight hairs, shoulders with 3–4 mm long hairs. Culm-sheath ligule 1 mm high. Leaves 2–4 per branch. Leaf-sheaths 3.5–5.5 cm long, glabrous on surface, outer margin glabrous. Leaf-sheath oral hairs setose, erect, 2–5 mm long, pale. Ligule an eciliate membrane, 1 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.15–0.2 cm long. Leaf-blades lanceolate, 10–19.5 cm long, 13–17 mm wide, fleshy, stiff. Leaf-blade venation with 10–12 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scaberulous. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**TDWG4.** Yunnan.

**Fargesia pleniculmis** (Hand.-Mazz.) T.P. Yi. *J. Bamboo Res.* 7(2): 113 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. **Basionym or Replaced Name:** *Arundinaria pleniculmis* Hand.-Mazz., *Symb. Sin.* 7(5): 1276–1277 (1936). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: 2500–3000 m.

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 117).

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short (4–10cm), pachymorph. Butt sheaths absent. Culms 400–800 cm long, 10–30 mm diam., woody. Culm-internodes terete, thick-walled, 24–30 cm long, ridged, distally mealy. Culm-nodes without obvious supra-nodal ridge or with distinct supra-nodal ridge. Lateral branches dendroid. Branch complement several. Culm-sheaths present, persistent, coriaceous, glabrous or hispid, with tawny hairs, hairy on margins, convex at apex, without auricles, ciliate on shoulders, shoulders with 1–2 mm long hairs. Culm-sheath ligule 1–2 mm high. Culm-sheath blade lanceolate or triangular, erect or reflexed, glabrous on surface. Leaves 1–3 per branch. Leaf-sheaths pilose. Leaf-sheath oral hairs lacking. Ligule an eciliate membrane, 1 mm long, purple, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 4–8 cm long, 5–8 mm wide, fleshy. Leaf-blade venation with 4–6 secondary veins, with distinct cross veins. Leaf-blade surface pubescent. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

**Fargesia plurisetosa** T.H. Wen. *J. Bamboo Res.* 3(2): 27, f. 3 (1984).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Menghai, ca. 1500 m, *S.G. Hua H82402* (HT: ZJFI).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 122).

**Derivation** (Clifford & Bostock 2007): *L. plus*, several; *seta*, bristle. Lower culm leaf-sheaths with stiff abundant hairs.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short (1–2.5cm), pachymorph. Butt sheaths absent. Culms 200 cm long, 10 mm diam., woody. Culm-internodes terete, thin-walled, 16–18 cm long, ridged, antrorsely scabrous, distally hispid. Culm-nodes without obvious supra-nodal ridge or with distinct supra-nodal ridge, pubescent. Lateral branches dendroid. Branch complement several. Culm-sheaths present, persistent, coriaceous, hispid, with appressed hairs, with yellow hairs, hairy on margins, triangular at apex, without auricles, glabrous on shoulders or ciliate on shoulders. Culm-sheath ligule 0.8–1 mm high, ciliate. Culm-sheath blade linear or lanceolate or triangular, deciduous, reflexed, pubescent. Leaves 2–10 per branch. Leaf-sheaths puberulous, outer margin hairy. Leaf-sheath oral hairs scanty, 2–6 mm long. Leaf-sheath auricles erect, 1.5 mm long. Ligule a ciliolate membrane, 1 mm long, truncate. Leaf-blade base cuneate or broadly rounded, with a brief petiole-like connection to sheath. Leaf-blades linear or lanceolate, 5–10 cm long, 7–11 mm wide, fleshy. Leaf-blade venation with 6–10 secondary veins, with obscure cross veins. Leaf-blade surface pubescent, hairy abaxially. Leaf-blade margins scabrous. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

**Fargesia porphyrea** T.P. Yi. *J. Bamboo Res.*, 7(2): 84 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Wenshan Xian, 1250 m, 12 Dec. 1977, *T.P. Yi 77329* (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 120).

**Derivation** (Clifford & Bostock 2007): Gk purple-red. Culm buds purple-red.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 300–500 cm long, 10–25 mm diam., woody. Culm-internodes terete, thin-walled,

20–35 cm long, striate, distally hispid. Lateral branches dendroid. Bud complement 1. Branch complement several, thinner than stem. Culm-sheaths present, persistent, 7–30 cm long, 1.5–3 times as long as wide, coriaceous, red, hispid, with appressed hairs, with dark brown hairs, glabrous on margins or hairy on margins, without auricles, glabrous on shoulders. Culm-sheath ligule 1–1.5 mm high, fimbriate. Culm-sheath blade linear or lanceolate, narrower than sheath, deciduous, reflexed, 1.5–11 cm long, 2–3 mm wide, pubescent. Leaves 3–10 per branch. Leaf-sheaths 3.5–7.5 cm long, outer margin glabrous. Leaf-sheath oral hairs ciliate, 1.5–2 mm long, pale. Leaf-sheath auricles absent. Ligule an eciliate membrane, 1 mm long, truncate. Collar with external ligule. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.2–0.3 cm long. Leaf-blades lanceolate, 6–19 cm long, 7–17 mm wide, fleshy. Leaf-blade venation with 6–8 secondary veins, with obscure cross veins. Leaf-blade surface glabrous or pubescent. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

### **Fargesia praecipua** T.P. Yi. *J. Bamboo Res.*, 7(2): 68 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Gongshan Xian, 1850–2600 m, 23 Nov. 1977, T.P. Yi 77317 (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 114).

**Derivation** (Clifford & Bostock 2007): L. special. Attractive in appearance.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 400–800 cm long, 20–50 mm diam., woody. Culm-internodes terete, thick-walled, 22–30 cm long, striate, distally glabrous. Lateral branches dendroid. Bud complement 1. Branch complement several, thinner than stem. Culm-sheaths present, persistent, 27–54 cm long, 4–5 times as long as wide, coriaceous, yellow, glabrous or hispid, with tawny hairs, glabrous on margins or hairy on margins, without auricles, glabrous on shoulders. Culm-sheath ligule 1 mm high, entire. Culm-sheath blade linear or lanceolate, deciduous, reflexed, 4–15 cm long, 4–5 mm wide. Leaves 4–10 per branch. Leaf-sheaths 3.5–5.5 cm long, outer margin glabrous or hairy. Leaf-sheath oral hairs scanty, deciduous, 1–2 mm long. Leaf-sheath auricles absent. Ligule an eciliate membrane, 1 mm long, truncate or obtuse. Collar with external ligule. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1–0.25 cm long. Leaf-blades lanceolate, 8.5–16.5 cm long, 8–13 mm wide, fleshy. Leaf-blade venation with 6–10 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

### **Fargesia qinlingensis** T.P. Yi & J.X. Shao. *J. Bamboo Res.*, 6(1): 42 (1987).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Shaanxi: Foping Xian, 1065 m, 23 June 1986, Q.L. Chang 1 (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 108).

**Derivation** (Clifford & Bostock 2007): L. *-ensis*, denoting origin. From QinLing Mountains, Shaanxi Province, China.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, inclined at the tip, 100–330 cm long, 4–9 mm diam., woody. Culm-internodes terete, thin-walled, 4–16 cm long, distally mealy. Lateral branches dendroid, ascending. Branch complement several, with subequal branches, thinner than stem. Culm-sheaths present, tardily deciduous, 10–35 cm long, 6–10 times as long as wide, coriaceous, brown or purple, glabrous or hispid, with tawny hairs, hairy on margins, auriculate, setose on shoulders, shoulders with straight hairs or curved hairs, shoulders with 4–5 mm long hairs. Culm-sheath ligule 1.5 mm high, ciliate. Culm-sheath blade linear or lanceolate, narrower than sheath, deciduous, reflexed, 0.5–9 cm long, 1.5–4 mm wide, glabrous on surface. Leaves 3–7 per branch. Leaf-sheaths 2.5–6 cm long, glabrous on surface, outer margin glabrous. Leaf-sheath oral hairs setose, erect or spreading, 2–3

mm long, dark. Leaf-sheath auricles falcate. Ligule a ciliolate membrane, 1 mm long. Collar with external ligule. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1–0.3 cm long. Leaf-blades lanceolate, 2–9 cm long, 4–10 mm wide, fleshy. Leaf-blade venation with 6–8 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** China. China North-Central.

**TDWG4.** Shaanxi.

**Fargesia robusta** T.P. Yi. *J. Bamboo Res.*, 4(2): 28 (1985).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Sichuan: Wenchuan Xian, 2100 m, 1 June 1977, *T.P. Yi 77065* (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 123).

**Derivation** (Clifford & Bostock 2007): *L. robust.* Culms tall or leaf-blades or spikelets large.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms 4–15 mm diam., woody. Culm-internodes terete, thick-walled. Lateral branches dendroid. Branch complement several, in a horizontal line, with subequal branches, thinner than stem. Culm-sheaths present, hispid, with yellow hairs. Leaf-sheath auricles absent. Ligule an eciliate membrane. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 6–9 cm long, 8–11 mm wide. Leaf-blade venation with 8–14 secondary veins. Flowering specimens unknown.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Sichuan.

**Fargesia rufa** T.P. Yi. *J. Bamboo Res.*, 4(2): 27 (1985).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Sichuan: Qingchuan Xian, 1580–1650 m, 22 Dec. 1983, *T.P. Yi 83215* (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 106).

**Derivation** (Clifford & Bostock 2007): *L. reddish.* Culm sheaths purple to red.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short (6–18cm), pachymorph. Butt sheaths absent. Culms 250–350 cm long, 8–10 mm diam., woody. Culm-internodes terete, thick-walled, 15–20 cm long, smooth, distally pruinose. Culm-nodes with distinct supra-nodal ridge. Lateral branches dendroid, reflexed. Branch complement several. Culm-sheaths present, tardily deciduous, coriaceous, hispid, with dark brown hairs, hairy on margins, without auricles, glabrous on shoulders. Culm-sheath ligule 1 mm high, ciliolate. Culm-sheath blade linear or lanceolate, deciduous, reflexed, glabrous on surface. Leaves 2–4 per branch. Leaf-sheaths ribbed, glabrous on surface, outer margin hairy. Leaf-sheath oral hairs scanty, 1–1.5 mm long, pale. Ligule an eciliate membrane, 1 mm long, obtuse. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades linear or lanceolate, 6–10 cm long, 6–8 mm wide, fleshy. Leaf-blade venation with 4–6 secondary veins, with obscure cross veins. Leaf-blade surface glabrous, hairless throughout or except near base. Leaf-blade margins scabrous. Leaf-blade apex attenuate. Flowering specimens unknown.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** China. China South Central, China North-Central.

**TDWG4.** Gansu. Sichuan.

**Fargesia sagittatinea** T.P. Yi. *J. Bamboo Res.*, 7(2): 63 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Gongshan Xian, 2450–2900 m, 22 Nov. 1977, *T.P. Yi 77314* (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 113).

**Derivation** (Clifford & Bostock 2007): *L. saggitus*, shaped like an arrow-head; *-inea*, close resemblance. Culms used for making arrows.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 700–900 cm long, 30–60 mm diam., woody. Culm-internodes terete, thin-walled, 20–28 cm long, striate, distally mealy. Culm-nodes flush with internodes. Lateral branches dendroid. Bud complement 1. Branch complement several, thinner than stem. Culm-sheaths present, persistent, 30–50 cm long, 2–3 times as long as wide, coriaceous, yellow, hispid, with dark brown hairs, hairy on margins, without auricles, setose on shoulders, shoulders with straight hairs, shoulders with 5–8 mm long hairs. Culm-sheath ligule 1 mm high. Culm-sheath blade linear or lanceolate, narrower than sheath, erect, 1.5–7 cm long, 2–3 mm wide, flat or wrinkled. Leaves 2–3 per branch. Leaf-sheaths 2.3–3 cm long, outer margin glabrous. Leaf-sheath oral hairs scanty, erect, 1–2 mm long, pale. Leaf-sheath auricles absent. Ligule an eciliate membrane, 1 mm long, truncate or obtuse. Collar with external ligule. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1–0.2 cm long. Leaf-blades lanceolate, 5–15 cm long, 3–6 mm wide, fleshy. Leaf-blade venation with 4–6 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

**Fargesia scabrida** T.P. Yi. *J. Bamboo Res.*, 4(2): 24 (1985).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Sichuan: Qingzhu, 1950 m, 21 Dec. 1983, *T.P. Yi 83214* (HT: SFS) or 83274?.

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 104).

**Derivation** (Clifford & Bostock 2007): *L. scaber*, rough; *-ida*, becoming. Plants in part or whole rough to the touch.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms 200–400 cm long, 7–10 mm diam., woody. Culm-internodes terete, 20 cm long, distally hispid. Lateral branches dendroid. Branch complement several, in a horizontal line, with subequal branches, thinner than stem. Culm-sheaths present, hispid, hairy above, with dark brown hairs, setose on shoulders. Culm-sheath ligule 2–6 mm high, ciliate. Culm-sheath blade linear, as wide as sheath at base, reflexed. Leaf-sheaths glabrous on surface. Leaf-sheath oral hairs scanty. Ligule a ciliate membrane. Leaf-blade base with a brief petiole-like connection to sheath, petiole 0.1–0.2 cm long. Leaf-blades lanceolate, 7–12 cm long, 10–15 mm wide. Leaf-blade venation with 8–10 secondary veins, with distinct cross veins. Leaf-blade apex attenuate. Flowering specimens unknown.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** China. China South Central, China North-Central.

**TDWG4.** Gansu. Guizhou, Sichuan.

**Fargesia semicoriacea** T.P. Yi. *J. Bamboo Res.*, 7(2): 71 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Dongchuan City, 2000–3000 m, 17 Jan. 1978, *T.P. Yi 78006* (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 114).

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 100–350 cm long, 5–12 mm diam., woody. Culm-internodes terete, thick-walled, 20–28 cm long, striate, distally glabrous. Lateral branches dendroid. Bud complement 1. Branch complement several, thinner than stem. Culm-sheaths present, persistent, 13.5–39 cm long, 4–5 times as long as wide, chartaceous, yellow and purple, concolorous or distinctly mottled with last colour, glabrous or hispid, with tawny hairs, hairy on margins, without auricles, glabrous on shoulders or ciliate on shoulders, shoulders with 2–5 mm long hairs. Culm-sheath ligule 1 mm high. Culm-sheath blade linear or lanceolate, reflexed, 1.2–11 cm long, 1–3 mm wide. Leaves 3–5 per branch. Leaf-sheaths 3–5 cm long, glabrous on surface, outer margin glabrous. Leaf-sheath oral hairs setose, 2–3 mm long, dark. Leaf-sheath auricles absent. Ligule an eciliate

membrane, 1 mm long, truncate. Collar with external ligule. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1–0.2 cm long. Leaf-blades lanceolate, 5.5–11 cm long, 5.5–10.5 mm wide, fleshy. Leaf-blade venation with 6–8 secondary veins, with obscure cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

**Fargesia setosa** T.P. Yi. *J. Bamboo Res.*, 2(2): 43 (1983).

**Accepted by:** U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Xizang: Bomi Xian, 2700–3800 m, 7 Jan. 1978, T.P. Yi 77126 (HT: SFS).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. *seta*, bristle; *-osa*, abundance. Glumes and/or lemmas awned or attenuated.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** China. Tibet.

**Fargesia similaris** Hsueh & T.P. Yi. *J. Bamboo Res.*, 7(2): 25 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China 22* (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Without precise locality, J.R. Xue 1091 (HT: Herb. Forestry School of Sichuan Prov.).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 103).

**Derivation** (Clifford & Bostock 2007): L. resembling. Readily confused with another species.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 300–400 cm long, 8–12 mm diam., woody. Culm-internodes terete, thick-walled, 9.5–18.2 cm long, distally mealy. Lateral branches dendroid. Branch complement several, thinner than stem. Culm-sheaths present, persistent, 6.5 cm long, 2 times as long as wide, coriaceous, yellow, glabrous, hairy on margins, without auricles, glabrous on shoulders. Culm-sheath ligule 1 mm high. Culm-sheath blade triangular, narrower than sheath, erect, 1.2–1.4 cm long, 1.5–2 mm wide. Leaves 2–4 per branch. Leaf-sheaths 2.2–3.2 cm long, glabrous on surface, outer margin glabrous or hairy. Leaf-sheath oral hairs setose, 2–4 mm long. Leaf-sheath auricles absent. Ligule an eciliate membrane, 1 mm long, truncate. Collar with external ligule. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1 cm long, petiole pubescent. Leaf-blades lanceolate, 1.3–6.5 cm long, 4–6 mm wide, fleshy. Leaf-blade venation with 4–6 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

**Fargesia solida** T.P. Yi. *J. Bamboo Res.*, 7(2): 47 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China 22* (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Tengchong Xian, 2300–2500 m, 20 Aug. 1983, T.P. Yi 83145 (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 109).

**Derivation** (Clifford & Bostock 2007): L. *solid*. Culms solid.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 300–500 cm long, 10–20 mm diam., woody. Culm-internodes terete, solid, 13–16 cm long, striate, distally mealy. Lateral branches dendroid. Bud complement 1. Branch complement several, thinner than stem. Culm-sheaths present, persistent, 9.5–17 cm long, 3 times as long as wide, coriaceous, yellow or brown, hispid, with appressed hairs, with yellow hairs, hairy on margins, without auricles, glabrous on shoulders. Culm-sheath ligule 1 mm high. Culm-sheath blade triangular, narrower than sheath, demarcated but



persistent, erect, 0.5–4.5 cm long, 2–4 mm wide. Leaves 1–5 per branch. Leaf-sheaths 2–3.5 cm long, outer margin glabrous. Leaf-sheath oral hairs lacking. Leaf-sheath auricles absent. Ligule an eciliate membrane, 0.5 mm long, obtuse. Collar with external ligule. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1–0.15 cm long. Leaf-blades lanceolate, 4–9.8 cm long, 4–7 mm wide, fleshy. Leaf-blade venation with 4–8 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG).** **Continent.** Temperate Asia.

**Country /Province /State.** **China.** China South Central.

**TDWG4.** Yunnan.

### **Fargesia sparsiflora** (Rendle) D.Ohrnberger. *Bamboos of the World Intro.* 3: 14 (1996).

**TYPE** from China. **Basionym or Replaced Name:** *Arundinaria sparsiflora* Rendle, *J. Linn. Soc., Bot.* 36(254): 436–437 (1904)

. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China, Hsingshan: Henry 6938 (BM holo, K).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Distribution (TDWG).** **Continent.** Temperate Asia.

**Country /Province /State.** **China.** China South Central.

### **Fargesia spathacea** Franch. *Bull. Soc. Linn. Paris*, ii. (1893).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Sichuan: 'dans les montagnes de district de Tchen-Kiou-tin', *M. Farges s.n.* (HT: P; IT: US).

**Illustrations (Books):** D.Farrelly, *The Book of Bamboo* (1984) (as *Thamnocalamus spathaceus*), S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 107).

**Derivation** (Clifford & Bostock 2007): L. *spatha*, *spatula*; -*acea*, indicating resemblance. Inflorescence pedunculate and so scarcely exerted from the uppermost leaf-sheath.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms woody. Culm-internodes terete, solid. Lateral branches dendroid. Branch complement several, in a horizontal line, with subequal branches, thinner than stem. Culm-sheaths present. Ligule an eciliate membrane. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 6–9 cm long, 8–11 mm wide.

**Inflorescence.** Inflorescence composed of racemes, subtended by a spatheole, embraced at base by subtending leaf. Spatheole elliptic, 2–3 cm long. Racemes 1, single, oblong, unilateral, 3–4 cm long. Spikelet packing crowded, irregular. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 11 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 10 mm long, chartaceous, without keels, 3 -veined. Lower glume apex attenuate. Upper glume lanceolate, 10 mm long, chartaceous, without keels. Upper glume apex acute, awned, 1 -awned, awn 1.5 mm long.

**Florets.** Fertile lemma elliptic, 10–11 mm long, chartaceous, without keel, 7 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–2 mm long overall. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 3. Anthers 3. Stigmas 3. Caryopsis with adherent pericarp.

**Distribution (TDWG).** **Continent.** Europe (\*), Temperate Asia.

**Region.** Northern Europe (\*).

**Country /Province /State.** : GB Aliens (Ryves et al). **China.** China South Central.

**TDWG4.** Hubei, Sichuan.

**Fargesia stenoclada** T.P. Yi. *J. Bamboo Res.*, 8(2): 30 (1989).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Sichuan: Peng Xian, 1650–1890 m, 14 Jan. 1988, *T.P. Yi 88003* (HT: Herb. Forestry School of Sichuan Province).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 101).

**Derivation** (Clifford & Bostock 2007): *Gk stenos*, narrow; *klados*, branch. Panicle branches thin.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 250–350 cm long, 10–17 mm diam., woody, 24–30-noded. Culm-internodes terete, thick-walled, 21–25 cm long, distally mealy. Lateral branches dendroid, erect or ascending. Bud complement 5–9. Branch complement many, thinner than stem. Culm-sheaths present, deciduous, 8–14.5 cm long, 0.2–0.5 length of internode, 3 times as long as wide, coriaceous, yellow, hispid, with grey hairs, hairy on margins, without auricles, glabrous on shoulders. Culm-sheath ligule 0.5 mm high, entire. Culm-sheath blade triangular, erect, 0.2–4.7 cm long, 1–4.5 mm wide, flat or wrinkled. Leaves 1–2 per branch. Leaf-sheaths 1.2–3.2 cm long, glabrous on surface, outer margin glabrous. Leaf-sheath oral hairs setose, erect, 0.5–2 mm long, pale. Leaf-sheath auricles absent. Ligule an eciliate membrane, 0.4 mm long, truncate. Collar with external ligule. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1 cm long, petiole glabrous. Leaf-blades linear or lanceolate, 2.5–9.4 cm long, 4–9 mm wide, fleshy. Leaf-blade venation with 4–6 secondary veins, with obscure cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**TDWG4.** Sichuan.

**Fargesia stricta** J.R. Xue & C.M. Hui. *Bull. Bot. Res.*, Harbin 18(3): 266, f. 6. 1998.

**Accepted by:** S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Lushui, Pianma, Wuzhong Shan, 2200–2300 m, 29 March 1992, *H.R. Zhang & C.M. Hui 92030* (HT: SWFC).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**TDWG4.** Yunnan.

**Fargesia strigosa** T.P. Yi. *J. Bamboo Res.*, 7(2): 90 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Lincang Xian, 2900 m, 2 Sept. 1983, *T.P. Yi 83151* (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 121).

**Derivation** (Clifford & Bostock 2007): L. covered with short, bristle-like hairs. One or more organs covered with bristle-like hairs.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 250–600 cm long, 10–25 mm diam., woody. Culm-internodes terete, thick-walled, 22–28 cm long, striate, distally mealy and pubescent. Lateral branches dendroid. Bud complement 1. Branch complement several, thinner than stem. Culm-sheaths present, persistent, 14–26 cm long, 3–3.5 times as long as wide, coriaceous, pubescent, hairy at the base, with grey hairs, glabrous on margins or hairy on margins, without auricles, glabrous on shoulders or setose on shoulders, shoulders with 2–6 mm long hairs. Culm-sheath blade linear or lanceolate, narrower than sheath, reflexed, 2–9.5 cm long, 1.5–3 mm wide. Leaves 2–4 per branch. Leaf-sheaths 2.6–4 cm long, outer margin glabrous. Leaf-sheath oral hairs lacking. Leaf-sheath auricles absent. Ligule an eciliate membrane, 0.5 mm long, truncate or obtuse. Collar with external ligule. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.2–0.25 cm long. Leaf-blades lanceolate, 4–8.5 cm long, 6–8 mm wide, fleshy. Leaf-blade venation with 6–8 secondary veins, with distinct cross veins. Leaf-

blade surface glabrous. Leaf-blade margins smooth or scaberulous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

**Fargesia subflexuosa** T.P. Yi. *J. Bamboo Res.*, 7(2): 36 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Yangbi Xian, 2920–3250 m, 13 Feb. 1984, *T.P. Yi 84008* (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 105).

**Derivation** (Clifford & Bostock 2007): *L. sub-*, approaching; *flexuosa*, bent. Culms with a tendency to bend.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 300–600 cm long, 15–30 mm diam., woody. Culm-internodes terete, thick-walled, striate, distally mealy and pubescent. Culm-nodes swollen. Lateral branches dendroid. Branch complement three, thinner than stem. Culm-sheaths present, deciduous, 15–33 cm long, 3–4 times as long as wide, coriaceous, yellow, hispid, with appressed hairs, with yellow hairs, without auricles, glabrous on shoulders. Culm-sheath ligule 1–2 mm high. Culm-sheath blade triangular, narrower than sheath, deciduous, reflexed, 1–9 cm long, 2.5–6 mm wide. Leaves 3–5 per branch. Leaf-sheaths 5–6.6 cm long. Leaf-sheath oral hairs setose, erect, 1.5–3 mm long, dark. Leaf-sheath auricles absent. Ligule an eciliate membrane, 1 mm long. Collar with external ligule. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.2–0.4 cm long. Leaf-blades lanceolate, 12–16 cm long, 20–30 mm wide, fleshy. Leaf-blade venation with 8–10 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

**Fargesia sylvestris** T.P. Yi. *J. Bamboo Res.*, 7(2): 31 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Deqen Xian, 3250 m, 11 Oct. 1977, *T.P. Yi 77240* (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 105).

**Derivation** (Clifford & Bostock 2007): *L. silva*, wood; *estris*, place of growth. Plants of woodlands.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, erect at the tip, 300–400 cm long, 6–19 mm diam., woody. Culm-internodes terete, thick-walled, 11–17 cm long, striate, distally mealy and hispid. Lateral branches dendroid. Bud complement 1. Branch complement several, thinner than stem. Culm-sheaths present, persistent, 13–21 cm long, 4 times as long as wide, coriaceous, yellow, hispid, with tawny hairs, hairy on margins, without auricles, glabrous on shoulders. Culm-sheath ligule 1 mm high, ciliate. Culm-sheath blade linear or lanceolate, narrower than sheath, deciduous, reflexed, 1.2–7 cm long, 1.5–2.5 mm wide, glabrous on surface. Leaves 3–5 per branch. Leaf-sheaths 2–4 cm long, outer margin hairy. Leaf-sheath oral hairs ciliate, spreading, 1 mm long. Leaf-sheath auricles falcate. Ligule a ciliolate membrane, 1 mm long, truncate. Collar with external ligule. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1–0.15 cm long, petiole pubescent. Leaf-blades lanceolate, 5–9.2 cm long, 5–8 mm wide, fleshy. Leaf-blade venation with 6 secondary veins, with obscure cross veins. Leaf-blade surface pilose. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

**Fargesia tenuilignea** T.P. Yi. *J. Bamboo Res.*, 7(2): 39 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Fengqing Xian, 2870–3098 m, 8 Feb. 1984, T.P. Yi 84001 (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 107).

**Derivation** (Clifford & Bostock 2007): *L. tenuis*, weak; *lignum*, wood; *-ea*, resembling. Culms hollow, flexuous.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 400–800 cm long, 10–30 mm diam., woody. Culm-internodes terete, thin-walled, 20–25 cm long, smooth, distally glabrous. Lateral branches dendroid. Branch complement several, thinner than stem. Culm-sheaths present, persistent, 12–37 cm long, 2–3 times as long as wide, coriaceous, hispid, with tawny hairs, hairy on margins, without auricles, setose on shoulders, shoulders with straight hairs or curved hairs, shoulders with 2–8 mm long hairs. Culm-sheath ligule 2–5 mm high. Culm-sheath blade linear or lanceolate, narrower than sheath, deciduous, reflexed, 5–6.5 cm long, 3–4.5 mm wide. Leaves 2–5 per branch. Leaf-sheaths 3–7 cm long, outer margin hairy. Leaf-sheath oral hairs setose, erect or deciduous, 3–11 mm long, pale. Leaf-sheath auricles absent. Ligule an eciliate membrane, 1 mm long, truncate. Collar with external ligule. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.4–0.6 cm long. Leaf-blades lanceolate, 13–18 cm long, 13–23 mm wide, fleshy. Leaf-blade venation with 8–10 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**TDWG4.** Yunnan.

**Fargesia unglata** T.H. Wen. *J. Bamboo Res.*, 8(1): 22 (1989).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China, Longshan: Chen Cx84535 (ZJFI holo).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 106).

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo. Butt sheaths absent. Culms 100–150 cm long, 5–8 mm diam., woody. Culm-internodes terete, 7–12 cm long, distally pubescent. Lateral branches dendroid. Branch complement several. Culm-sheaths present. Leaves 3–4 per branch. Leaf-sheaths glabrous on surface or pubescent. Leaf-sheath oral hairs ciliate. Leaf-sheath auricles falcate. Ligule an eciliate membrane, 1 mm long, obtuse. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades lanceolate. Leaf-blade apex acuminate.

**Inflorescence.** Inflorescence composed of racemes. Racemes 1, single, bearing 2–4 fertile spikelets on each. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 18–20 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels. Upper glume apex acute.

**Florets.** Fertile lemma ovate, 16 mm long, chartaceous, without keel, 9–11 -veined, more than 3-veined. Lemma surface glabrous. Lemma apex acuminate. Palea 9 mm long. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 3, ciliate. Anthers 3. Stigmas 3. Caryopsis with adherent pericarp.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China Southeast.

**TDWG4.** Hunan.

**Fargesia utilis** T.P. Yi. *J. Bamboo Res.*, 7(2): 28 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Dongchuan City, 2700–3600 m, 18 Jan. 1978, T.P. Yi 78007 (HT: Herb. Forestry School of Sichuan Prov.).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 102).

**Derivation** (Clifford & Bostock 2007): L. useful. Peduncles used for manufacture of hats.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 200–400 cm long, 15–25 mm diam., woody. Culm-internodes terete, thick-walled, 15–17 cm long, smooth, distally glabrous. Lateral branches dendroid. Bud complement 1. Branch complement several, thinner than stem. Culm-sheaths present, persistent, coriaceous, hispid, with tawny hairs, glabrous on margins, without auricles, glabrous on shoulders. Culm-sheath ligule 1 mm high. Culm-sheath blade lanceolate or triangular, narrower than sheath, reflexed, 3–14 cm long, 3–14 mm wide. Leaves 1–2 per branch. Leaf-sheaths 1.5–2.5 cm long, outer margin glabrous. Leaf-sheath oral hairs lacking. Leaf-sheath auricles absent. Ligule an eciliate membrane, 1 mm long, truncate. Collar with external ligule. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1 cm long. Leaf-blades lanceolate, 4–10 cm long, 5–10 mm wide, fleshy. Leaf-blade venation with 4–6 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

**Fargesia vicina** (Keng) T.P. Yi. *J. Bamboo Res.* 7(2): 113 (1988).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online, U. Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. **Basionym or Replaced Name:** *Arundinaria vicina* Keng, *Sinensia*, 7: 410 (1936). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: no precise locality, no date, E.E. Maire 10037 (HT: ?; IT: US-803021 & 2808994).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo. Butt sheaths absent. Culms woody. Culm-internodes terete. Lateral branches dendroid. Branch complement three. Culm-sheaths present. Leaves 1–3 per branch. Leaf-sheaths 2.5–3 cm long. Leaf-sheath oral hairs ciliate, 1.5–3.3 mm long. Ligule an eciliate membrane, 1 mm long, pubescent on abaxial surface, truncate or obtuse. Leaf-blade base with a brief petiole-like connection to sheath, petiole 0.1–0.2 cm long. Leaf-blades lanceolate, 2.5–8 cm long, 3.5–7 mm wide. Leaf-blade venation with 6 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scaberulous.

**Inflorescence.** Inflorescence composed of racemes, embraced at base by subtending leaf. Racemes 1, single, bearing 3–5 fertile spikelets on each. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 8–15 mm long, glabrous.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 20–30 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 4–5 mm long, pubescent. Floret callus pilose. Floret callus hairs 0.8 mm long.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4–7 mm long, chartaceous, without keels, 3 -veined. Lower glume apex acuminate. Upper glume lanceolate, 7–10 mm long, chartaceous, without keels, 5–7 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate or ovate, 10 mm long, chartaceous, without keel, 9 -veined, more than 3-veined. Lemma lateral veins with cross-veins. Lemma margins pubescent. Lemma apex attenuate. Palea 8 mm long. Palea keels ciliate, adorned above. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 3, 2 mm long, veined, ciliate. Anthers 3, 5 mm long, brown. Stigmas 2. Ovary glabrous. Caryopsis with adherent pericarp.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

**Fargesia violascens** (Keng) Z.Y. Li & D.Z. Fu. *Vasc. Pl. Hengduan Mount.*, 2: 2163: (1994).

**TYPE** from China. **Basionym or Replaced Name:** *Arundinaria violascens* Keng, *J. Wash. Acad. Sci.* 26(10): 396 (1936)

. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: mountains south of Likiang, near Hochin and Chuiho, 25–28 May 1922, *J.F. Rock 4082* (HT: US-1214328).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. violasco*, become violet. Anthers, stigmas or glumes blue to purple.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo. Butt sheaths absent. Culms woody. Culm-internodes terete, 14 cm long. Lateral branches dendroid. Culm-sheaths present. Leaves 4–6 per branch. Leaf-sheaths glabrous on surface or puberulous. Leaf-sheath oral hairs ciliate. Ligule an eciliate membrane, 0.3–1 mm long, truncate. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades lanceolate, involute, 2.5–5 cm long, 3–5 mm wide. Leaf-blade venation with distinct cross veins. Leaf-blade margins scaberulous.

**Inflorescence.** Inflorescence composed of racemes, subtended by a spatheole, embraced at base by subtending leaf. Racemes 1, single, 4–7 cm long, bearing 3–7 fertile spikelets on each. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 4–14 mm long, smooth.

**Fertile Spikelets.** Spikelets comprising 5–9 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets linear, laterally compressed, 27–40 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 4 mm long, pubescent, hairy above. Floret callus pilose. Floret callus hairs 1 mm long.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 5–7 mm long, chartaceous, without keels, 3–5 -veined. Lower glume surface glabrous or puberulous, hairy above. Lower glume apex acuminate. Upper glume lanceolate, 7–11 mm long, chartaceous, without keels, 7–9 -veined. Upper glume surface glabrous or puberulous, hairy above. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate or oblong, 12–15 mm long, chartaceous, without keel, 9 -veined, more than 3-veined. Lemma lateral veins with cross-veins. Lemma surface puberulous. Lemma apex acuminate or attenuate. Palea 9–10 mm long. Palea keels ciliate, adorned above. Palea surface puberulous. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 3, 2–2.5 mm long, veined, ciliate. Anthers 3, 5–6 mm long, yellow. Stigmas 3. Ovary glabrous. Caryopsis with adherent pericarp.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

**Fargesia wuliangshanensis** T.P. Yi. *Acta Bot. Yunnanica*, 10(4): 438 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Jingdong Xian, Wuliang Shan, 3000–3100 m, 10 Feb. 1987, *T.P. Yi 87014* (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 121).

**Derivation** (Clifford & Bostock 2007): *L. -ensis*, denoting origin. From Wuliangshan, Yunnan Province, China.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, erect at the tip, 300–700 cm long, 15–25 mm diam., woody. Culm-internodes terete, thick-walled or solid, striate, distally mealy. Lateral branches dendroid, erect or ascending. Bud complement 1. Branch complement several or many, thinner than stem. Culm-sheaths present, persistent, 18–28 cm long, 4 times as long as wide, coriaceous, yellow, hispid, with appressed hairs, with yellow hairs, hairy on margins, without auricles, setose on shoulders, shoulders with 2–5 mm long hairs. Culm-sheath ligule 1–3 mm high, entire. Culm-sheath blade triangular, reflexed, 1.5–3.5 cm long, 3.5–4.5 mm wide, glabrous on surface. Leaves 3–4 per branch. Leaf-sheaths 2.8–3.7 cm long, glabrous on surface, outer margin glabrous. Leaf-sheath oral hairs setose, 3–6 mm long. Leaf-sheath auricles absent. Ligule an eciliate membrane, 0.5 mm long, purple. Collar with external ligule. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.15–0.25 cm long. Leaf-blades linear or lanceolate, 4–9.5 cm long, 5–12 mm wide, fleshy. Leaf-blade venation with 6–8 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.  
**TDWG4.** Yunnan.

**Fargesia yajiangensis** T.P. Yi & J.Y. Shi. *Bull. Bot. Res., Harbin* 27(5): 516, f. 2 (2007).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Sichuan: Yajiang, Magezong, under forest, 3300 m, 3 Aug. 2006, *T.P. Yi 06050* (HT: SIFS=SAUD).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 200–250 cm long, 5–15 mm diam., woody. Culm-internodes terete, thick-walled, 5–22 cm long, distally mealy. Culm-nodes swollen. Lateral branches dendroid, ascending. Bud complement 1. Branch complement many. Culm-sheaths present, coriaceous, pilose, with appressed hairs, with tawny hairs, without auricles, ciliate on shoulders, shoulders with 2–5 mm long hairs. Culm-sheath ligule 1 mm high. Culm-sheath blade linear, erect or reflexed, 0.7–7.5 cm long, 3–5.5 mm wide, glabrous on surface. Leaves 2–3 per branch. Leaf-sheaths 3–3.5 cm long, glabrous on surface. Leaf-sheath oral hairs lacking. Ligule an eciliate membrane, 0.5 mm long. Leaf-blade base with a brief petiole-like connection to sheath, petiole 0.1 cm long. Leaf-blades linear or lanceolate, 3–6 cm long, 4–5.5 mm wide, fleshy. Leaf-blade venation with 4–6 secondary veins, with distinct cross veins. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.  
Sichuan.

**Fargesia yuanjiangensis** Hsueh & T.P. Yi. *J. Bamboo Res.*, 7(2): 76 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Yuanjiang Xian, Sept. 1982, *J.R. Xue 1302* (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 115).

**Derivation** (Clifford & Bostock 2007): *L. -ensis*, denoting origin. From Yuangiang County, Yunnan Province, China.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 300–500 cm long, 8–13 mm diam., woody. Culm-internodes terete, thick-walled, 8–20 cm long, striate, distally mealy. Culm-nodes swollen. Lateral branches dendroid. Bud complement 1. Branch complement several, thinner than stem. Culm-sheaths present, persistent, 16–25 cm long, 4 times as long as wide, chartaceous, hispid, with dark brown hairs, glabrous on margins, without auricles, setose on shoulders, shoulders with straight hairs, shoulders with 3–5 mm long hairs. Culm-sheath ligule 1 mm high. Culm-sheath blade linear or lanceolate, demarcated but persistent, erect, 3–6.5 cm long, 1.5–2.5 mm wide. Leaves 3–6 per branch. Leaf-sheaths 2–4 cm long, outer margin glabrous. Leaf-sheath oral hairs setose, erect, 2–5 mm long. Leaf-sheath auricles absent. Ligule an eciliate membrane, 1 mm long, truncate. Collar with external ligule. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1–0.2 cm long. Leaf-blades lanceolate, 3–10.6 cm long, 4–8.5 mm wide, fleshy. Leaf-blade venation with 6–8 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.  
**TDWG4.** Yunnan.

**Fargesia yulongshanensis** T.P. Yi. *J. Bamboo Res.*, 7(2): 87 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Lijiang Xian, Yulong Shan, 3050–4200 m, 3 Oct. 1977, *T.P. Yi 77227* (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 121).

**Derivation** (Clifford & Bostock 2007): *L. -ensis*, denoting origin. From Yulong Shan, Yunnan Province, China.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 500–700 cm long, 10–30 mm diam., woody. Culm-internodes terete, thick-walled, 35–45 cm long, distally mealy. Lateral branches dendroid. Bud complement 1. Branch complement several, thinner than stem. Culm-sheaths present, persistent or tardily deciduous, 18–33 cm long, 6 times as long as wide, coriaceous, yellow, hispid, with appressed hairs, with tawny hairs, hairy on margins, without auricles, setose on shoulders, shoulders with curved hairs, shoulders with 1–5 mm long hairs. Culm-sheath ligule 1–2 mm high, ciliate. Culm-sheath blade linear or lanceolate, reflexed, 2–11 cm long, 3–4 mm wide. Leaves 2–5 per branch. Leaf-sheaths 2–2.5 cm long, outer margin glabrous. Leaf-sheath oral hairs lacking. Leaf-sheath auricles absent. Ligule an eciliate membrane, 1–1.5 mm long, obtuse. Collar with external ligule. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1–0.2 cm long. Leaf-blades lanceolate, 5–8 cm long, 4–9 mm wide, fleshy. Leaf-blade venation with 4–8 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**TDWG4.** Yunnan.

**Fargesia yunnanensis** Hsueh & T.P. Yi. *Bull. Bot. Res. North-East. Forest. Inst.*, 5(4): 125 (1985).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: 1700–2500 m, 10 Feb. 1977, T.P. Yi 77223 (HT: SFS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 116).

**Derivation** (Clifford & Bostock 2007): L. *-ense*, denoting origin. From Yunnan Province, China.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo. Butt sheaths absent. Culms 400–1000 cm long, 30–60 mm diam., woody. Culm-internodes terete, thick-walled, 4.5–9.5 cm long, distally glabrous. Lateral branches dendroid. Culm-sheaths present. Leaves 3–6 per branch. Leaf-sheaths 4.5–6 cm long, glabrous on surface, outer margin glabrous or hairy. Ligule an eciliate membrane, 0.5 mm long, truncate. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 8–19 cm long, 8–18 mm wide. Leaf-blade venation with 8–10 secondary veins, with distinct cross veins. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**TDWG4.** Sichuan, Yunnan.

**Fargesia zayuensis** T.P. Yi. *J. Bamboo Res.*, 7(2): 20 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Xizang: Zayu Xian, 2500 m, 19 Aug. 1979, T.P. Yi 79111 (HT: Herb. Forestry School of Sichuan Province).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 100).

**Derivation** (Clifford & Bostock 2007): L. *-ensis*, denoting origin. From Zaya Xian, Xizang Province, China.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 400–600 cm long, 15 mm diam., woody. Culm-internodes terete, thin-walled, 14–35 cm long. Lateral branches dendroid. Bud complement 1. Branch complement several, thinner than stem. Culm-sheaths present, tardily deciduous, 11–16 cm long, 3 times as long as wide, coriaceous, hispid, with tawny hairs, glabrous on margins or hairy on margins, convex at apex, without auricles, glabrous on shoulders. Culm-sheath ligule 1 mm high, entire. Culm-sheath blade linear or lanceolate, narrower than sheath, deciduous, erect or reflexed, 1.2–8 cm long, 1.5–2 mm wide, glabrous on surface. Leaves 1–3 per branch. Leaf-sheaths 2–4 cm long, glabrous on surface. Leaf-sheath oral hairs lacking. Leaf-sheath auricles absent. Ligule an eciliate membrane, 1 mm long, red, truncate. Collar with external ligule. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1 cm long, petiole glabrous. Leaf-blades lanceolate, 5–8.5 cm long, 4–6 mm wide, fleshy. Leaf-blade venation with 4 secondary veins, with obscure cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.



**Country /Province /State.** China. Tibet.

**Farrago racemosa** W. D. Clayton. *Kew Bull.* xxi. 125 (1967).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Tanzania. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Tanzania, Nachingwea: Anderson 1316 (K holo).

**Illustrations (Books):** R.M.Phill, F.T.E.A., *Gramineae* (2(1974):393, Fig.105).

**Derivation** (Clifford & Bostock 2007): *L. racemus*, stalk of a cluster of grapes; -osa, abundance. The spikelets are borne in racemes or contracted panicles.

**Classification.** Subfamily Chloridoideae. Tribe: Chloridoideae incertae sedis.

**Habit, Vegetative Morphology.** Annual, caespitose. Culms erect, 25–50 cm long, wiry. Ligule a fringe of hairs. Leaf-blades flat or convolute, 3–8 cm long, 1–1.5 mm wide.

**Inflorescence.** Inflorescence composed of racemes. Racemes numerous, borne along a central axis, closely spaced, in a unilateral false spike, appressed, lanceolate, 0.15 cm long, bearing a triad of spikelets. Central inflorescence axis 4–8 cm long, flattened. Rhachis deciduous from axis, subterete. Spikelets appressed, in threes. Fertile spikelets sessile, 1 in the cluster. Companion sterile spikelets sessile, 2 in the cluster.

**Sterile Spikelets.** Companion sterile spikelets represented by awns, comprising 1 awn, 5–15 mm long, deciduous with the fertile.

**Fertile Spikelets.** Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, dorsally compressed, 2.5–3 mm long, falling entire, deciduous with accessory branch structures. Spikelet callus bearded. Spikelet callus hairs 0.3 length of spikelet.

**Glumes.** Glumes dissimilar, subequal in width, exceeding apex of florets, firmer than fertile lemma. Lower glume elliptic, 2.5–3 mm long, 1 length of upper glume, membranous, dark green, 1-keeled, 1 -veined. Lower glume primary vein ciliate. Lower glume lateral veins absent. Lower glume apex truncate, awned, 1 -awned, awn 8 mm long. Upper glume elliptic, 2.5–3 mm long, 2.5–3 length of adjacent fertile lemma, membranous, dark green, without keels, 1 -veined. Upper glume lateral veins absent. Upper glume apex acuminate, mucronate.

**Florets.** Fertile lemma obovate, 1 mm long, hyaline, without keel, 0 -veined, 0–3 -veined, without veins. Lemma margins ciliate. Lemma apex truncate. Palea absent or minute.

**Flower and Fruit.** Lodicules 2, cuneate, fleshy. Anthers 3, oblong, 0.5–0.6 mm long. Stigmas 2. Caryopsis with adherent pericarp, ellipsoid, dorsally compressed, biconvex, 1.7 mm long.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** East tropical Africa. Tanzania.

**Ferrocalamus rimosivaginus** T. H. Wen. *J. Bamboo Res.* 3(2) ; 26 (1984).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Jinping, montane broad-leaved forests, 900–1000 m, *G.K. Chen 1* (HT: ZJFI).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes elongated, leptomorph. Butt sheaths absent. Culms erect, 500–700 cm long, 20–40 mm diam., woody. Culm-internodes terete, solid, 50–70 cm long, distally glabrous. Culm-nodes swollen. Lateral branches suffrutescent. Culm-sheaths present, coriaceous, brown, hispid, with dark brown hairs, without auricles, setose on shoulders. Culm-sheath ligule 1–2 mm high. Culm-sheath blade linear, reflexed, 0.5 cm long. Leaves cauline. Leaf-sheaths glabrous on surface. Leaf-sheath oral hairs setose, deciduous, 10 mm long. Ligule an eciliate membrane. Leaf-blade base truncate, with a false petiole. Leaf-blades lanceolate, 25–30 cm long, 50–60 mm wide. Flowering specimens unknown.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

**Ferrocalamus strictus** Hsueh & P.J. Keng. *J. Bamboo Res.*, 1(2): 3 (1982).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Jinping, montane broad-leaved forests, 900–1200 m, *J.R. Xue 1088* (HT: YNFC).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 170).

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes elongated, leptomorph. Butt sheaths absent. Culms erect, 500–900 cm long, 20–50 mm diam., woody, with aerial roots from the nodes. Culm-internodes terete, thick-walled or solid, 60–80 cm long, scaberulous. Culm-nodes swollen. Lateral branches suffrutescent, erect. Bud prophyll 1 mm long. Branch complement as thick as stem. Culm-sheaths present, persistent or tardily deciduous, 30 cm long, 3 times as long as wide, coriaceous, hispid, with black hairs, without auricles, setose on shoulders. Culm-sheath blade lanceolate, deciduous, erect, 4 cm long. Leaves cauline. Leaf-sheaths 15 cm long, pubescent. Leaf-sheath oral hairs setose, 10–20 mm long. Ligule an eciliate membrane, truncate. Leaf-blade base truncate, with a brief petiole-like connection to sheath. Leaf-blades oblong, 30–55 cm long, 60–90 mm wide. Leaf-blade venation with 20–24 secondary veins, with distinct cross veins. Leaf-blade surface puberulous. Leaf-blade margins scabrous. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle. Panicle open, pyramidal, 30–45 cm long. Primary panicle branches 10–20 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 10 mm long.

**Fertile Spikelets.** Spikelets comprising 3–10 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, subterete, 14–18 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes clavate, 3 mm long.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3–4.5 mm long, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface puberulous. Lower glume apex acuminate. Upper glume lanceolate, 5 mm long, chartaceous, without keels, 3–5 -veined. Upper glume lateral veins obscure. Upper glume surface puberulous, hairy at apex. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 7 mm long, chartaceous, without keel, 7 -veined, more than 3-veined. Lemma lateral veins with cross-veins. Lemma surface puberulous. Lemma apex obtuse. Palea surface puberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 3. Anthers 3. Stigmas 2. Caryopsis with adherent pericarp.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**TDWG4.** Yunnan.

## ***Festuca abyssinica*** A. Rich. *Tent. Fl. Abyss.* ii. 433. (1850).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Ethiopia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *Schimper 410*, 26 Oct 1837, Ethiopia: Tigre in regione superiori septentrionali montis Scholoda (P; IT: B, K, LE, MO-1837430, US-3298801).

**Illustrations (Books):** H.Jacques-Felix, *Les Graminees d'Afrique tropicale* (1962) (186, Fig. 108 as *Koeleria afromontana*), R.M.Pohill, F.T.E.A., *Gramineae* (1(1970):61, Fig. 21), G.V.Pope et al., *Flora Zambesiaca* 10 (1(1971):58, t. 15), S.Phillips, *Poaceae* (Gramineae) in I.Hedberg & S.Edwards, *Flora of Ethiopia and Eritrea* (1995) (25, Fig. 11 & 26, Fig. 12).

**Derivation** (Clifford & Bostock 2007): L. *-ica*, belonging to. From Abyssinia, now Ethiopia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths withering. Culms decumbent, 15–60 cm long, 2–5 -noded. Leaf-sheaths smooth, glabrous on surface. Ligule an eciliate membrane, 0.5–1 mm long. Leaf-blades filiform or aciculate, involute, 3–25 cm long, 1–3 mm wide. Leaf-blade venation without layer of subepidermal sclerenchyma masking vein striation or with continuous uniform subepidermal sclerenchyma layer on the underside (var *supina*).

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 8–20 cm long. Primary panicle branches appressed. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate or ovate, laterally compressed, 6.5–12 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus pubescent.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 5.5–8.5 mm long, 0.8–0.9 length of upper glume, membranous, much thinner on margins, without keels, 1–3 -veined. Lower glume

apex acute. Upper glume lanceolate or ovate, 6–10 mm long, 0.9–1 length of adjacent fertile lemma, chartaceous, with hyaline margins, without keels, 3(–5) -veined. Upper glume apex acute.

**Florets.** Fertile florets appressed to rhachilla. Fertile lemma elliptic, 6.5–9.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous. Lemma apex acute, muticous or mucronate or awned, 0–1 -awned. Principal lemma awn 1–3(–5) mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–2.5 mm long. Ovary glabrous or pubescent on apex. Caryopsis with adherent pericarp, glabrous or hairy at apex. Hilum linear.

$2n = 28$  (2 refs TROPICOS).

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** West-central tropical Africa, Northeast tropical Africa, East tropical Africa, South tropical Africa. Cameroon, Bioko, Rwanda. Ethiopia (inc. Eritrea), Sudan. Kenya, Tanzania, Uganda. Angola, Malawi, Mozambique, Zambia, Zimbabwe.

**Festuca acamptophylla** (St.-Yves) E.B.Alekseev. *Bot. Zhurn.*, 71(8): 1113: (1986).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Tanzania. **Basionym or Replaced Name:** *Festuca abyssinica* subsp. *acamptophylla* St.-Yves, *Rev. Bretonne Bot. Pure Appl.* 2: 75 (1927)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: ST: *G.Volkens 1857* (2), Febr. 1894, Kilimandscharo: Oberhalb Marangu, 2800 m. (LE).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk *a-*, without; *kampto*, bend; *phyllon*, leaf. The leaf-blade is rigid and held erect.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths withering. Culms 15–60 cm long. Leaf-sheaths tubular for much of their length, with 0.75 of their length closed. Ligule an eciliate membrane, truncate. Leaf-blades erect, filiform, conduplicate, angular in section, 3–25 cm long, 1 mm wide, indurate, stiff. Leaf-blade venation comprising 5(–7) vascular bundles, with 3 inner ridges, with 5 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 8–20 cm long. Primary panicle branches appressed. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 9–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, membranous, much thinner on margins, without keels, 1–3 -veined. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3 -veined. Upper glume apex obtuse or acute.

**Florets.** Fertile lemma elliptic, 6.5–8.5 mm long, chartaceous, purple, without keel, 5 -veined, more than 3-veined. Lemma apex acute, muticous or awned, 1 -awned. Principal lemma awn 0.8–1.3 mm long overall. Palea 2 -veined. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.3–1.7 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** East tropical Africa. Tanzania.

**Festuca acanthophylla** E. Desv. C. Gay, *Fl. Chil.* 6: 434 (1853).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Chile. **Basionym or Replaced Name:** *Festuca desvauxii* Phil., *Linnaea*, 33: 295 (1865). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Gay s.n.*, Chile: Prov. Colchagua: Cordillera altas de Cauquenes, Valle de los Cipreses (P(photo, CONC)).

**Recent Synonyms:** *Festuca desvauxii* Phil., *Linnaea*, 33: 295 (1865).

**Illustrations (Books):** M.N.Correa, *Flora Patagonica* Parte III, Gramineae (1978) (117, Fig. 69 as *F. desvauxii*).

**Derivation** (Clifford & Bostock 2007): Gk *akantha*, prickle or thorn; *phyllon*, leaf. Leaf-blades sharp pointed.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths purple. Basal innovations intravaginal. Culms erect, 50–90 cm long, 2-noded. Leaf-sheaths pubescent. Ligule an eciliate membrane, 0.8–1 mm long, lacerate. Leaf-blades filiform, conduplicate, elliptic in section, 8–35 cm long, 1–1.5 mm wide. Leaf-blade venation with subepidermal sclerenchyma attached to veins above, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface pubescent, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 8–15 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9–17 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1.5–2 mm long, sparsely hairy.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3.5–4 mm long, 0.75 length of upper glume, chartaceous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4–5.5 mm long, 0.66 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6.5–8 mm long, chartaceous, without keel, 5-veined, more than 3-veined. Lemma margins scabrous. Lemma apex acute, muticous. Palea 2-veined. Palea keels ciliolate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, 1.2 mm long. Anthers 3, 3.5–5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, linear, 4 mm long, hairy at apex. Embryo 0.1–0.15 length of caryopsis. Hilum linear, 0.75 length of caryopsis.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America, Southern South America. Peru. Argentina South, Chile North, Chile Central.

**TDWG4.** Jujuy, Mendoza, San Juan, San Luis. Neuquén. Rest of Chile- Biobio, La Auracania, Maule, O'Higgins, Santado, Valpariso. Tarapaca. Coquimbo, Valparaiso, Santiago, O'Higgins, Maule.

**Festuca achtarovii** Velchev & P.Vassil. *Phytologia Balcan.* 8(2): 185 . (2002).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Bulgaria. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Bulgaria, Banichan: Velchev & Vassilev (SOM holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of Boris T. Achtarov (1885–1959) who collected in Bulgaria.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 25–50 cm long. Leaf-sheaths open for most of their length, with 0.33 of their length closed. Leaf-sheath auricles erect. Ligule a ciliolate membrane. Leaf-blades filiform, conduplicate, 0.4–1 mm wide. Leaf-blade venation comprising 7–9 vascular bundles, with 3–7 inner ridges, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with unevenly thickened subepidermal sclerenchyma layer on the underside or with continuous uniform subepidermal sclerenchyma layer on the underside.

**Inflorescence.** Inflorescence a panicle. Peduncle antrorsely scabrous above. Panicle contracted, linear or oblong, interrupted, 6–9 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–9 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5–13 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1-veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume margins ciliolate. Lower glume apex acute. Upper glume lanceolate, 4.1–6.2 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume primary vein scabrous. Upper glume margins ciliolate. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 4–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface pubescent. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2–3.5 mm long overall, 0.5 length of lemma. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Vegetative proliferation absent, or occurs.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG).** Continent. Europe.

**Region.** Southeastern Europe.

**Country /Province /State.** : Bulgaria.

### **Festuca actae** Connor. *N. Z. J. Bot.* 36:335 (1998).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), E.Edgar, & H.Connor, *Flora of New Zealand Gramineae* 5 (2000).

**TYPE** from New Zealand. **Basionym or Replaced Name:** *Festuca ovina* var. *grandiflora* Howarth, *J. Linn. Soc., Bot.* 48: 66 (1928)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *A. Wall s.n.*, Dec 1920, New Zealand: Lyttelton-Summer Road, sea level, close to Christ Church (K). LT designated by Connor, *New Zealand J. Bot.* 36: 335 (1998).

**Illustrations (Books):** No illustration found (BKS).

**Images:** R.Darke, *The Encyclopaedia of Grasses for Liveable Landscapes* (2007);

**Derivation** (Clifford & Bostock 2007): *L. acta*, sea-shore. Growing on sea-shores.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect or geniculately ascending, 25–60 cm long, 2–3 -noded. Culm-internodes smooth, distally glabrous. Leaf-sheaths 5–10 cm long, ribbed, glabrous on surface. Leaf-sheath oral hairs ciliate. Leaf-sheath auricles erect, 0.4–0.7 mm long. Ligule an eciliate membrane, 0.4–0.7 mm long. Collar dark, pubescent. Leaf-blades deciduous at the ligule, filiform, involute, angular in section or elliptic in section, 20–60 cm long, 0.4–0.7 mm wide, glaucous. Leaf-blade venation comprising 5 vascular bundles, with 7–11 subepidermal sclerenchyma strands. Leaf-blade surface puberulous, hairy adaxially. Leaf-blade apex antrorsely scabrous.

**Inflorescence.** Inflorescence a panicle, comprising 10–30 fertile spikelets. Panicle open, 5–25 cm long. Primary panicle branches ascending, 2 -nate, 4–5 cm long, bearing 2–6 fertile spikelets on each lower branch. Panicle axis 7–9 noded, smooth or scaberulous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, scaberulous.

**Fertile Spikelets.** Spikelets comprising 4–7(–12) fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 10–17 mm long, 6 mm wide, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1–1.5 mm long, pubescent. Floret callus 0.2–0.5 mm long, pilose, disarticulating transversely.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3–4.5 mm long, 0.66 length of upper glume, membranous, 1-keeled, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume margins ciliate. Lower glume apex acute. Upper glume ovate, 4.5–7.5 mm long, 0.75 length of adjacent fertile lemma, membranous, 1-keeled, 3(–5) -veined. Upper glume primary vein scabrous. Upper glume margins ciliate. Upper glume apex obtuse or acute.

**Florets.** Fertile lemma lanceolate, 6–9 mm long, membranous, glaucous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous. Lemma margins ciliate. Lemma apex dentate, 2 -fid, acute, mucronate or awned, 1 -awned. Principal lemma awn from a sinus, 0.1–2.5 mm long overall. Palea 6–8 mm long, 2 -veined. Palea keels scabrous, adorned all along. Palea surface puberulous, hairy on back or on margins, hairy above. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, 0.75–1.5 mm long, membranous, ciliate, entire or 2-toothed. Anthers 3, 3.5–4.4 mm long, yellow. Ovary pubescent on apex. Caryopsis with adherent pericarp, 3–4.75 mm long, hairy at apex. Embryo 0.25–0.33 length of caryopsis. Hilum linear, 0.6 length of caryopsis.

**Distribution (TDWG).** Continent. Australasia.

**Country /Province /State.** New Zealand. New Zealand South I.

### **Festuca acuminata** Gaud. *Agrost. Helv.* ii. 287 (1811).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Switzerland. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Switzerland, Bagnes: Gaudin.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): leaf-blades acute.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms 25–50 cm long. Leaf-sheaths open for most of their length, with 0.25–0.33 of their length closed, antrorsely scabrous, glabrous on surface. Ligule an eciliate membrane, 0.6–1.9 mm long. Leaf-blades filiform, conduplicate, 0.4–0.7 mm wide, glaucous. Leaf-blade venation comprising 7–9 vascular bundles, with (3–)5(–7) inner ridges, with sclerenchyma strands above some veins or above all veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth. Leaf-blade apex acute, pungent.

**Inflorescence.** Inflorescence a panicle. Peduncle antrorsely scabrous above. Panicle open, ovate, nodding, 4–7.5 cm long, bearing few spikelets. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–9 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8.5–11 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3 -veined. Upper glume apex obtuse or acute.

**Florets.** Fertile lemma oblong, 5.1–6.3 mm long, chartaceous, yellow or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, mucronate or awned, 1 -awned. Principal lemma awn 0.6 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels ciliolate. Palea surface scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3 mm long. Caryopsis with adherent pericarp, obovoid. Hilum linear. Disseminule comprising a caryopsis.

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe, Southwestern Europe, Southeastern Europe.

**Country /Province /State.** : Switzerland. : France. : Italy.

**Festuca adamovicii** (St-Yves) I. Markgraf-Dannenber. *Bot. J. Linn. Soc.*, 76(4): 326 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**Basionym or Replaced Name:** *Festuca varia* var. *adamovicii* St.-Yves, *Bull. Soc. Bot. France* 71: 131 (1924)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Serbie: Stara Planina et Alexandrowa, *Adam. s.n.*.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Lulji Adamovic (1864–1935) Dalmatian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms 30–80 cm long. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 1.3–2.5 mm long. Leaf-blades filiform, conduplicate, 0.7–1 mm wide. Leaf-blade venation comprising 7–9 vascular bundles, with 7–9 inner ridges, with sclerenchyma strands below veins or above all veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth. Leaf-blade apex pungent.

**Inflorescence.** Inflorescence a panicle. Peduncle antrorsely scabrous above. Panicle open, equilateral, 7.5–8 cm long. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8.5–11 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 5.8–6.2 mm long, 0.75 length of adjacent fertile lemma, chartaceous, with scarious margins, without keels, 3 -veined. Upper glume apex obtuse.

**Florets.** Fertile lemma oblong, 6.3–7.4 mm long, chartaceous, much thinner on margins, mid-green or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma apex acute, mucicous or mucronate or awned, 1 -awned. Principal lemma awn 0–1 mm long overall. Palea 0.75 length of lemma, 2 -veined. Palea keels ciliate, adorned above. Palea surface puberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–3.5 mm long. Caryopsis with adherent pericarp, obovoid. Hilum linear. Disseminule comprising a caryopsis.

**Distribution (TDWG). Continent.** Europe.

**Region. Southeastern Europe.**

**Country /Province /State. :** Albania, Yugoslavia.

**Festuca adanensis** I. Markgraf-Dannenber. *Willdenowia*, 11(2): 201 (1981).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Turkey. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Turkey, Saimbeyli: Davis, Dodds & Cetik 19758 (K holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Adana, Anatolia, Turkey.

**Classification.** Subfamily Pooideae. Tribe: Poae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths withering. Basal innovations intravaginal. Culms 30–45 cm long. Culm-internodes distally glabrous. Leaf-sheaths open for most of their length, with 0 of their length closed, scaberulous. Leaf-sheath auricles erect. Ligule an eciliate membrane, 0.2 mm long. Leaf-blades filiform, conduplicate, elliptic in section, 0.4–0.65 mm wide, without exudate. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with unevenly thickened subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, glabrous. Leaf-blade apex obtuse or abruptly acute.

**Inflorescence.** Inflorescence a panicle. Peduncle smooth. Panicle open, lanceolate, 5–8 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 8–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.5–4.8 mm long, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 5.5–6.2 mm long, 2.2–2.4 mm wide, chartaceous, glaucous or purple, suffused with last colour, without exudate, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2–3 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. Western Asia.** Turkey.

**Festuca aequipaleata** Fourn. *Mex. Pl. Enum, Gram.* 125 (1886).

Regarded by K as a synonym (*F. toluensis*).

**Accepted by:** U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Mexico. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: ST: *Liebmann 511 [= 6108, vide Alexeev]*, Mexico LT designated by Alexeev, Nov. Sis. Viss. Rast. 21: 47 (1984).

ST: *Liebmann 513*, Mexico

LT: *Liebmann 6108*, Mexico: Orizaba, 14000 ft (C; ILT: C, K). LT designated by Alexeev, Nov. Sis. Viss. Rast. 21: 47 (1984).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. aequus, equal; palea, scale; -ata, possessing. Glumes equal in length.

**Classification.** Subfamily Pooideae. Tribe: Poae.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State. Mexico.** Gulf (Mexico). Veracruz.

**Festuca afghanica** Bor. *K. H. Rechinger, Fl. Iran., Lief.* 70, 76 (1970).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Pakistan. **Basionym or Replaced Name:** *Festuca ovina* subsp. *remota* Hack. ex Boiss., *Fl. Or.* 5: 619 (1884). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Pakistan, Sikka Ram: Aitchison 1256 (K holo) ; : Based on *F. ovina* subsp. *remota*.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Afghanistan.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect or geniculately ascending, 15–30 cm long. Ligule an eciliate membrane, 0.8 mm long. Leaf-blades filiform, conduplicate, 4–8 cm long, 1 mm wide, glaucous. Leaf-blade venation comprising 5 vascular bundles, with 7 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, effuse, 6–7 cm long. Primary panicle branches spreading, 1 -nate. Panicle branches scabrous, rough distally. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 7 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 2–2.2 mm long, 0.5–0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.5 mm long, 0.75–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4–4.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acuminate, mucronate or awned, 1 -awned. Principal lemma awn 0.3–0.8 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous, adorned above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.5–1.7 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG), Continent.** Temperate Asia, Tropical Asia.

**Country /Province /State.** Western Asia. Afghanistan. **Indian Subcontinent.** Pakistan.

### ***Festuca (Pseudobromus) africana* (Hack.) W.D. Clayton. *Kew Bull.*, 40(4): 727 (1985).**

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online, U. Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from South Africa. **Basionym or Replaced Name:** *Brachyelytrum africanum* Hack., *Bull. Herb. Boissier* 3(8): 382 (1895)

. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *Rehmann 5732*, South Africa: Transvaal: Houtbosh (W; GRA, K).

**Recent Synonyms:** *Pseudobromus silvaticus* K. Schum., *Engl. Pflanzenw. Ost-Afr.* C 108 (July) (1895).

**Illustrations (Books):** H. Jacques-Felix, *Les Graminees d'Afrique tropicale* (1962) (171, Fig. 94 as *Pseudobromus silvaticus*), L.K.A. Chippindall, *Grasses and Pastures of South Africa* (1955) (61, Fig. 34 as *Pseudobromus africanus*).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating location. From Africa.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Rhizomes short, knotty. Culms 60–200 cm long. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane. Leaf-blades 20–40 cm long, 6–14 mm wide, flaccid. Leaf-blade venation with obscure cross veins.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 25–50 cm long. Primary panicle branches spreading. Panicle branches flexuous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, filiform.

**Fertile Spikelets.** Spikelets comprising (1–)2 fertile florets, with a barren rhachilla extension or with diminished florets at the apex. Spikelets of 1 fertile floret with or without additional sterile florets, or of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, subterete, 7–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Floret callus pubescent, obtuse.

**Glumes.** Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture. Lower glume lanceolate or oblong, 2–5.5 mm long, 0.7–0.9 length of upper glume, membranous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute or acuminate. Upper glume lanceolate or oblong, 3–6 mm long, 0.5–0.7 length of adjacent fertile lemma, membranous, without keels, 3 -veined. Upper glume apex acute or acuminate.



**Florets.** Fertile lemma lanceolate, 6–9 mm long, membranous, without keel, 3(–5) -veined, 0–3 -veined or more than 3-veined. Lemma lateral veins with distinct primaries but obscure intermediates. Lemma apex entire or dentate, 2 -fid, awned, 1 -awned. Principal lemma awn subapical, flexuous, 12–20 mm long overall. Palea 1 length of lemma. Palea keels scaberulous. Rhachilla extension 0.5 length of fertile floret. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Embryo 0.15–0.2 length of caryopsis. Hilum linear, 1 length of caryopsis.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** West-central tropical Africa, Northeast tropical Africa, East tropical Africa, South tropical Africa, Southern Africa. Rwanda. Sudan. Kenya, Tanzania, Uganda. Malawi, Mozambique, Zambia. Limpopo, Mpumalanga, Kwazulu-Natal, Western Cape, Eastern Cape.

**Festuca aguana** E.B. Alekseev. *Bot. Zhurn.*, 66(10): 1493 (1981).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Guatemala. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Guatemala: volcano Agua, open woods, middle altitudes, 2000–3500 m, 5 Dec 1911, *Hitchcock 9126* (HT: US).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating location. From Agua, a volcano in Guatemala.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Basal innovations extravaginal. Culms erect, 60–150 cm long. Culm-internodes distally glabrous. Leaves basal and cauline. Leaf-sheaths open for most of their length, glabrous on surface. Leaf-sheath auricles absent. Ligule a ciliolate membrane, 0.2–1 mm long. Leaf-blades flat or conduplicate, 16–60 cm long, 5–12 mm wide. Leaf-blade venation with sclerenchyma strands below veins or above all veins. Leaf-blade surface glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, nodding, 20–34 cm long, 10–20 cm wide. Primary panicle branches spreading, 2 -nate, 10–18 cm long. Panicle axis scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, scaberulous.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.5–11.4 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3.2–6 mm long, 0.7–0.9 length of upper glume, chartaceous, without keels, 1–3 -veined. Lower glume lateral veins absent or obscure. Lower glume apex acute. Upper glume lanceolate, 4.5–6.2 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5.5–8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma midvein scaberulous. Lemma surface smooth or scaberulous, rough above. Lemma apex acute, muticous. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.7–2 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** North America, South America.

**Country /Province /State.** Mexico. Southwest Mexico, Southeast Mexico. **Mesoamerica.** Guatemala, Panama.

Guerrero. Chiapas.

**Festuca agustinii** Lindinger. *Abh. Gebiet Auslandsk., Hamb. xxi. Reihe C, Naturw.* viii. 298 (1926).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Canary Islands. **Basionym or Replaced Name:** *Festuca filiformis* C. Sm. ex Link, *Phys. Beschr. Canar. Ins.* 139 (1825). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Tenerife, Aug Masa, *Buch* 25.

**Recent Synonyms:** *Festuca filiformis* C. Sm. ex Link, non Pourr.(1788), *Buch, Beschr. Canar. Ins.* 139. (1825). *Festuca tenuifolia* Agrost. *Bras.* 472. (1829).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of Bernardo H. Agustin (fl. 1926–1941).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 30–60 cm long. Lateral branches lacking. Leaf-sheaths open for most of their length, glabrous on surface. Ligule an eciliate membrane, 0.2 mm long. Leaf-blades filiform, conduplicate, 10–30 cm long, 1 mm wide. Leaf-blade surface smooth, glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, lanceolate, dense, 8–15 cm long. Primary panicle branches appressed or ascending. Panicle axis pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 4–5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume linear, 3–4 mm long, 0.75–1 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume linear, 4 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, muticous. Palea 1 length of lemma, 2 -veined. Palea keels smooth or scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.2 mm long. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear, 1 length of caryopsis.

$2n = 28$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** Macaronesia. Canary Is.

**Festuca airoides** Lam. *Encyc.* ii. 464 (1788).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from France. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: France: Mont. d'Or.,

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. -oides, resembling. Inflorescences resemble those of *Aira*.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 10–30 cm long. Leaf-sheaths tubular for much of their length, with 0.25–0.33 of their length closed, with flat margins, glabrous on surface or puberulous. Ligule an eciliate membrane. Leaf-blades curved, filiform, conduplicate, 0.5–0.7 mm wide. Leaf-blade venation comprising (5–)7 vascular bundles, with 1(–3) inner ridges, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous.

**Inflorescence.** Inflorescence a panicle. Peduncle glabrous or pubescent above. Panicle open, dense, 2.5–5 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 6–7 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or ovate, 2.7–3.4 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 3.3–4.3 mm long, chartaceous, glaucous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1.5–2 mm long overall, 0.4 length of lemma. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

$2n = 28$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe, Temperate Asia.

**Region.** Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe.

**Country /Province /State.** : Austria, Czechoslovakia, Germany, Poland, Switzerland. : France, Spain. : Bulgaria, Italy, Romania, Yugoslavia. Northwest European Russia, Ukraine. **Western Asia, China.** China South Central, Inner Mongolia, Manchuria.

**TDWG4.** Sichuan, Yunnan.

**Festuca akhanii** N.N. Tzvelev. *Bot. Zhurn.*, 82(4): 118 (1997).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online.

**TYPE** from Iran. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Iran, Golestan Nat. Park: Akhani 10806 (LE iso).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of Hossein Akhani (fl. 1995) Iranian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Culms erect, 25–40 cm long. Leaf-sheaths tubular for much of their length, with 0.66–0.75 of their length closed. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 0.6–0.8 mm wide, stiff, grey-green. Leaf-blade venation comprising 5 vascular bundles, with 3 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scaberulous, rough abaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 3–5 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 7–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume linear or lanceolate, chartaceous, with scarious margins, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma linear or lanceolate, 4–5.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2–2.5 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–2.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Western Asia. Iran.

**Festuca alaiica** Drobov. *Trav. Mus. Bot. Acad. Petersb.* xvi. 134 (1916).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N. Tzvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: ST: *Margelan s.n.*, Prov. Fergana, distr. Skobelev

ST: *Drobov 303*, In pratis alpinis ad fl. Dugova, circa pag. Jordan.

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 337).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From the Alaj valley, Turkestan, former Soviet Union.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, mat forming, clumped densely. Culms geniculately ascending, 15–35 cm long, 3 -noded. Culm-internodes smooth, distally glabrous. Culm-nodes black. Leaf-sheaths tubular for much of their length, with 1 of their length closed, smooth, glabrous on surface. Leaf-sheath auricles erect. Ligule an eciliate membrane. Leaf-blades filiform, convolute, elliptic in section, 5–10 cm long, 0.5 mm wide, glaucous. Leaf-blade venation comprising 5–7 vascular bundles, with 5 inner ridges, with 3 subepidermal sclerenchyma strands. Leaf-blade surface smooth or scaberulous, rough abaxially, glabrous.

**Inflorescence.** Inflorescence a panicle, comprising 6–10 fertile spikelets. Panicle open, oblong, 3–5 cm long, bearing few spikelets. Primary panicle branches bearing 1–3 fertile spikelets on each lower branch. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 8–8.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet, similar to fertile lemma in texture. Lower glume lanceolate, 1.5–2 mm long, 0.5 length of upper glume, chartaceous, much thinner on margins, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous, rough at apex. Lower glume margins ciliate. Lower glume apex acute. Upper glume lanceolate, 3–4 mm long, 1–1.5 length of adjacent fertile lemma, chartaceous, with membranous margins, without keels, 3 -veined. Upper glume surface scabrous, rough at apex. Upper glume margins ciliate. Upper glume apex setaceously acuminate.

**Florets.** Fertile lemma lanceolate, 2–4 mm long, chartaceous, light green or light green or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma margins scabrous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–1.5 mm long overall. Palea lanceolate, 1 length of lemma, 2 -veined. Palea keels ciliolate. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia, Tropical Asia.

**Country /Province /State. Middle Asia, Western Asia, China.** Kirgizistan, Turkmenistan, Tadzhikistan. Iran. **Indian Subcontinent.** Pakistan, West Himalaya.

**TDWG4.**

### **Festuca alata** (St.- Yves) Roshev. *Komarov, Fl. URSS*, ii. 528 (1934).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N.L.Bor, Grasses of Burma, Ceylon, India and Pakistan (1960), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. **Basionym or Replaced Name:** *Festuca rubra* subsp. *alata* St.-Yves, *Candollea* 3:393 (1928). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Russia, Kokoirak: Brotherus (LE isolecto).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig.322).

**Derivation** (Clifford & Bostock 2007): L. -icum, belonging to. From Alatau, Pamir district, former Soviet Union.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Rhizomes short. Culms erect, 30–85 cm long. Leaves mostly basal. Leaf-sheaths tubular for much of their length, with 0.5–0.66 of their length closed. Ligule an eciliate membrane, 0.75 mm long. Leaf-blades conduplicate, 10–25 cm long, 1.5–2.5 mm wide. Leaf-blade surface ribbed. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, effuse, 7–16 cm long, bearing few spikelets. Primary panicle branches spreading, bearing 1–3 fertile spikelets on each lower branch. Panicle branches capillary, flexuous, smooth or scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate or elliptic, laterally compressed, 10–13 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 3–4 mm long, 0.7–0.8 length of upper glume, hyaline, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4–5 mm long, 0.6–0.7 length of adjacent fertile lemma, hyaline, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 6.5–8 mm long, chartaceous, much thinner on margins, purple, without keel, 5 -veined, more than 3-veined. Lemma surface smooth. Lemma apex acuminate, mucronate or awned, 1 -awned. Principal lemma awn 0.3–1.5 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–4 mm long. Ovary with a few apical hairs. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia, Tropical Asia.

**Country /Province /State. Middle Asia, China.** Kazakhstan, Kirgizistan, Turkmenistan, Tadzhikistan. Xinjiang. **Indian Subcontinent.** Pakistan, West Himalaya.

**TDWG4.**

### **Festuca alexeenkoi** Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 78(3): 104 (1973).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, N.Tsvelev, *Grasses of the Soviet Union* (1983).

T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: 1215, (LE).

HT: *Alexeenko 1207*, 14 Aug 1900, [Caucasus]: Dagestan: Samur: Mt. Czilim: elev. 9400' (LE). Orig. label: Gub. Dagestan, distr. Samur, in fauce inter Daschalig-czai et Gedym-czai pr. m. Czilim, 9400', in pratis lapidosis..

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Th. Alexeenko (fl. 1900) Russian plant collector.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Leaf-sheaths tubular for much of their length, with 0.5–0.75 of their length closed, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, 0.45–0.6 mm wide. Leaf-blade venation with 7 secondary veins, 3–5 inner ridges. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 4.5–6 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6–7 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4.2–4.5 mm long, chartaceous, light green, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.2–2.2 mm long overall. Palea 2 -veined. Palea keels ciliolate, adorned above, with 0.33 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–2.5 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Caucasus. North Caucasus, Transcaucasus.

**TDWG4.**

### **Festuca alfrediana** B.Foggi & M.A.Signorini. *Parlatorea*, 2: 130 (1997).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Corsica. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Corsica, Monte Stello: Herb. Chabert.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. *-ana*, indicating connection. In honor of Alfred Marie Augustine Saint-Yves (1855–1933) French soldier and amateur agrostologist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 15–30 cm long. Lateral branches lacking. Leaf-sheaths tubular for much of their length. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 6–20 cm long, 0.3–0.6 mm wide, without exudate. Leaf-blade venation comprising 5 vascular bundles, with 1 inner ridges, with 5 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth, puberulous, sparsely hairy, hairy adaxially. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear or oblong, 2.5–4 cm long. Primary panicle branches ascending. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 8.5–9.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or ovate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4.5–6.6 mm long, chartaceous, mid-green, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 4–5 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : Corsica.

### **Festuca algeriensis** Trabut. *Batt. & Trab. Fl. de l'Alger. [Monoc.]* 212. (1895).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Algeria. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *V.P.Bochantsev 1203*, 1 Aug 1968, Algeria: Highlands: vic. t.Trezel: Mts. Chemeur to E from town: limestones (LE). b=F. trabutii (m.) Alexeev (1977).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. -ensis*, denoting origin. From Algeria.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm. Basal innovations intravaginal. Culms erect or geniculately ascending, 30–60 cm long, 2-noded, with 0.1–0.15 of their length below uppermost node. Lateral branches lacking. Leaf-sheaths tubular for much of their length, with 0.5–0.66 of their length closed, with infolded margins, smooth, glabrous on surface or puberulous. Ligule an eciliate membrane, 0.5 mm long, lacerate. Leaf-blades straight or curved, conduplicate, elliptic in section, 8–30 cm long, 0.6–1.1 mm wide. Leaf-blade venation with 7 secondary veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface glabrous. Leaf-blade apex abruptly acute or acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear or lanceolate, 4–12 cm long. Primary panicle branches appressed, 1–2-nate. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, tip widened.

**Fertile Spikelets.** Spikelets comprising 4–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate or elliptic, laterally compressed, 10–13 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1–1.5 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, 3.5–4 mm long, 0.75 length of upper glume, chartaceous, much thinner on margins, without keels, 1-veined. Lower glume lateral veins absent. Lower glume surface smooth or asperulous. Lower glume apex acute. Upper glume lanceolate, 0.7–0.8 length of adjacent fertile lemma, chartaceous, with scarious margins, without keels, 3-veined. Upper glume surface smooth or asperulous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6 mm long, chartaceous, without keel, 5-veined, more than 3-veined. Lemma midvein scabrous. Lemma surface scaberulous, rough above. Lemma apex acute, awned, 1-awned. Principal lemma awn 2–3 mm long overall. Palea 2-veined. Palea keels scabrous. Palea surface scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3.5–4 mm long, yellow. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** Northern Africa. Algeria, Tunisia.

### ***Festuca alpestris*** Roem. & Schult. *Syst.* ii. 722 (1817).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Austria. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Austria, Tyrol: Coll?.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. alpes*, high mountain; -estre, place of growth. Growing on high mountains.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms 25–55 cm long, 0.8–1.8 mm diam. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 2–5 mm long, acute. Leaf-blades straight or curved, filiform, 0.6–0.9 mm wide, stiff, glaucous. Leaf-blade venation comprising 7–9 vascular bundles, with 5–7 inner ridges, with sclerenchyma strands below veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth. Leaf-blade apex pungent.

**Inflorescence.** Inflorescence a panicle. Panicle open, 3–7 cm long. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.5–4.9 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume apex obtuse.

**Florets.** Fertile lemma oblong, 4.5–5.3 mm long, chartaceous, yellow, without keel, 5-veined, more than 3-veined. Lemma apex acute, mucronate. Palea 2-veined. Palea keels ciliate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary pubescent on apex. Caryopsis with adherent pericarp, obovoid. Hilum linear. Disseminule comprising a caryopsis.

**Distribution (TDWG). Continent.** Europe.

**Region. Southeastern Europe.**

**Country /Province /State. :** Italy, Yugoslavia.

**Festuca alpina** Suter. *Fl. Helv.* i. 55 (1802).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Europe. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Europe: Frequens in altioribus alpinis, *Gemmio, Javernaz, Fouly, Enzeindaz, Richard and Champ. 1442.*

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. alpes, high mountain; -ina, belonging to. Species growing at high altitudes.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms 5–20 cm long. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 0.2–0.4 mm wide. Leaf-blade venation comprising 3 vascular bundles, with 1 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, 1.5–3.5 cm long. Primary panicle branches simple. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.2–3.6 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 3.6–4.2 mm long, chartaceous, yellow, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 3–4 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 0.7–1 mm long. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 14$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe, Africa.

**Region. Middle Europe, Southwestern Europe, Southeastern Europe.**

**Country /Province /State. :** Austria, Germany, Switzerland. : France. : Italy, Yugoslavia. **Northern Africa.** Morocco.

**Festuca altaica** Trin. *Ledeb. Fl. Alt.* i. 109. (1829).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N.L.Bor, *Grasses of Burma, Ceylon, India and Pakistan* (1960), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: ST?: *C.B. Clarke*, China: Xizang: Karakoram, 14,500 ft

ST?: *Duthie*, China: Xizang: Dras, 11–12,000 ft.

**Illustrations (Books):** K.F.Best, et al, *Prairie Grasses* (1971) (137 as *F. scabrella*), M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (405), S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig.322).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From the Altai Mts., Mongolia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Culms 60–100 cm long. Lateral branches lacking. Leaf-sheaths glabrous on

surface. Ligule an eciliate membrane, 0.5 mm long. Collar glabrous. Leaf-blades erect, involute, 2.5–4 mm wide, stiff. Leaf-blade surface scabrous, glabrous.

**Inflorescence.** Inflorescence a panicle. Peduncle antrorsely scabrous above. Panicle open, elliptic, dense, 10–15 cm long. Primary panicle branches appressed or ascending, 1–2 -nate. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10–12 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 6–7 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 7–8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins distinct. Lemma surface scaberulous. Lemma apex acute, muticous. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3.5–4.5 mm long. Caryopsis with adherent pericarp. Hilum linear.

$2n = 28$  (6 refs TROPICOS).

**Distribution (TDWG).** **Continent.** Temperate Asia, North America.

**Country /Province /State.** Siberia, Russian far east, **Middle Asia, China, Mongolia.** Altay, Buryatiya, Chita, Irkutsk, Krasnoyarsk, Tuva. Amur, Kamchatka, Magadan. Kazakhstan. Xinjiang. Mongolia. **Subarctic America, Western Canada, Eastern Canada, Northwest USA.** Aleutian Is, Alaska, Northwest Territories, Yukon. Alberta, British Columbia. Newfoundland, Quebec. Washington.

**TDWG4.**

**Festuca altissima** All. *Auct. Fl. Pedem.* 43 (1789).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983).

T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: ST: *Locis lapidosis & umbrosis prope thermas Valderii*

ST: In valle d'Entraque prope sacellum S. Johannis.

**Illustrations (Books):** C.E.Hubbard, *Grasses* (1968) (126).

**Derivation** (Clifford & Bostock 2007): *L. altus*, tall; -issima, most. Very tall compared with other members of the genus.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 50–120 cm long, 3–4 -noded. Leaf-sheaths without keel, smooth or scaberulous, glabrous on surface. Ligule an eciliate membrane, 3–5 mm long. Leaf-blades 20–60 cm long, 4–14 mm wide. Leaf-blade surface smooth or scaberulous. Leaf-blade margins scaberulous. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, effuse, nodding, 10–18 cm long, 8–12 cm wide. Primary panicle branches spreading, 2 -nate. Panicle branches smooth or scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 1.5–15 mm long.

**Fertile Spikelets.** Spikelets comprising 2–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong or cuneate, laterally compressed, 5–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet, thinner than fertile lemma. Lower glume lanceolate, 2–3 mm long, 0.6–0.8 length of upper glume, membranous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3–4 mm long, 0.7–0.8 length of adjacent fertile lemma, membranous, without keels, 1 -veined. Upper glume lateral veins absent. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4–6 mm long, chartaceous, without keel, rounded except near apex, 3 -veined, 0–3 -veined. Lemma surface scaberulous. Lemma apex acute, muticous. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, oblong, membranous, 2-toothed. Anthers 3, 2.5–3 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Hilum linear, 0.7–0.8 length of caryopsis.

$2n = 14$  (2 refs TROPICOS).

**Distribution (TDWG).** **Continent.** Europe, Temperate Asia.



**Region.** Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe.

**Country /Province /State.** : Denmark, Finland, Great Britain, Ireland, Norway, Sweden. : Austria, Belgium, Czechoslovakia, Germany, Hungary, Switzerland. : France, Portugal. : Albania, Bulgaria, Greece, Italy, Romania, Yugoslavia. Belarus, Estonia, Latvia, Lithuania, Baltic States, Central European Russia, East European Russia, South European Russia, Northwest European Russia, Ukraine. Siberia, **Middle Asia, Caucasus, Western Asia.** Altay, Irkutsk, Tuva. Kazakhstan.

**TDWG4.**

**Festuca altopyrenaica** V. de la Fuente Garcia & E. Ortunez Rubio. *Fontqueria*, 40: 36 (1994).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Spain. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: España: Huesca, pico Tres Hombres, 30TYN13, 2270 m, 29 Jun 1991, *V. de la Fuente Garcia s.n.* (HT: MAF-140156).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms erect, 13–27 cm long. Lateral branches lacking. Leaf-sheaths tubular for much of their length, with 0.5 of their length closed. Leaf-sheath oral hairs ciliate. Leaf-sheath auricles erect. Ligule an eciliate membrane, 0.1 mm long, truncate. Leaf-blades filiform, conduplicate, elliptic in section, 5–10 cm long, 0.7–0.9 mm wide, stiff, glaucous, pruinose. Leaf-blade venation comprising 7 vascular bundles, with 1–3 inner ridges, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth or scaberulous, pubescent, hairy adaxially. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle, comprising 8–23 fertile spikelets. Peduncle smooth or scaberulous above. Panicle contracted, linear, 3–4.5 cm long. Primary panicle branches 1.4–2.4 cm long. Panicle axis scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 1.1–2 mm long.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 5.3–6.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 2–3 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3–4 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4–6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface smooth or scaberulous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.2–1.6 mm long overall. Palea lanceolate, 3.8–4.2 mm long, 2 -veined. Palea keels scabrous. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : Spain.

**Festuca (Pseudobromus) ambilobensis** (A. Camus) FORSAN.

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Madagascar. **Basionym or Replaced Name:** *Pseudobromus ambilobensis* A. Camus, *Bull. Soc. Bot. France*, 102: 120 (1955). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Madagascar, Marivorahona: *Humbert & Capuron 25809*.

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Culms erect, 70–80 cm long. Culm-internodes striate, smooth, distally glabrous. Lateral branches ample. Leaf-sheaths striately veined, smooth. Ligule an eciliate membrane. Leaf-blades 20–22 cm long, 8 mm wide, light green. Leaf-blade apex acuminate.

**Inflorescence.** Inflorescence a panicle. Panicle open. Primary panicle branches spreading, 5–6 cm long. Panicle branches flexuous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, filiform, 1–3 mm long.

**Fertile Spikelets.** Spikelets comprising 3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 14–17 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1.5–2 mm long, pilose.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3.4–4 mm long, 0.5 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume lanceolate, 7–8 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate, mucicous.

**Florets.** Fertile lemma lanceolate, 8–10 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins obscure. Lemma surface asperulous, rough above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn subapical, 6–8 mm long overall. Apical sterile florets resembling fertile though underdeveloped.

**Distribution (TDWG).** Continent. Africa.

**Country /Province /State.** Western Indian ocean. Madagascar.

**Festuca amblyodes** Krecz. & Bobr. *Komarov, Fl. URSS*, ii. 529, 771 (1934).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N.Tsvelev, *Grasses of the Soviet Union* (1983).

T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Turkestan: Pamir, in declivibus australibus Kisyl-Art. pass, Sep 1911, *B. Fedtschenko & R. Roshevitz 175* (HT: ?).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig.333).

**Derivation** (Clifford & Bostock 2007): Gk. amblys, blunt; -odes, resembling. Glume apices obtuse.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths or fibrous dead sheaths. Culms 5–15 cm long. Culm-internodes smooth. Leaf-sheaths tubular for much of their length, with 0.9 of their length closed, glabrous on surface. Ligule an eciliate membrane. Leaf-blades curved, filiform, conduplicate, angular in section, 5–6 cm long, 1–2 mm wide, stiff. Leaf-blade venation with 7 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous, rough adaxially. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle, comprising 3–8 fertile spikelets. Panicle open, lanceolate, 2–8 cm long, bearing few spikelets. Primary panicle branches spreading, bearing 1(–2) fertile spikelets on each lower branch. Panicle axis scaberulous. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–12 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes smooth.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.5–3 mm long, 0.66–0.75 length of upper glume, chartaceous, purple, 1-keeled, 1 -veined. Lower glume lateral veins absent. Lower glume apex obtuse. Upper glume ovate, 4 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, purple, 1-keeled, 3 -veined. Upper glume lateral veins obscure. Upper glume apex obtuse.

**Florets.** Fertile lemma oblong, 5–6 mm long, chartaceous, purple, keeled, lightly keeled, keeled above, 5 -veined, more than 3-veined. Lemma midvein scabrous. Lemma lateral veins obscure. Lemma apex obtuse, mucicous or mucronate or awned, 1 -awned. Principal lemma awn 1 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3 mm long. Ovary with a few apical hairs. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** Middle Asia, China. Kazakhstan, Kirgizistan, Turkmenistan, Tadzhikistan. China South Central, Qinghai, Xinjiang.

**TDWG4.** Yunnan.

**Festuca amethystina** Linn. *Sp. Pl.* 74. (1753).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983).

T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *Scheucher, Agrostographia t. 6, f. 7 (1719)*, LT designated by Kerguilen & Plonka, *Bull. Soc. Bot. Centre-Ouest* 10: 117 (1989).

ET: *Jacquet s.n.*, 8 Jun 1928, Switzerland: Fribourg au Breilfeld, 670 m (B). ET designated by Scholz in Cafferty et al., *Taxon* 49(2): 250 (2000).

**Recent Synonyms:** *Festuca balansae* Alexeev, *Byull. Mosk. Obshch. Isp. Prirod., Biol.* 83:97 (1978). *Festuca mutica* Chevall., *Fl. Gen. Env. Paris* 167 (1827).

**Illustrations (Books):** G.Hegi, *Flora von Mitteleuropa* 1 (1909) (& as *F. vallesiaca* ssp. *pseudovina* & ssp. *stricta*), M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007).

**Images:** R.Darke, *Ornamental Grasses* (2004);, R.Darke, *The Encyclopaedia of Grasses for Liveable Landscapes* (2007);.

**Derivation** (Clifford & Bostock 2007): L. amethysteus, violet; -ina, belonging to. Spikelets dark purplish-red.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations extravaginal or intravaginal. Culms erect, 50–80 cm long, 2–3 -noded, with 0.25–0.33 of their length below uppermost node. Leaf-sheaths tubular for much of their length, with 0.5–0.75 of their length closed, with flat margins, ribbed. Leaf-sheath auricles erect. Ligule a ciliolate membrane. Leaf-blades filiform, conduplicate, angular in section, 10–30 cm long, 0.3–0.75 mm wide. Leaf-blade venation comprising 5–7 vascular bundles, with 3–5 inner ridges, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous.

**Inflorescence.** Inflorescence a panicle. Peduncle smooth or scaberulous above. Panicle open, ovate, nodding, 10–15 cm long. Primary panicle branches 2 -nate. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 7.8–8.3 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 3–3.5 mm long, 0.8–0.9 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.2–4.3 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, with scarious margins, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate or ovate, 4.5–5.3 mm long, chartaceous, glaucous or purple, without keel, 5 -veined, more than 3-veined. Lemma surface glabrous or hispid, hairy above. Lemma apex acuminate, muticous. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–4 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Hilum linear, 1 length of caryopsis.

**Distribution (TDWG).** Continent. Europe, Temperate Asia.

**Region.** Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe.

**Country /Province /State.** : Austria, Czechoslovakia, Germany, Hungary, Poland, Switzerland. : France. : Bulgaria, Greece, Italy, Romania, Yugoslavia. Northwest European Russia, Ukraine. **Western Asia.** Iran.

**TDWG4.**

**Festuca ampla** Hack. *Cat. Gram. Portugal*, 26. (1880).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Spain. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: ST: *Jules Henriques s.n.*, Portugal: prope Conimbricam

ST: *E. Hackel s.n.*, Spain: in collibus graminosis ad El Escorial (W).

ST: *E. Hackel s.n.*, Spain: ad Puerto de Despequaperros Marianorum

ST: *Bourgeau*, 1863, Spain: Placencia

ST: *Hackel s.n.*, Spain: Sierra de Alfacar et Sierra Nevada loco dicto el Puche prope Granatum.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. large. Spikelets large.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms 50–100 cm long. Culm-internodes smooth. Leaf-sheaths glabrous on surface or pubescent. Ligule an eciliate membrane, 0.1–0.3 mm long, truncate. Leaf-

blades filiform, conduplicate or convolute, 4–6.8 cm long, 0.4–1 mm wide. Leaf-blade venation without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface glabrous. Leaf-blade margins scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, elliptic, loose, 5–30 cm long. Panicle axis smooth. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–10 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 7–19 mm long, 2.5–4 mm wide, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume ovate, 2.3–4 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume elliptic or ovate, 3–6.5 mm long, 0.7–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4.3–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2.3–4 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–3 mm long. Ovary glabrous. Caryopsis with adherent pericarp, hairy at apex. Hilum linear.

$N = 21$  (1 ref TROPICOS).  $2n = 28$  (2 refs TROPICOS).

**Distribution (TDWG). Continent.** Europe, Africa.

**Region.** Southwestern Europe.

**Country /Province /State.** : Portugal, Spain. **Northern Africa.** Morocco.

### **Festuca amplissima** Rupr. *Bull. Acad. Brux.* ix. II. 236. (1842).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Mexico. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *H. Galeotti* 5766, Jun-Oct. 1840, Mexico: Veracruz: Vaquerma de Jacal, Pic d'Orizaba, alt. 10000 [ft.] (BR; IT: LE, W). LT designated by ?; cited by M. Gonzalez L., *Biotam* n.s. 12: 52 (2001).

**Illustrations (Books):** W.Burger, *Flora Costaricensis* 15, Gramineae: *Fieldiana Botany New Series* 4 (1980) (243, Fig 85).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56:19, fig 1 (2007), as var. *sirrae*).

**Derivation** (Clifford & Bostock 2007): *L. amplus*, large; -issima, most. Culms taller than many other species of the genus.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms erect, 110–150 cm long, 2–3 mm diam. Culm-internodes smooth or scaberulous. Culm-nodes constricted, brown, glabrous. Lateral branches lacking. Leaf-sheaths antrorsely scabrous, glabrous on surface. Ligule an eciliate membrane, 0.8–1.3 mm long. Leaf-blades erect, 20–50 cm long, 7–8 mm wide, stiff. Leaf-blade surface scabrous, rough abaxially, glabrous. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle. Peduncle 20–40 cm long, antrorsely scabrous above. Panicle open, elliptic, 15–30 cm long. Primary panicle branches ascending, 5 -nate, 10–12 cm long. Panicle branches scaberulous. Spikelets appressed, solitary. Fertile spikelets pedicelled. Pedicels present, scabrous.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, 3–4.5 mm long, 0.6–0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.8–6 mm long, 0.8–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5.5–7 mm long, chartaceous, purple or light brown, tipped with last colour, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acuminate, muticous. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Palea surface scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–2.8 mm long, purple. Caryopsis with adherent pericarp. Hilum linear.

$2n = 40$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** North America, South America.

**Country /Province /State. Mexico.** Central Mexico, Northeast Mexico, Gulf (Mexico), Northwest Mexico, Southwest Mexico, Southeast Mexico. **Mesoamerica, Western South America.** Costa Rica, Guatemala, Panama. Colombia.

**TDWG4.** Distrito Federal, Mexico State, Morelos, Puebla, Tlaxcala. Coahuila, Chihuahua, Durango, Guanajuato, Hidalgo, Neuvo Leon, Queretaro, Tamaulipas. Veracruz. Baja California, Sinaloa, Sonora. Colima, Guerrero, Jalisco, Michoacan, Nayarit, Oaxaca. Chiapas.

**Festuca amurensis** E.B.Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 85(4): 87 (1980).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Russia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Russia, Pivanj; Schlotgauer (VLA holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. *-ense*, denoting origin. From the Amur District, Russian Far East.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 15–30 cm long. Culm-internodes distally glabrous. Lateral branches lacking. Leaf-sheaths open for most of their length, with 0.2–0.25 of their length closed. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 9–18 cm long, 0.45–0.6 mm wide, glaucous, pruinose. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with sclerenchyma strands below veins, with 5 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous, rough abaxially, puberulous, hairy adaxially. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate or oblong, 3–5 cm long. Panicle branches flat, scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 5.5–6.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or ovate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 3.5–3.7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface glabrous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.5–1.7 mm long overall. Palea 2 -veined. Palea keels scaberulous, with 0.25–0.33 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 1.4–1.6 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Russian far east. Amur.

**Festuca anatolica** I. Markgraf-Dannenber. *Willdenowia*, 11(2): 202 (1981).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Turkey. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Turkey, Bulgar Dag; Siehe 252 (E holo, BM, W).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. *-ica*, belonging to. From Anatolia, Turkey.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms 30–50 cm long. Culm-internodes distally glabrous. Leaf-sheaths open for most of their length, with 0.33 of their length closed, smooth, glabrous on surface, outer margin hairy. Leaf-sheath auricles absent. Ligule an eciliate membrane, 0.5–1.6 mm long, obtuse. Leaf-blades filiform, conduplicate, 0.5–1 mm wide. Leaf-blade venation comprising 7–9 vascular bundles, with 5–7 inner ridges, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth, pubescent, hairy adaxially. Leaf-blade apex mucous or pungent.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong or ovate, 3–5 cm long. Panicle branches smooth or scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate or oblong, laterally compressed, 9.5–11 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume ovate, 4.4–7.3 mm long, 1 length of upper glume, chartaceous, much thinner above, much thinner on margins, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex obtuse. Upper glume ovate, 4.4–7.3 mm long, 0.66–1 length of adjacent fertile lemma, chartaceous, much thinner above, with scarious margins, without keels, 1–3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate or oblong, 6.4–7.1 mm long, 2.6–3.3 mm wide, chartaceous, much thinner on margins, yellow or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, mucicous or mucronate or awned, 1 -awned. Principal lemma awn 0–1 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Western Asia. Turkey.

**Festuca ancachsana** E.B. Alekseev. *Bull. Mosk. Obshch. Ispyt. Prir., Biol.*, 89(4): 115 (1984).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Peru: Ancachs, prov. Huari, Cordillera westlich von Pichin, 4500 m, 20 Apr 1903, *Weberbauer 2942* (HT: S).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. *-ana*, indicating connection. From Anchachs, Huari Province, Peru.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 70–80 cm long, 1–1.5 mm diam., 1 -noded. Culm-internodes terete, antrorsely scabrous. Leaf-sheaths open for most of their length, smooth or scaberulous, glabrous on surface. Ligule an eciliate membrane or a ciliolate membrane, 1.5–3 mm long. Leaf-blades filiform, conduplicate, 20–30 cm long, 1.3–1.7 mm wide, stiff. Leaf-blade venation comprising 11–13 vascular bundles, with 9–11 inner ridges, with subepidermal sclerenchyma attached to veins above and below, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, rough abaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 13–17 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 0 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate or elliptic, laterally compressed, falling entire.

**Florets.** Apical sterile florets barren, lanceolate, 5.7–6.2 mm long. Apical sterile lemmas scabrous (above), dentate, 2 -fid, mucronate or awned, 1 -awned. Apical sterile lemma awns 0.5–0.8 mm long.

**Flower and Fruit.** Vegetative proliferation occurs.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Peru.

**Festuca andicola** H. B. & K. *Nov. Gen. et Sp.* i. 153. (1815).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Ecuador. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Humboldt & Bonpland s.n.*, Jan, Ecuador: Carchi: 3220 m (P; IT: US-2875373 (fragm. ex P, B)).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. *-cola*, dweller. Andean species.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 6–14 cm long, 1 -noded. Leaf-sheaths glabrous on surface. Ligule a ciliolate membrane, 0.5–1 mm long, truncate. Leaf-blades straight or curved, conduplicate or involute, 1–3.5 cm long, 1 mm wide. Leaf-blade surface pubescent, hairy adaxially. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 2–3.5 cm long. Primary panicle branches appressed, bearing spikelets almost to the base. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, smooth.

**Fertile Spikelets.** Spikelets comprising 3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6–7 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes smooth.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2–2.3 mm long, 0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3–3.2 mm long, 0.66 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 3–5.5 mm long, chartaceous, black, without keel, 5 -veined, more than 3-veined. Lemma apex acute, muticous. Palea 2 -veined. Palea keels scabrous. Palea surface pubescent, hairy above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–2.3 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Colombia, Ecuador, Peru.

**Festuca apuanica** I. Markgraf-Dannenber. *Bot. J. Linn. Soc.*, 76(4): 322 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Italy. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Italy, Apuanische Alpen: Ludi (Z holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Apuane Alps, Italy.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 33–64 cm long. Culm-internodes smooth or scaberulous. Leaf-sheaths open for most of their length, with 0.1–0.15 of their length closed, with flat margins, smooth or scaberulous, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, angular in section, 0.5–0.9 mm wide, without exudate. Leaf-blade venation comprising 5–7 vascular bundles, with 1–3 inner ridges, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation or with sclerenchyma strands widened to form a discontinuous subepidermal layer or with unevenly thickened subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth or scaberulous, rough adaxially. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, loose, 6–14 cm long. Primary panicle branches spreading. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–9.4 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.5–5.5 mm long, 0.8 length of adjacent fertile lemma, chartaceous, with scarious margins, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 5.2–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2–3.3 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southeastern Europe.

**Country /Province /State.** : Italy.

**Festuca arenicola** (Prodan) Soo. *Acta Bot. Acad. Sci. Hung.*, 18(3–4): 365 (1973).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**Basionym or Replaced Name:** *Festuca pallens* subsp. *arenicola* Prodan, *Bull. Acad. Agronom. Club* 5:193 (1935).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. arena*, sandy place; *-cola*, dweller. Species of sandy habitats.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths pallid or light brown, persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 21–36 cm long. Culm-internodes distally pubescent. Leaf-sheaths open for most of their length, with 0 of their length closed, with flat margins, glabrous on surface, outer margin hairy. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades deciduous at the ligule, filiform, conduplicate, circular in section, 0.4–0.7 mm wide, glaucous, pruinose. Leaf-blade venation comprising 7–11 vascular bundles, with 5–7 inner ridges, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with unevenly thickened subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous. Leaf-blade apex acuminate, pungent.

**Inflorescence.** Inflorescence a panicle. Panicle open, 3–12 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5.5–7 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 3.1–3.6 mm long, 0.75–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 3.5–4.6 mm long, chartaceous, light green, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acute, mucronate or awned, 1 -awned. Principal lemma awn 0.1–0.5 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 14$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region. Southeastern Europe.**

**Country /Province /State.** : Bulgaria, Romania.

***Festuca argentina*** (Speg.) Parodi. *Physis*, xi. 498 (1935).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Argentina. **Basionym or Replaced Name:** *Poa argentina* Speg., *Revista Fac. Agron. Univ. Nac. La Plata* 3(30–31): 584 (1897)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *L.R. Parodi s.n.*, 1884, Argentina: Santa Cruz (US-81670).

**Illustrations (Books):** M.N.Correa, *Flora Patagonica* Parte III, Gramineae (1978) (117, Fig 70).

**Derivation** (Clifford & Bostock 2007): from Argentina.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths pallid or yellow, pubescent. Basal innovations intravaginal. Culms erect, 40–100 cm long. Lateral branches lacking. Leaf-sheaths open for most of their length, glabrous on surface. Ligule a ciliolate membrane, 0.5 mm long. Leaf-blades filiform, conduplicate, 15–30 cm long, 1–1.5 mm wide, stiff. Leaf-blade surface puberulous, hairy adaxially. Leaf-blade apex pungent.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 7–15 cm long. Panicle axis scaberulous. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10–15 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1–1.5 mm long, smooth or scaberulous. Floret callus pubescent.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 5–7.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 6–8 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.



**Florets.** Fertile lemma lanceolate, 7–9.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough generally, puberulous, hairy at base. Lemma apex acute, muticous. Palea 1 length of lemma, 2 -veined. Palea keels ciliolate. Palea surface scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, ciliate. Anthers 3, 3–4.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear, 0.5 length of caryopsis.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Southern South America.** Argentina South, Chile South.

**TDWG4.** Mendoza. Chubut, Neuquén, Río Negro, Santa Cruz. Aisen.

### ***Festuca argentinensis* (St.-Yves) Turpe. *Darwiniana*, xv. 254 (1969).**

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Argentina. **Basionym or Replaced Name:** *Festuca scirpifolia* var. *argentinensis* St.-Yves, *Candollea* 5: 138 (1932)

. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: LT: *Schreiter 6119*, 2 Feb, Argentina: Catamarca: Dpto. Tinogasta: Reales Blancos (BAA; ILT: LIL). LT designated by Turpe, *Darwiniana* 15: 254 (1969).

ST: *Parodi 9612*, Argentina: Jujuy: Dpto. Cochinoca: Abra Pampa, (HP).

ST: *Parodi 9756*, Argentina: Jujuy: Dpto. Humahuaca: Humahuaca (BAA).

ST: *Parodi 9657*, Argentina: Jujuy: Dpto. Yavi: La Quiaca (BAA, LIL).

**Illustrations (Books):** S.A.Renvoize, *Gramineas de Bolivia* (1998) (110, Fig 25).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Argentina.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 20–50 cm long, 1 -noded, with 0.5 of their length below uppermost node. Culm-internodes terete, glaucous, smooth, distally glabrous. Leaves distichous. Leaf-sheaths open for most of their length, striately veined, smooth, glabrous on surface. Ligule a ciliolate membrane, 0.5 mm long, truncate. Leaf-blades erect, filiform, conduplicate, 0.8–1 mm wide, stiff, glaucous. Leaf-blade venation comprising 11 vascular bundles, with 9 inner ridges, with subepidermal sclerenchyma attached to veins above and below, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth or scaberulous, rough abaxially, pubescent, hairy adaxially. Leaf-blade apex filiform.

**Inflorescence.** Inflorescence a panicle, embraced at base by subtending leaf. Panicle contracted, oblong, 3–10 cm long, bearing few spikelets. Primary panicle branches 1–2 -nate. Panicle axis smooth or scaberulous. Panicle branches smooth or scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate or elliptic, laterally compressed, 8–9 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1.5 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume margins ciliolate. Lower glume apex acuminate. Upper glume lanceolate, 4–4.5 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume margins ciliolate. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 5.5–6.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, muticous or awned, 1 -awned. Principal lemma awn 1–1.5 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–3.5 mm long, purple. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Western South America, Southern South America.** Bolivia. Argentina Northwest, Chile North.

**TDWG4.** Catamarca, Jujuy, La Rioja, Salta, San Juan, Tucuman.

### ***Festuca arizonica* Vasey. *Contr. U.S. Nat. Herb.* 1:277 (1893).**

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from USA. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Arizona: near Flagstaff, 1887, *S.M. Tracy 118* (HT: US).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (439), F.W.Gould, *The Grasses of Texas* (1975) (99, Fig. 46).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Arizona, USA.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths light brown. Culms erect, 45–90 cm long, wiry. Leaf-sheaths wider than blade at the collar, smooth or scaberulous, glabrous on surface. Leaf-sheath auricles erect, 0.5–1.5 mm long. Ligule a ciliolate membrane, 0.5–1.5 mm long. Leaf-blades filiform, conduplicate or involute, 20–50 cm long, 1–1.5 mm wide, glaucous. Leaf-blade surface scabrous, glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open or contracted, linear or lanceolate, 8–18 cm long. Primary panicle branches appressed or ascending. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–15 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, with lower narrower than upper, shorter than spikelet. Lower glume lanceolate, 5–6.5 mm long, 0.9 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous, rough at apex. Lower glume apex acute. Upper glume lanceolate, 5–6.5 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface scabrous, rough at apex. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5.5–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, scabrous, muticous or mucronate or awned. Principal lemma awn ascending, 0–2 mm long overall. Palea 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–3 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** Northwest USA, Southwestern USA, South-central USA, Mexico. Colorado. Arizona, California, Nevada. New Mexico, Texas. Central Mexico, Northeast Mexico.

Mexico State. Coahuila, Durango, Nuevo Leon, Zacatecas.

**Festuca armoricana** Kerguelen. *Lejeunia*, 75: 9 (1975).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from France. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *M. Kerguelen 7211*, 27 May 1972, France: Cotes-du-Nord: Point de Lermont, pres Hillion, sables maritimes fixes (P; IT: LG).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to; armor, in Breton meaning "the sea". From coastal habitats in Brittany.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 9–36 cm long. Culm-internodes distally glabrous or pubescent. Leaf-sheaths open for most of their length, with 0.33–0.5 of their length closed, with flat margins, glabrous on surface or puberulous. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 0.3–0.8 mm wide, mid-green or glaucous, without exudate. Leaf-blade midrib scarcely raised beneath. Leaf-blade venation comprising 7 vascular bundles, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with unevenly thickened subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth or scaberulous, rough adaxially. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 1.5–6 cm long. Panicle branches glabrous or pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6–7.4 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.6–4.2 mm long, 0.8–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface scabrous, rough above. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 4.4–4.6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1.3–1.7 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : France.

### ***Festuca artvinensis*** I. Markgraf-Dannenberg. *Willdenowia*, 11(2): 202 (1981).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Turkey. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Turkey, Ziyaret Dag: Davis & Hedge D.30293 (E holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. *-ensis*, denoting origin. From Artvin, East Anatolia, Turkey.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms 31–42 cm long. Leaf-sheaths open for most of their length, with 0.33 of their length closed, smooth, glabrous on surface. Leaf-sheath auricles absent. Ligule an eciliate membrane, 0.4–0.75 mm long, obtuse. Leaf-blades erect, filiform, conduplicate, 0.4–0.7 mm wide. Leaf-blade venation comprising 7(–9) vascular bundles, with 4–6 inner ridges, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth, pubescent, hairy adaxially. Leaf-blade apex pungent.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, dense, 4.5–6 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate or oblong, laterally compressed, 9–11 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume lanceolate or elliptic, 4–4.5 mm long, 1 length of upper glume, chartaceous, much thinner above, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex obtuse. Upper glume lanceolate or oblong, 4.2–4.6 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, much thinner above, without keels, 1–3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5.8–6 mm long, 2.3–2.6 mm wide, chartaceous, yellow or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, muticous or mucronate. Palea 1 length of lemma, 2 -veined. Palea keels ciliolate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–4 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Western Asia. Turkey.

### ***Festuca arvernensis*** P. Auquier, M. Kerguelen & I.Markgraf-Dannenberg. *Lejeunia*, 89: 15 (1977).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from France. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *P. Auquier 1116*, 2 Jul 1971, France, Centre: Murat, 950 m (L).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. *-ensis*, denoting origin. From Arverna otherwise Alvernia now mostly the Auvergne, France.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 31–65 cm long. Culm-internodes distally glabrous. Leaf-sheaths open for most of their length, with 0–0.33 of their length

closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule a ciliolate membrane. Leaf-blades curved, filiform, conduplicate, circular in section, 0.55–1 mm wide, glaucous, pruinose. Leaf-blade venation comprising 7–9 vascular bundles, with 3–5 inner ridges, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 4–6.5 cm long. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7.2–8.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 3.4–4.9 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex obtuse.

**Florets.** Fertile lemma oblong, 4.5–5.7 mm long, chartaceous, glaucous, without keel, 5 -veined, more than 3-veined. Lemma surface glabrous or pubescent. Lemma margins eciliate or ciliate. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1.5–2.5 mm long overall, 0.33–0.5 length of lemma. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : France.

**Festuca asperella** E.B. Alekseev. *Bot. Zhurn.*, 66(10): 1496 (1981).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Mexico. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *Dzieskanowski, Dunn & Bolingbroke 2022*, 21 Aug 1972, Mexico: MEXICO: along Hwy 95, south of Mexico City, just south of El Gordo, high mountain meadow area, alt. 9000 ft, sheep herds (US; IT: CHAPA, MO-2107299).

**Illustrations (Books):** N.Walsh & T.Entwistle, *Flora of Victoria* Vol 2 (1994), S.W.L.Jacobs, R.D.B.Whalley & D.J.B.Wheeler., *Grasses of New South Wales*, 4th edn (2008) (267).

**Derivation** (Clifford & Bostock 2007): *L. asper*, rough; -ella, diminutive. Plants asperous overall.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, robust, 50–100 cm long. Culm-internodes scaberulous, distally glabrous. Lateral branches lacking. Leaf-sheaths scaberulous. Ligule an eciliate membrane, 5–5.5 mm long. Leaf-blades flat or convolute, 4–7 mm wide. Leaf-blade venation with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scaberulous.

**Inflorescence.** Inflorescence a panicle. Panicle open, elliptic, 15–25 cm long. Panicle axis scaberulous. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 14–15.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface asperulous. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels. Upper glume surface asperulous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 8–9 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, glabrous. Lemma apex dentate, 2 -fid, awned, 1 -awned. Principal lemma awn from a sinus, 0.4–0.8 mm long overall. Palea 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 4–4.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** Mexico. Central Mexico.

Distrito Federal, Mexico State.

**Festuca asperula** Vickery. *Contrib. N. S. Wales Nat. Herb.* i. 12 (1939).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), D.Sharp, D. & B.K.Simon, *AusGrass* (2002).

**TYPE** from Australia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Australia, Armidale: *McKie 611* (K holo).

**Illustrations (Books):** N.Walsh & T.Entwistle, *Flora of Victoria Vol 2* (1994) (402, Fig 80), A.Wilson (ed.), *Flora of Australia*, Vol 44A. *Poaceae* (2009) (280, Fig 37), D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002).

**Derivation** (Clifford & Bostock 2007): *L. asper*, rough; -ula, diminutive. Awns slightly scabrous.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 50–100 cm long, 2–3 -noded. Culm-internodes smooth. Culm-nodes glabrous. Leaf-sheaths smooth or scaberulous, glabrous on surface. Ligule an eciliate membrane, 0.2 mm long. Leaf-blades filiform, convolute, 15–30 cm long, 1 mm wide, glaucous. Leaf-blade surface scabrous. Leaf-blade margins scaberulous. Leaf-blade apex attenuate, callose.

**Inflorescence.** Inflorescence a panicle. Panicle open or contracted, lanceolate, 10–25 cm long. Primary panicle branches 1–2 -nate. Panicle axis angular, smooth. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, angular, 2–10 mm long, scabrous.

**Fertile Spikelets.** Spikelets comprising 3–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10–15 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1.5–2 mm long, scaberulous.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 5–5.5 mm long, 0.8 length of upper glume, chartaceous, without keels, 1–3 -veined. Lower glume lateral veins absent or distinct. Lower glume surface asperulous. Lower glume margins ciliolate. Lower glume apex acuminate. Upper glume oblong, 6–7 mm long, 0.8–1 length of adjacent fertile lemma, chartaceous, without keels, 3–5 -veined. Upper glume surface asperulous. Upper glume margins ciliolate. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 6–8.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous. Lemma margins ciliolate. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1–4 mm long overall. Palea lanceolate, 6–8 mm long, 2 -veined. Palea keels scaberulous, adorned above. Palea surface scaberulous. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, linear, 4.5–5 mm long. Ovary glabrous. Caryopsis with adherent pericarp, sulcate on hilar side.

**Distribution (TDWG). Continent.** Australasia.

**Country /Province /State.** Australia. New South Wales, A.C.T., Victoria.

**TDWG4.** Tablelands.

**Festuca asplundii** E.B. Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 89(4): 116 (1984).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Ecuador. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *Asplund 8586*, Ecuador (S).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 85, fig 40 (2007)).

**Derivation** (Clifford & Bostock 2007): *L.* in honor of Erik Asplund (1888–1974) Swedish botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 40–80 cm long, 1–1.5 mm diam., 1 -noded. Culm-internodes terete. Leaf-sheaths open for most of their length, smooth or scaberulous, glabrous on surface. Ligule a ciliolate membrane, 0.5–1 mm long. Leaf-blades straight, filiform, conduplicate, 20–50 cm long, 1.2–1.5 mm wide, stiff. Leaf-blade venation comprising 11–15 vascular bundles, with 9–13 inner ridges, with subepidermal sclerenchyma attached to veins above and below, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, rough abaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 11–18 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 0 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate or elliptic, laterally compressed, falling entire.

**Florets.** Apical sterile florets barren, lanceolate, 4.5–5.2 mm long. Apical sterile lemmas scabrous (above), muticous or mucronate.

**Flower and Fruit.** Vegetative proliferation occurs.  
**Distribution (TDWG). Continent.** South America.  
**Country /Province /State. Western South America.** Colombia, Ecuador, Peru.

**Festuca athenica** Hook. f. *Fl. Brit. Ind.* vii. 354. (1896).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Pakistan. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *Duthie 13469*, 4 Aug 1893, Kashmir: Liddar Valley, above Pahlgam, in forest (K). LT designated by Stewart, *Bull. Bot. Surv. India* 9:1–4.1967..

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. *asthenes*, of low specific gravity; -ike, belonging to. Growing on very high mountains.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 90–120 cm long. Leaf-sheaths open for most of their length. Ligule an eciliate membrane, 4–6 mm long. Leaf-blades flat, 15–30 cm long, 7–10 mm wide. Leaf-blade surface ungrooved.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate or ovate, 14–20 cm long. Primary panicle branches ascending or spreading. Panicle branches smooth or scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 8–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 2.5–4 mm long, 0.66–0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.5–6 mm long, 0.66–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile florets divergent. Fertile lemma oblong, 5.5–7 mm long, chartaceous, without keel, 3 -veined, 0–3 -veined. Lemma surface scabrous. Lemma apex acuminate, mucous. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–4 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Tropical Asia.

**Country /Province /State. Indian Subcontinent.** Pakistan, West Himalaya.

**Festuca atlantica** Duval-Jouve. *Bull. Soc. Bot. France*, vi. 484 (1859).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Morocco. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Morocco: Coll?.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): from the Atlantic coast of North Africa.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms geniculately ascending, 30–50 cm long, 2 -noded, with 0.33 of their length below uppermost node. Culm-nodes black. Lateral branches lacking. Leaf-sheaths tubular for much of their length, with 0.5 of their length closed, smooth, glabrous on surface. Ligule an eciliate membrane, 0.2–0.5 mm long, truncate. Leaf-blades filiform, conduplicate, elliptic in section, 6–20 cm long, 0.6–0.8 mm wide. Leaf-blade venation with 7 secondary veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, rough abaxially, pubescent, densely hairy, hairy adaxially. Leaf-blade margins scabrous. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle. Peduncle scaberulous above. Panicle open, linear or oblong, dense, 3–15 cm long. Primary panicle branches appressed, 1–2 -nate. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, tip widened.

**Fertile Spikelets.** Spikelets comprising 4–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, compressed slightly, 5–8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1 mm long, smooth.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.5–3.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex obtuse or acute. Upper glume ovate, 3–4 mm long, 0.33–0.66 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex obtuse.

**Florets.** Fertile lemma ovate, 3.75–5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex obtuse, mucous. Palea 2 -veined. Palea keels smooth or scaberulous. Palea surface asperulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3 mm long. Ovary with a few apical hairs. Caryopsis with adherent pericarp, obovoid, sulcate on hilar side, hairy at apex. Hilum linear, 0.5 length of caryopsis.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** Northern Africa. Algeria, Morocco, Tunisia.

**Festuca auquieri** M. Kerguelen. *H. Coste, Fl. Descr. Illustr. France, Suppl. 5: 544 (1979).*

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from France. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: France, Gorges du Tarn: Kerguelen & Boivin.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of Paul Auquier (1939–1980) Belgian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 30–60 cm long. Lateral branches lacking. Leaf-sheaths open for most of their length. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, angular in section or elliptic in section, 3–25 cm long, 1.5–2 mm wide, stiff. Leaf-blade venation comprising 7–9 vascular bundles, with 1(–3) inner ridges, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth, puberulous. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear or oblong, 4.5–8 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 6.6–8.8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or ovate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4.5–6.2 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma margins eciliate or ciliolate. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.8–3 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : France.

**Festuca auriculata** Drobov. *Trav. Mus. Bot. Acad. Petersb.* xiv. 159 (1915).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Siberia: Prov. Jakutsk. dist. Kolymsk. Mons. Panteleyevskaja sopka, 1905, *Schulga 155* (HT: Herb. H. P.).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (427).

**Derivation** (Clifford & Bostock 2007): L. auris, ear; -ula, diminutive; -ata, possessing. Leaf-blades rounded at the base or with auricles.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Culms 8–13 cm long. Culm-internodes smooth. Leaf-sheaths tubular for much of their length, with 0.5–0.75 of their length closed, wider than blade at the collar, glabrous on surface. Leaf-sheath auricles erect, 0.5–1.5 mm long. Ligule an eciliate membrane. Leaf-blades curved, filiform, conduplicate, elliptic in section, 4–10 cm long, 0.5 mm wide. Leaf-blade venation comprising 5–7 vascular bundles, with 3 subepidermal sclerenchyma strands. Leaf-blade surface smooth or scaberulous, rough abaxially, pubescent, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 2–3 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous, rough above. Lower glume apex acute. Upper glume lanceolate, 4 mm long, 0.8–1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface scabrous, rough above. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4–5 mm long, chartaceous, light green, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2–2.5 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.  $2n = 14$  (2 refs TROPICOS).

**Distribution (TDWG). Continent.** Europe, Temperate Asia.

**Region.** Eastern Europe.

**Country /Province /State.** North European Russia. Siberia, Russian far east. Buryatiya, Chita, Irkutsk, Krasnoyarsk, Tuva. Amur, Khabarovsk, Primorye.

**TDWG4.**

**Festuca austrouralensis** P.V. Kulikov. *Bot. Zhurn.*, 83(8): 111 (1998).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Russia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Russia, Urals, Tscheljabinsk: Kulikov (LE holo, SVER).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms 30–70 cm long. Culm-internodes distally glabrous. Leaf-sheaths open for most of their length, with 0.8–0.9 of their length closed. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 5–22 cm long, 0.6–1.2 mm wide. Leaf-blade venation comprising 7 vascular bundles, with 3–5 inner ridges, with 3 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth, glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, 4–8 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5.5–7 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 3.5–4.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 0.8–1.2 mm long overall. Palea 2 -veined. Palea keels scaberulous, adorned above, with 0.33–0.5 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.6–2.3(–2.5) mm long. Ovary glabrous.

**Distribution (TDWG). Continent.** Europe.

**Region.** Eastern Europe.

**Country /Province /State.** East European Russia.

**Festuca azgarica** Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 78(3): 107 (1973).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: 2 TT: *E. & D. Alexeev 6353, Herb. Fl. URSS*, 12 Jul 1983, see sp. # 1 (LE). Orig. label: Caucasus boreali-occidentalis, in valle fl. Urup, mons Azgara Minor, pratim subalpinum in declivi australi..



IT: *E. Alexeev s. n.*, 18 Jul 1971, Caucasus: Rv. Urup: Mt. Malaya Atsgera (LE). Orig. label: Caucasus boreali-occidentalis, in valle fluvii Urup, mons Malaja Azgara, in regionis subalpinae..

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Azgar, Caucasus, former Soviet Union.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Leaf-sheaths open for most of their length, with 0.15–0.25 of their length closed, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, 0.6–0.95 mm wide, glaucous. Leaf-blade venation comprising 5–7 vascular bundles, with 3–7 secondary veins, with 3(–5) inner ridges, with 5–7 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation or with sclerenchyma strands widened to form a discontinuous subepidermal layer. Leaf-blade surface smooth, puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 7–10 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7.5–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 5–6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2.5–4.5 mm long overall. Palea 2 -veined. Palea keels ciliolate, adorned above, with 0.33 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.2–3 mm long. Caryopsis with adherent pericarp. Hilum linear.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Caucasus. North Caucasus.

**TDWG4.**

**Festuca azucarica** E.B. Alekseev. *Bot. Zhurn.*, 69(11): 1546 (1984).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Colombia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *J. Cuatrecasas et al.* 27562, 26 Feb 1969, Colombia: Valle del Cauca (US-278; IT: COL, U-5508).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 64, fig 28 (2007)).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Cerro Pan de Azucar, Colombia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms erect, 50–100 cm long, 2 -noded, with 0.5–0.66 of their length below uppermost node. Culm-internodes smooth. Culm-nodes glabrous. Lateral branches lacking. Leaf-sheaths open for most of their length, smooth. Ligule a ciliolate membrane, 1–1.5 mm long, obtuse. Leaf-blades straight, filiform, conduplicate, 20–35 cm long, 0.9–1.1 mm wide, indurate. Leaf-blade venation comprising 11–13 vascular bundles, with 9–11 inner ridges, with 12 subepidermal sclerenchyma strands, with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate or oblong, 15–20 cm long. Primary panicle branches 4–8 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 7.5–9.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 3.5–4 mm long, 0.75–0.9 length of upper glume, coriaceous, without keels, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4–5.2 mm long, 0.75–0.9 length of adjacent fertile lemma, coriaceous, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5.5–6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.5–2 mm long overall. Palea 2 -veined. Palea keels scabrous, adorned all along. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 2.5–3 mm long. Ovary with a few apical hairs. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Colombia.

**Festuca baffinensis** Polunin. *Bull. Nat. Mus. Canada*, No. 92, *Biol. Ser. No.* 24:91 (1940).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Canada. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Canada: Baffin Island: Pond inlet, 12 Sep 1934, *Nicholas Polunin 706* (HT: GH; IT: CAN, BM).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Baffin Land.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 5–15 cm long. Culm-internodes distally pubescent. Lateral branches lacking. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.2–0.5 mm long. Leaf-blades conduplicate, 2–6 cm long, 0.5–1 mm wide. Leaf-blade surface scabrous, glabrous.

**Inflorescence.** Inflorescence a panicle. Peduncle pubescent above. Panicle contracted, linear, secund, 2–4 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–11 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.5–3.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.3–4.6 mm long, 0.7–0.9 length of adjacent fertile lemma, chartaceous, without keels, 1 -veined. Upper glume primary vein smooth or scabrous. Upper glume lateral veins absent. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4.6–5.2 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1–3 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 0.2–0.5 mm long. Caryopsis with adherent pericarp. Hilum linear.

$2n = 28$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe, Temperate Asia, North America.

**Region.** Northern Europe, Eastern Europe.

**Country /Province /State.** : Svarlbad. North European Russia. Russian far east. Kamchatka. **Subarctic America, Western Canada, Eastern Canada, Northwest USA, Southwestern USA.** Aleutian Is, Alaska, Yukon, Northwest Territories, Nunavut, Greenland. Alberta, British Columbia. Labrador, Ontario, Quebec. Colorado, Montana, Wyoming. Utah.

**TDWG4.**

**Festuca bajacaliforniana** M. Gonzalez-Ledesma & S.D. Koch. *Novon*, 4(1): 28 (1994).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Mexico. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Mexico: Baja California: Sierra de San Pedro Martir, N slope of Cerro "2828, near 31.02N 115.27 W, ca. 2800 m, 14 Sep 1968, *R. Moran 15619* (HT: ENCB; IT: LL, MICH, MSC, SD, TAES, US).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating location. From Baja California, Mexico.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms geniculately ascending, 15–50 cm long, 1–2 -noded. Culm-nodes purple. Leaf-sheaths glabrous on

surface. Leaf-sheath auricles absent. Ligule a ciliolate membrane, 0.4–1.3 mm long, entire or bilobed. Leaf-blades conduplicate, angular in section, 3–15 cm long, 0.4–0.6 mm wide. Leaf-blade venation comprising 3 vascular bundles, with 7 subepidermal sclerenchyma strands. Leaf-blade surface scabrous, rough adaxially, glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, 4–9 cm long. Primary panicle branches appressed, 1–2 -nate. Panicle axis smooth. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7.8–8.8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.6–4 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface asperulous, rough above. Lower glume apex acute. Upper glume lanceolate, 4.4–5.1 mm long, 0.75–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface asperulous, rough below. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5.3–6.7 mm long, chartaceous, without keel, 3 -veined, 0–3 -veined. Lemma surface scaberulous, rough above. Lemma apex acute, scabrous, awned. Principal lemma awn ascending, 2–4.7 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, with a small lateral lobe. Anthers 3, 2–2.3 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, 4.2–4.5 mm long. Hilum linear.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** Mexico. Northwest Mexico.

**TDWG4.** Baja California.

**Festuca balcanica** (Acht.) I. Markgraf-Dannenberg. *Bot. J. Linn. Soc.*, 76(4): 326 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Bulgaria. **Basionym or Replaced Name:** *Festuca cyllenica* subsp. *balcanica* Acht., *Izvest. Bot. Inst. Sofia* 3:47 (1953). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Bulgaria, Vilja-Glava: Achtarov.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Balcanum, now southern Tyrol, Italy.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms 20–60 cm long. Culm-internodes smooth. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 1–2.3 mm long. Leaf-blades filiform, conduplicate, 0.4–0.7 mm wide. Leaf-blade venation comprising 7–9 vascular bundles, with 5–7 inner ridges, with sclerenchyma strands above some veins or above all veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth or scaberulous, rough adaxially. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, elliptic, dense, nodding, 4–6 cm long. Panicle branches glabrous or puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9–11 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.6 mm long, 0.75–1 length of adjacent fertile lemma, chartaceous, with scarious margins, without keels, 3 -veined. Upper glume apex obtuse.

**Florets.** Fertile lemma ovate, 4.6–6.3 mm long, chartaceous, yellow or mid-green or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma apex acute, muticous or mucronate or awned, 1 -awned. Principal lemma awn 0–0.3 mm long overall. Palea 2 -veined. Palea keels ciliate. Palea surface scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3 mm long. Caryopsis with adherent pericarp, obovoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southeastern Europe.

**Country /Province /State.** : Bulgaria.

**Festuca bartherei** Timb.-Lagr. *Bull. Soc. Hist. Nat. Toulouse* 4: 183 (1870).

**TYPE** from France. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Mont Cagire: Timbal-Lagrave.

**Festuca bargusinensis** Malyshev. *Novosti Sist. Vyssh. Rast.*, 7: 296 (1971).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online, U. Quattrocchi, *CRC World Dictionary of Grasses* (2006), N. Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Russia, Shegnanda R.: Malyshev & Skvortsov 818 (LE holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From the Barguzinski Khrebet a range of mountains in Siberia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Cataphylls inconspicuous. Basal innovations intravaginal. Culms 35–45 cm long. Leaf-sheaths open for most of their length, glabrous on surface. Ligule a ciliolate membrane, 0.3 mm long. Leaf-blades filiform, conduplicate, angular in section, 15 cm long, 0.5 mm wide. Leaf-blade venation comprising 5 vascular bundles, with 7 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface ribbed, scabrous, rough abaxially, puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, nodding, 6–8 cm long, 5–7 cm wide. Primary panicle branches spreading, 1–2 -nate, 3–4 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 5–10 mm long.

**Fertile Spikelets.** Spikelets comprising 2(–3) fertile florets, with a barren rhachilla extension. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6–7 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4 mm long, 0.75 length of upper glume, membranous, without keels, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5 mm long, 1 length of adjacent fertile lemma, membranous, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 5 mm long, chartaceous, purple, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.2–1.6 mm long overall. Palea 4.5 mm long, 2 -veined. Palea keels scabrous.

**Flower and Fruit.** Anthers 3, 2 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Siberia. Buryatiya, Chita.

**TDWG4.**

**Festuca beamanii** E.B. Alekseev. *Bot. Zhurn.*, 66(10): 1500 (1981).

**Accepted by:** R.J. Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D. Clayton & K. Harman, *GrassBase* (2008) and online, U. Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Guatemala. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Guatemala: Huehuetenango: Sierra de los Cuchumatanes, near lake at E end of Llano de Tierra Blanca, ca. 2.5 mi W of Llano de San Miquel, ca. 3500m 2 Aug 1960., *Beaman 3970* (HT: US).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of John H. Beaman (1929–) United States botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 20–45 cm long. Culm-internodes smooth. Lateral branches lacking. Leaf-sheaths open for most of their length, with 0.33 of their length closed, smooth. Ligule a ciliolate membrane, 0.5–1 mm long. Leaf-blades filiform, conduplicate, elliptic in section, 0.7–0.8 mm wide. Leaf-blade venation comprising 7 vascular bundles, with 5 inner ridges, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate or oblong, 8–9 cm long. Panicle branches flat, scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 7–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or ovate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5–5.2 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2–2.2 mm long overall. Palea 2 -veined. Palea keels scabrous, with 0.33 of their length adorned. Apical sterile florets distinct from fertile, with internodes 3–3.2 mm long between them.

**Flower and Fruit.** Lodicules 2. Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Mesoamerica. Guatemala.

**Festuca beckeri** (Hack.) Trautv. *Acta Horti Petrop.* 9:325 (1884).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. **Basionym or Replaced Name:** *Festuca ovina* subsp. *beckeri* Hack., *Monogr.* :100 (1882). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Russia, Sarepta: Becker (W holo, LE).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Alexander Becker (1818–1901) Russian organist and plant collector in the Caucasus Mountains.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Butt sheaths pallid or light brown, pubescent. Basal innovations intravaginal. Culms erect, 20–60 cm long. Leaf-sheaths open for most of their length, with flat margins, pubescent. Ligule an eciliate membrane. Leaf-blades deciduous at the ligule, filiform, conduplicate, 0.3–0.7 mm wide, light green. Leaf-blade venation comprising 7–9 vascular bundles, with 3 inner ridges, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth. Leaf-blade apex mucous or pungent.

**Inflorescence.** Inflorescence a panicle. Peduncle smooth. Panicle open, linear, continuous or interrupted, 6–14 cm long. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 4.5–7.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or ovate, 2.9–4 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 2.5–4.7 mm long, chartaceous, light green, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 0.3–0.8 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Europe, Temperate Asia.

**Region.** Northern Europe, Eastern Europe.

**Country /Province /State.** : Denmark. Belarus, Estonia, Latvia, Lithuania, Krym, Central European Russia, East European Russia, North European Russia, South European Russia, Northwest European Russia, Ukraine. Siberia, **Middle Asia, Caucasus, Western Asia.** Buryatiya, Chita, Irkutsk, Krasnoyarsk, Tuva. Kazakhstan.

**TDWG4.**

**Festuca benthamiana** Vickery. *Contrib. N. S. Wales Nat. Herb.* i. 13 (1939).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), D.Sharp, D. & B.K.Simon, *AusGrass* (2002).

**TYPE** from Australia. **Basionym or Replaced Name:** *Festuca duriuscula* var. *aristata* Benth., *Fl. Austral.* 7:664 (1878). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Australia: *Mueller* (K holo).

**Illustrations (Books):** J.P.Jessop, G.R.M. Dashorst & F.M.James, *Grasses of South Australia* (2006) (125, Fig 81).

**Images:** D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002);.

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating connection. In honor of George Bentham (1800–1884) English botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 30–60 cm long, 2 -noded. Culm-internodes smooth. Culm-nodes glabrous. Leaf-sheaths striately veined, smooth, glabrous on surface. Ligule an eciliate membrane, 0.2 mm long, truncate. Leaf-blades filiform, convolute, 10–20 cm long, 0.5–2.5 mm wide. Leaf-blade surface scabrous, rough adaxially. Leaf-blade margins scaberulous. Leaf-blade apex attenuate, filiform.

**Inflorescence.** Inflorescence a panicle. Panicle open or contracted, lanceolate or oblong, 15–30 cm long. Primary panicle branches 2 -nate. Panicle axis angular, scaberulous. Panicle branches angular, scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 5–15 mm long, scabrous.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 15 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 2–2.5 mm long, scaberulous, glabrous or sparsely hairy.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 4.5–5 mm long, 0.7–0.75 length of upper glume, chartaceous, without keels, 1–3 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent or distinct. Lower glume margins ciliolate. Lower glume apex acuminate. Upper glume oblong, 6–7 mm long, 0.6–0.7 length of adjacent fertile lemma, chartaceous, without keels, 3–5 -veined. Upper glume primary vein scabrous. Upper glume margins ciliolate. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 9–11 mm long, chartaceous, without keel, 5–7 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma margins eciliate or ciliolate. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 5–15 mm long overall. Palea 9–11 mm long, 2 -veined. Palea keels scaberulous. Palea surface scaberulous, pubescent, hairy on back, hairy above. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, linear, 4 mm long. Ovary glabrous. Caryopsis with adherent pericarp, sulcate on hilar side.

**Distribution (TDWG). Continent.** Australasia.

**Country /Province /State.** Australia. South Australia.

**TDWG4.** Southern.

**Festuca bhutanica** E.B. Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 83(4): 117 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Bhutan. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Bhutan, Isethanka: Goold 2404 (K holo).

**Illustrations (Books):** H.J.Noltie, *The Grasses of Bhutan* (2000) (539, Fig. 13).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Bhutan.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 15–25 cm long. Culm-internodes distally glabrous. Lateral branches lacking. Leaf-sheaths open for most of their length, with 0.2–0.25 of their length closed, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, angular in section, 0.45–0.6 cm long. Leaf-blade venation comprising 5 vascular bundles, with sclerenchyma strands below veins, with 5–7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate or oblong, 4.5–9 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile.

Spikelets ovate, laterally compressed, 7.5–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4.7–5.2 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.2–2.5 mm long overall. Palea 2 -veined. Palea keels scabrous, adorned all along. Palea apex emarginate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 2.3–2.8 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Tropical Asia.

**Country /Province /State. Indian Subcontinent.** Eastern Himalaya.

**TDWG4.** Bhutan, Sikkim.

### ***Festuca bidenticulata* E.B. Alekseev. *Bot. Zhurn.*, 66(10): 1496 (1981).**

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Mexico. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Mexico:umbre de Istepeco, Nov 1842, *Liebmann 2897* (HT: US).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. bis, twice; dens, tooth; -ula, diminutive; -ata, possessing. Lemma apex shortly two-tooth with a short awn from the sinus.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Cataphylls inconspicuous. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations extravaginal. Culms erect, 50–110 cm long. Culm-internodes smooth, distally glabrous. Lateral branches lacking. Leaf-sheaths smooth, glabrous on surface. Ligule an eciliate membrane, 0.5 mm long, truncate. Leaf-blades 3–5 mm wide. Leaf-blade venation with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, elliptic, 15–23 cm long. Panicle axis smooth. Panicle branches smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 9.5–11 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6.5–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins distinct. Lemma surface scaberulous, rough above. Lemma apex dentate, 2 -fid, awned, 1 -awned. Principal lemma awn from a sinus, 0.3–1.8 mm long overall. Palea 2 -veined. Palea keels scaberulous, with 0.33 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 3.5–4 mm long. Ovary with a few apical hairs. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State. Mexico.** Gulf (Mexico).

**TDWG4.** Veracruz.

### ***Festuca billyi* M. Kerguelen & F. Plonka. *Soc. Ech. Pl. Vasc. Eur. Bassin Medit. Bull.*, 23: 87 (1991).**

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from France. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: France, Chambon sur Lac: Billy.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of F. Billy (fl. 1988) French botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 25–50 cm long. Lateral branches lacking. Leaf-sheaths open for most of their length. Ligule an

eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 10–50 cm long, 2 mm wide, stiff. Leaf-blade venation comprising 7–9(–13) vascular bundles, with 3–5(–7) inner ridges, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth, puberulous, sparsely hairy. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, lanceolate, continuous or interrupted, 5–12 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 7.6–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or ovate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5–7 mm long, chartaceous, glaucous, without keel, 5 -veined, more than 3-veined. Lemma margins ciliate. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.8–3.4 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : France.

### ***Festuca boliviana*** E.B. Alekseev. *Bot. Zhurn.*, 70(9): 1243 (1985).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Bolivia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: Cardenas 769, Jun 1939, Bolivia: Cochabamba (US-1763464).

**Illustrations (Books):** S.A.Renouze, *Gramineas de Bolivia* (1998) (116, Fig 27).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating location. From Bolivia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms 60–100 cm long. Culm-internodes mid-green. Ligule a ciliate membrane, 0.7–1.3 mm long. Leaf-blades conduplicate, 10–30 cm long, 0.8–1.2 mm wide, coriaceous, glaucous. Leaf-blade surface scabrous, rough adaxially, glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 16–22 cm long. Primary panicle branches appressed. Panicle branches glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets linear or lanceolate, laterally compressed, 8–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.5–3 mm long, 0.66–0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.7–4 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5.5–6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acute, muticous or mucronate. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Bolivia.

### ***Festuca borderi*** (Hack.) Richt. *Pl. Eur.* 1:97 (1890).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from France. **Basionym or Replaced Name:** *Festuca ovina* subsp. *borderii* Hack., *Monogr. Festuc. Eur.* 113 (1882)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: France, Vallee d'Eyne: Gautier.

**Illustrations (Books):** No illustration found (BKS).



**Derivation** (Clifford & Bostock 2007): in honor of Henri Bordhre (1825–1889) French teacher and plant collector.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 10–30 cm long. Leaf-sheaths tubular for much of their length, with 0.66 of their length closed, with infolded margins, glabrous on surface. Ligule a ciliolate membrane. Leaf-blades straight or curved, filiform, conduplicate, 0.6–0.85 mm wide. Leaf-blade venation comprising 5–7 vascular bundles, with 5 inner ridges, with sclerenchyma strands below veins, with subepidermal sclerenchyma attached to veins above (midrib & margins). Leaf-blade apex pungent.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong, dense, 5 cm long. Panicle branches glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–7.6 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 4.3–4.9 mm long, 0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 5.2–5.8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, muticous. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–2.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region. Southwestern Europe.**

**Country /Province /State.** : France, Spain.

**Festuca boriana** E.B. Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 83(4): 115 (1978).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online.

**TYPE** from India. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: India, Sikkim, Natula: Bor & Kirat Ram 20552 (K holo).

**Illustrations (Books):** H.J. Noltie, *The Grasses of Bhutan* (2000) (537, Fig. 12).

**Derivation** (Clifford & Bostock 2007): in honor of Norman Loftus Bor (1893–1972) Irish-born Indian forest botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Basal innovations extravaginal and intravaginal. Culms erect, 15–30 cm long. Lateral branches lacking. Leaf-sheaths tubular for much of their length, with 0.5–0.66 of their length closed. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, angular in section, 0.55–0.95 mm wide. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins or attached to veins below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Peduncle antrorsely scabrous above. Panicle contracted, linear, 7–10 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 8.5–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6.8–7.2 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface pubescent. Lemma apex acute, awned, 1 -awned. Principal lemma awn 3–5 mm long overall. Palea 2 -veined. Palea keels scabrous, adorned above, with 0.33 of their length adorned. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 1.5–1.7 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Tropical Asia.

**Country /Province /State. Indian Subcontinent.** Eastern Himalaya.

**TDWG4.** Bhutan, Sikkim.

**Festuca borissii** Reverdatto. *Sist. Zam. Mater. Gerb. Tomsk Gos. Univ.*, 83: 8 (1965).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Russia, Altai, Katon-Karagai: Sapozhnikov (TK holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Boris (1894–1943) King of Bulgaria.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations extravaginal. Culms 6–45 cm long. Leaf-sheaths tubular for much of their length, with 0.66–0.75 of their length closed, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 3–6 cm long, 1–2 mm wide. Leaf-blade venation comprising 7 vascular bundles, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, equilateral or nodding, 1–4 cm long, 0.7–1 cm wide. Primary panicle branches bearing 1–3 fertile spikelets on each lower branch. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5–7 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4 mm long, chartaceous, light brown, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–1.5 mm long overall. Palea 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Siberia, **Middle Asia.** Altai. Kazakhstan, Kirgizistan.

**TDWG4.**

**Festuca bosniaca** Kumm. & Sendtn. *Flora*, ii. 756 (1849).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Yugoslavia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: In pratis subalpinis montis Vlassich 4500–5500 feet, ? 64 ; Yugoslavia, Vlassich: Coll?.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. a Bosnian. From Bosnia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms 30–88 cm long, 1.7–2.6 mm diam. Culm-internodes antrorsely scabrous. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.3–1.6 mm long. Leaf-blades filiform, conduplicate, 0.3–1.2 mm wide. Leaf-blade venation comprising 7–11 vascular bundles, with 7–9 inner ridges, with sclerenchyma strands below veins or above all veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth. Leaf-blade apex pungent.

**Inflorescence.** Inflorescence a panicle. Peduncle antrorsely scabrous above. Panicle open, ovate, nodding, 6–9.5 cm long. Panicle branches flexuous, smooth or scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8.4–13 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.1–7.8 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex obtuse or acute.

**Florets.** Fertile lemma oblong, 5.5–8.8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1.4–2.1 mm long overall. Palea 2 -veined. Palea surface smooth, glabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–4 mm long. Caryopsis with adherent pericarp, obovoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southeastern Europe.

**Country /Province /State.** : Albania, Bulgaria, Italy, Yugoslavia.

**Festuca boyacensis** Stančmk. *Darwiniana* 41(1–4): 128 (-129; figs. 7f-k, 17a) (2003).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Colombia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Colombia: Boyaca: Munic. Aquitania, paramo Los Curies, 3500m, 8 Feb 1999, *Stančmk & Medina 2166* (HT: PRC; IT: COL, FMB).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 89, fig 41 (2007)).

**Derivation** (Clifford & Bostock 2007): L. -ensis. From Department of Boyaca, Colombia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Cataphylls inconspicuous. Basal innovations intravaginal. Culms erect, slender, straight, 30–60 cm long, 1–2 -noded, without nodal roots. Culm-internodes terete. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves mostly basal, 0–2 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined, glabrous on surface. Leaf-sheath auricles absent. Ligule a ciliolate membrane, 0.3–0.6 mm long, membranous, white, entire, truncate. Leaf-blade base symmetrical. Leaf-blades straight or curved, involute, angular in section, 15–20 cm long, 0.4–0.7 mm wide, indurate, glaucous. Leaf-blade midrib indistinct. Leaf-blade venation indistinct, with subepidermal sclerenchyma strands unequal in size, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation or with sclerenchyma strands widened to form a discontinuous subepidermal layer. Leaf-blade surface scaberulous, glabrous. Leaf-blade margins smooth, glabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle, aerial, with 1 peduncles per sheath. Peduncle terete, eglandular, glabrous. Panicle contracted, lanceolate, continuous, dense, straight, 6–15 cm long, 0.5–1 cm wide, bearing many spikelets or few spikelets, contracted about primary branches. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 8.5–9.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes smooth, glabrous. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume lanceolate, 3–3.7 mm long, 0.75 length of upper glume, chartaceous, pallid or light green or purple, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume margins ciliolate. Lower glume apex acute. Upper glume ovate, 4–5.2 mm long, 0.66 length of adjacent fertile lemma, chartaceous, pallid or light green or purple, without keels, 3 -veined. Upper glume margins ciliolate. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, symmetrical, 6–7.5 mm long, chartaceous, pallid or light green or purple, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous. Lemma apex awned, 1 -awned. Principal lemma awn stiff, 1–2 mm long overall. Palea 0.8 length of lemma, 2 -veined. Palea keels ciliolate. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 0.9–1.3 mm long. Ovary glabrous. Caryopsis with adherent pericarp, lanceolate. Hilum linear, 0.5 length of caryopsis.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Colombia.

**Festuca brachyphylla** Schult. *Mant.* ii. 646 (1824).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et

al, *Flora of China* 22 (Poaceae) (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Melville Island. **Basionym or Replaced Name:** *Festuca brevifolia* R. Br., *Chlor. Melvill.* 31 (1823). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: ST, LPT: *Parry s.n.*, (LE). "Name was written by Brown" Herb.Mertens.

LT: *Edwards*, 1819–1820, [Canada, NWT] Melville Island (BM).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (429, as subspecies *brachyphylla*, *breviculmis* & *coloradoensis*), S-L Chen et al, *Flora of China*, Illustrations, *Poaceae* (2007) (Fig.334).

**Derivation** (Clifford & Bostock 2007): Gk. brachys, short; phyllon, leaf. Leaf-blades short.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms 10–15 cm long. Leaf-sheaths tubular for much of their length, with 0.5–0.75 of their length closed, with flat margins, glabrous on surface. Ligule a ciliate membrane. Leaf-blades filiform, conduplicate, 0.5–0.7 mm wide, stiff. Leaf-blade venation comprising 5–7 vascular bundles, with 1–3 inner ridges, with 5 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth, glabrous or puberulous, sparsely hairy.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, dense, 2–4 cm long. Primary panicle branches simple, bearing 1–2 fertile spikelets on each lower branch. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5.5–7.3 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.2–4.1 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 3.7–5.5 mm long, chartaceous, glaucous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.2–2 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 0.7–1.3 mm long. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

Vegetative proliferation absent, or occurs.

$2n = 28$  (1 ref TROPICOS), or 42 (5 refs TROPICOS).

**Distribution (TDWG).** Continent. Europe, Temperate Asia, North America.

**Region. Northern Europe, Eastern Europe.**

**Country /Province /State.** : Svarlbad. North European Russia. Siberia, Russian far east, **Middle Asia, China, Mongolia.** Altay, Buryatiya, Chita, Irkutsk, Krasnoyarsk, Tuva. Amur, Kamchatka. Kazakhstan, Kirgizistan, Turkmenistan, Tadjikistan. China North-Central, Qinghai, Tibet, Xinjiang. Mongolia. **Subarctic America, Western Canada, Eastern Canada, Northwest USA, Southwestern USA, South-central USA.** Aleutian Is, Alaska, Yukon, Northwest Territories, Nunavut, Greenland. Alberta, British Columbia, Manitoba, Saskatchewan. Labrador, New Brunswick, Newfoundland, Nova Scotia, Ontario, Prince Edward I, Quebec. Colorado, Idaho, Montana, Oregon, Washington, Wyoming. Arizona. New Mexico.

**TDWG4.** Gansu.

**Festuca breistrofferi** E.A.Chas, M.Kerguelen & F.Plonka. *Lejeunia*, 142: 9 (1993).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from France. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: France, Gorges de la Meouge: Chas & Plonka.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of Maurice Andre Frantz Breistroffer (1910–1986) French Museum administrator.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 25–45 cm long. Lateral branches lacking. Leaf-sheaths open for most of their length. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 10–25 cm long, 2–2.5 mm wide, stiff,

mid-green or glaucous, without exudate or pruinose. Leaf-blade venation comprising 7–9 vascular bundles, with 3–5 inner ridges, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth or scaberulous, pubescent. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 5–12 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–10 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 7–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or ovate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4.5–6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface glabrous. Lemma apex acute, mucicous or mucronate or awned, 1 -awned. Principal lemma awn 0–1.5 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : France.

### ***Festuca breviaristata*** Pilger. *Engl. Jahrb.* xxv. 717. (1898).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Ecuador. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: A. Stuebel 207, Oct–Nov 1971, Ecuador: Pichincha: Mount Puntas, 4400 m (B; IT: US-2875385 (fragm. ex B), S).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. brevis*, short; arista, bristle; -ata, possessing. Glumes or lemmas shortly awned.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect or geniculately ascending, 25–50 cm long, 1 -noded. Culm-internodes smooth or scaberulous. Leaf-sheaths open for most of their length, glabrous on surface. Ligule a ciliolate membrane, 0.5–1 mm long, truncate. Leaf-blades involute, 12–30 cm long, 1–2 mm wide, stiff. Leaf-blade surface smooth or scaberulous, rough abaxially, pubescent, hairy adaxially. Leaf-blade margins scaberulous. Leaf-blade apex pungent.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, 8–15 cm long. Primary panicle branches appressed, bearing spikelets almost to the base. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4–5.5 mm long, 0.8–0.9 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface asperulous, rough above. Lower glume apex acute. Upper glume lanceolate, 5–6.2 mm long, 0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface asperulous, rough above. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 6–7.2 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex dentate, 2 -fid, acute, awned, 1 -awned. Principal lemma awn from a sinus, 0.5–1 mm long overall. Palea 2 -veined. Palea keels scabrous. Palea surface pubescent, hairy above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Bolivia, Ecuador, Peru.

### ***Festuca breviglumis*** Swallen. *Contrib. U. S. Nat. Herb.* xxix. 398 (1950).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Costa Rica. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Costa Rica: Prov. San Josi: in dense oak and bamboo forest near Laguna de la Escuadra, NE of El Copey, alt. 2000–2200 m, 16 Dec. 1925, *Standley 41998* (HT: US-1307123).

**Illustrations (Books):** R.McVaugh, *Flora Nova-Galiciana* Vol.14 *Gramineae* (1983), W.Burger, *Flora Costaricensis* 15, *Gramineae: Fieldiana Botany New Series* 4 (1980) (241, Fig 84).

**Derivation** (Clifford & Bostock 2007): *L. brevis*, short; gluma, husk. One or both glumes short with respect to the length of the spikelet.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Culms erect or geniculately ascending, 60–130 cm long, 3 mm diam. Culm-internodes distally glabrous. Culm-nodes constricted, brown, glabrous. Lateral branches lacking. Leaf-sheaths 10–25 cm long, glabrous on surface. Ligule an eciliate membrane, 0.5–0.8 mm long. Leaf-blades flat or conduplicate, 15–35 cm long, 3–7 mm wide. Leaf-blade surface scaberulous, rough abaxially, glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, elliptic, nodding, 15–27 cm long, 7–15 cm wide, bearing few spikelets. Primary panicle branches 2-nate, 9–18 cm long. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 15–20 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, 3–5 mm long, 0.5–0.6 length of upper glume, chartaceous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 6.5–8.5 mm long, 0.5–0.6 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 14–15.5 mm long, chartaceous, without keel, rounded except near apex, 5-veined, more than 3-veined. Lemma surface scabrous. Lemma apex acuminate, awned, 1-awned. Principal lemma awn 10–15 mm long overall. Palea 0.66–0.75 length of lemma, 2-veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 4–4.5 mm long, purple. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** North America, South America.

**Country /Province /State. Mexico.** Central Mexico, Northeast Mexico, Southwest Mexico, Southeast Mexico. **Mesoamerica.** Costa Rica, Guatemala, Panama.

**TDWG4.** Morelos, Aguascalientes, Durango, Guanajuato, Jalisco, Michoacan, Oaxaca, Chiapas.

## **Festuca (Pseudobromus) breviligulata** (A.Camus) FORSAN. (2002).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Madagascar. **Basionym or Replaced Name:** *Pseudobromus biflorus* A.Camus, *Bull. Soc. Bot. France*, 77: 512 (1931). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Madagascar, Tsaratanana: Perrier 16150 (P syn).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. brevis*, short; *ligula*, little tongue; *-ata*, possessing. Ligule short.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms 60–80 cm long. Culm-internodes smooth, distally glabrous. Leaf-sheaths striately veined, glabrous on surface. Ligule an eciliate membrane, 1 mm long, lacerate, truncate. Leaf-blades 25–35 cm long, 8–10 mm wide. Leaf-blade surface scaberulous, glabrous. Leaf-blade apex acuminate.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, effuse, 30–32 cm long. Primary panicle branches ascending, 5–8 cm long. Panicle branches glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 1 fertile florets, with diminished florets at the apex. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, subterete, 18–24 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture. Lower glume lanceolate, 4–4.2 mm long, 0.7–0.8 length of upper glume, membranous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5.5 mm long, 0.75 length of adjacent fertile lemma, membranous, without keels, 5-veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 7–8 mm long, membranous, without keel, 3-veined, 0–3-veined. Lemma surface asperulous. Lemma apex dentate, 2-fid, awned, 1-awned. Principal lemma awn subapical, 10–15 mm long overall. Palea 9 mm long. Rhachilla extension 3 mm long, glabrous. Apical sterile florets 1 in number,

barren, lanceolate, 3 mm long. Apical sterile lemmas awned, 1 -awned. Apical sterile lemma awns 7–8 mm long.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, oblong, 5 mm long. Hilum linear.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** Western Indian ocean. Madagascar.

**Festuca brevipaleata** (St.-Yves) E.B.Alekseev. *Bot. Zhurn.*, 71(8): 1113: (1986).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Madagascar. **Basionym or Replaced Name:** *Festuca camusiana* var. *brevipaleata* St.-Yves, *Bull. Soc. Bot. Geneve, ser. 2*, 18: 158 (1926)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Madagascar: massif d'Andringitra, bords des eaux, 2000 m, *Perrier de la Bathie 14433* (HT: P; IT: B).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. brevis*, short; *palea*, scale; *-ata*, possessing. Palea much reduced.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms geniculately ascending, 50–100 cm long. Leaf-sheaths open for most of their length, with 0.25 of their length closed. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, angular in section, 6–25 cm long, 1–2 mm wide. Leaf-blade venation comprising 7 vascular bundles, with 5 inner ridges, with 7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, 10–30 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 8–13 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 9.5–10.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 5.5–11 mm long overall. Palea 7.4–8.5 mm long, 0.75 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.2–2.7 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Hilum linear.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** Western Indian ocean. Madagascar.

**Festuca brevipila** R. Tracey. *Pl. Syst. Evol.*, 128(3–4): 287 (1977).

Regarded by K as a synonym (*F. trachyphylla*).

**Accepted by:** U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Niederosterreich, Waldviertel, Amplendorf (nordlich von Schrems), in der Nahe des Houses Nr. 55, in sehr flachgrundidigen Rasen uber Granit, 20 May 1977, A. Weber (HT: WU).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. brevis*, short; pilum, hair. Lemmas or glumes bearing short hairs.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 18–37 cm long. Culm-internodes smooth. Leaf-sheaths open for most of their length, with 0.33 of their length closed, with flat margins, glabrous on surface or pubescent. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 0.8–1.1 mm wide, glaucous, without exudate or pruinose. Leaf-blade venation comprising 7–9 vascular bundles, with 3 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with unevenly thickened subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 3–4 cm long. Primary panicle branches sparsely divided. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.8–7.2 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.4 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface scabrous, rough above. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4.3 mm long, chartaceous, glaucous, without keel, 5 -veined, more than 3-veined. Lemma surface pubescent. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1–2 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Dissemínule comprising a caryopsis and palea.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Northern Europe (\*), Middle Europe.

**Country /Province /State.** : Great Britain (\*). : Austria.

### **Festuca brevissima** Yurtsev. *Bot. Zhurn.*, 57(6): 645 (1972).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Russia, Chukotka, Elguytgyn Lake: Yurtsev et al. K-61 (LE holo).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (429).

**Derivation** (Clifford & Bostock 2007): *L. brevis*, short; *-issima*, most. Leaf-blades very short.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Culms 3–10 cm long, 1 -noded. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane. Leaf-blades straight, filiform, convolute, 1.5–5 cm long, 0.25–0.4 mm wide. Leaf-blade venation comprising 7 vascular bundles, with 5 secondary veins, with 3 inner ridges, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth. Leaf-blade apex abruptly acute.

**Inflorescence.** Inflorescence a panicle, comprising 2–8 fertile spikelets. Peduncle smooth or scaberulous above, glabrous. Panicle open, ovate, 1–4 cm long. Primary panicle branches spreading, bearing 1 fertile spikelets on each lower branch. Panicle branches with occasional prickles. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5–6 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 2.5 mm long, chartaceous, purple, without keel, 5 -veined, more than 3-veined. Lemma surface smooth or asperulous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.5–4.5 mm long overall. Palea 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 0.7–0.8 mm long. Ovary glabrous. Caryopsis with adherent pericarp, 2.5 mm long, glabrous. Hilum linear.

$2n = 14$  (2 refs TROPICOS).

**Distribution (TDWG). Continent.** Temperate Asia, North America.

**Country /Province /State.** Russian far east. Kamchatka. **Subarctic America, North-central USA.** Aleutian Is, Alaska, Yukon. Minnesota.

**TDWG4.**



**Festuca brigantina** (I. Markgraf-Dannenberg) I. Markgraf-Dannenberg. *Bot. J. Linn. Soc.*, 76(4): 328 (1978).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online, U. Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G. Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Portugal. **Basionym or Replaced Name:** *Festuca ovina* subsp. *brigantina* Mark.-Dann., *Agron. Lus.* 28:69 (1967). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Portugal, Carrazedo: Silva, Rainha & Martins 7655 (LISE holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ina, belonging to. From Brigantium, now Briangon, France.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 25–40 cm long. Culm-internodes smooth or scaberulous. Leaf-sheaths open for most of their length, with 0.33–0.5 of their length closed, with flat margins, smooth or antrorsely scabrous, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades curved, filiform, conduplicate, circular in section, 0.5–0.75 mm wide, stiff, glaucous. Leaf-blade venation comprising 5–7 vascular bundles, with 1 inner ridges, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, rough adaxially. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 5–7.5 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–8.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 4–4.3 mm long, 0.75 length of adjacent fertile lemma, chartaceous, with scarious margins, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 5.5–6 mm long, chartaceous, glaucous or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.6–1.7 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 56$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : Portugal.

**Festuca brunnescens** (Tsvelev) A.I. Galushko. *Novosti Sist. Vyssh. Rast.*, 13: 254 (1976).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online.

**TYPE** from Russia. **Basionym or Replaced Name:** *Festuca rupicola* subsp. *brunnescens* Tsvelev, *Bot. Zhurn.*, 56(9): 1255 (1971). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Russia, Elenovka: Schelkovnikov & Kara-Murza (LE holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. *brunnesco*, become brown. Spikelets pale brown.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms 20–50 cm long. Leaf-sheaths open for most of their length or tubular for much of their length, with 0.15–0.33 of their length closed, antrorsely scabrous. Leaf-sheath auricles erect. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 0.5–0.8 mm wide, glaucous, pruinose. Leaf-blade venation comprising 5 vascular bundles, with 3(–5) inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation or with sclerenchyma strands widened to form a discontinuous subepidermal layer or with unevenly thickened subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, glabrous.

**Inflorescence.** Inflorescence a panicle. Peduncle antrorsely scabrous above. Panicle open, lanceolate, dense, 3–6 cm long. Panicle branches scaberulous or scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 8.5–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.3–5.3 mm long, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma elliptic, 4.8–6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1–3 mm long overall, 0.25–0.5 length of lemma. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear.  $2n = 28$  (2 refs TROPICOS).

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Caucasus and Western Asia. North Caucasus, Transcaucasus. Turkey.

**Festuca bucegiensis** I. Markgraf-Dannenberg. *Bot. J.Linn. Soc.*, 76(4): 325 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Rumania. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Rumania, Bucegi: Nyarady (CL holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Bucegi, Romania.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms 6–12 cm long. Leaf-sheaths unthickened at base, tubular for much of their length, with 1 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect. Ligule an eciliate membrane or a ciliate membrane, obtuse. Leaf-blades filiform, conduplicate, 0.3–0.65 mm wide. Leaf-blade venation comprising 5–7 vascular bundles, with 3 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, 1–2.5 cm long. Primary panicle branches simple, bearing 1–2 fertile spikelets on each lower branch. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5.2–6.2 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3–4.6 mm long, 0.75–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 3.8–4.7 mm long, chartaceous, mid-green, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.6–2.1 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southeastern Europe.

**Country /Province /State.** : Romania.

**Festuca buchtienii** Hackel. *Fedde, Repert. Nov. Sp.* vi. 160 (1908).

Regarded by K as a synonym (*F. humilior*).

**Accepted by:** U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Bolivia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Buchtien* 870, 25 Mar 1907, Bolivia: La Paz, 3700 m, en faldeos (W; IT: LIL, SI, US-2875388 (fragm. ex W)).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Otto Buchtien (1859–1946) German botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 30–50 cm long, 1-noded, with 0.5 of their length below uppermost node. Culm-internodes terete, scaberulous. Leaf-sheaths open for most of their length, glabrous on surface. Leaf-sheath auricles absent. Ligule a ciliolate membrane, 0.5 mm long. Leaf-blades erect, filiform, convolute, 8–12 cm long, 0.8–1 mm wide, stiff. Leaf-blade venation comprising 10–13 vascular bundles, with 5 inner ridges, with 15 subepidermal sclerenchyma strands, with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scaberulous, rough adaxially, pubescent, hairy abaxially. Leaf-blade apex abruptly acute or acute.

**Inflorescence.** Inflorescence a panicle, embraced at base by subtending leaf. Panicle open, linear or oblong, 8–10 cm long, bearing few spikelets. Primary panicle branches 2-nate. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate or elliptic, laterally compressed, 8–9 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1–1.5 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear or lanceolate, 2.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1-veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex obtuse. Upper glume lanceolate, 3–3.5 mm long, 0.5 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume primary vein scabrous. Upper glume apex obtuse.

**Florets.** Fertile lemma lanceolate, 6–7 mm long, chartaceous, without keel, 5-veined, more than 3-veined. Lemma apex acute, mucronate or awned, 1-awned. Principal lemma awn 0.5–1 mm long overall. Palea 1 length of lemma, 2-veined. Palea keels ciliolate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3 mm long, purple. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** Europe (\*), South America.

**Region. Northern Europe (\*).**

**Country /Province /State.** : Great Britain (\*). **Western South America, Southern South America.** Bolivia. Argentina Northwest.

**TDWG4.** Jujuy.

**Festuca burgundiana** P. Auquier & M. Kerguelen. *Lejeunia*, 89: 63 (1977).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from France. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: France, Bourgneuf Val d;Or: Auquier 1139 (K iso).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating connection. From Burgundy, France.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 12–50 cm long. Lateral branches lacking. Leaf-sheaths open for most of their length, with 0.25 of their length closed. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 3–40 cm long, 1–1.5 mm wide, stiff, glaucous, without exudate or pruinose. Leaf-blade venation comprising 7–9 vascular bundles, with 3 inner ridges, with 3–5 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear or lanceolate, interrupted, 1.5–6 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 6–8.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or ovate, chartaceous, without keels, 3-veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4.2–5.5 mm long, chartaceous, without keel, 5-veined, more than 3-veined. Lemma surface glabrous. Lemma margins eciliate or ciliolate. Lemma apex acute, awned, 1-awned. Principal lemma awn 0.6–2.5 mm long overall. Palea 2-veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG).** Continent. Europe.  
**Region.** Southwestern Europe.  
**Country /Province /State.** : France.

**Festuca burmanica** E.B.Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 83(4): 116 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Myanmar. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Burma, Enakan: Kingdon-Ward 22686 (K holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -*ica*, belonging to. From Burma, now Myanmar.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 45–75 cm long. Culm-internodes distally glabrous. Lateral branches lacking. Leaf-sheaths open for most of their length, with 0.33 of their length closed, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, angular in section, 0.5–0.8 mm wide. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with sclerenchyma strands below veins, with 7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma attached to veins below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate or oblong, 10–20 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong or ovate, laterally compressed, (5–)7–12 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5–5.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface glabrous. Lemma apex acute, awned, 1 -awned. Principal lemma awn (5–)7–12 mm long overall. Palea 2 -veined. Palea keels scabrous, adorned all along. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 1.6–1.9 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG).** Continent. Tropical Asia.

**Country /Province /State.** Indo-China. Myanmar.

**Festuca burnatii** St.- Yves. *Ann. Conserv. & Jard. Bot. Geneve*, xv. & xvi. 347 (1913).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Spain. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: LT: *E. Levier s.n.*, 13 Jul 1879, Spain: Cantabria, montes Picos de Europa in herbosis alpinis, circa Aliva, ad fodinas zinci (FI; ILT: FI). LT designated by Gutierrez Villarmas, *Bol. Ci. Nat. IDEA* 42: 19–20 (1992).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Emile Burnat (1828–1920) Swiss engineer, magistrate and amateur botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms 15–25 cm long, 1.2 mm diam. Leaf-sheaths transversely wrinkled, glabrous on surface. Ligule an eciliate membrane, 5–7 mm long, scarious. Leaf-blades filiform, 0.5–0.7 mm wide. Leaf-blade venation comprising 5–7 vascular bundles, with 3–5 inner ridges, with sclerenchyma strands below veins or above all veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface ribbed, smooth. Leaf-blade apex pungent.

**Inflorescence.** Inflorescence a panicle. Peduncle antorsely scabrous above. Panicle open, ovate, 4–7 cm long. Primary panicle branches spreading. Panicle branches capillary, scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet, shiny. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5–5.5 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 5.5–6 mm long, chartaceous, yellow or purple, suffused with last colour, shiny, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2–3 mm long overall. Palea 2 -veined. Palea keels ciliate, adorned above, with 0.66 of their length adorned. Palea surface glabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–3.5 mm long. Caryopsis with adherent pericarp, obovoid. Hilum linear. Disseminule comprising a caryopsis.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : Spain.

**Festuca bushiana** (St.- Yves) Tsvelev. *Bot. Zhurn.*, 56(9): 1254 (1971).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. **Basionym or Replaced Name:** *Festuca rubra* subsp. *bushiana* St.-Yves, *Candollea* 5:125 (1932). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Russia, Tepio-Kara: Bush 764 (LE holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating connection. In honor of Elizabeth Alexandrowna Busch (1886–1960) and Nicolai Adolfowitsch Busch (1869–1941) who collected in the Caucasus, former Soviet Union.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 20–34 cm long. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, antrorsely scabrous. Ligule a ciliate membrane. Leaf-blades filiform, conduplicate, 0.4–0.65 mm wide, glaucous. Leaf-blade venation comprising 5 vascular bundles, with 1–3 inner ridges, with 3 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong, 3–5 cm long. Panicle branches smooth or scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 7–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.2–4.2 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 4.1–5.5 mm long, chartaceous, dark green or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1–2.5 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–2.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Hilum linear, 1 length of caryopsis.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Caucasus, Western Asia. North Caucasus, Transcaucasus. Turkey.

**TDWG4.**

**Festuca caerulea** Tenore, non Desv. (1798). *Fl. Nap.* iii. 81 (1829).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Italy. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Italy, Naples: Coll?.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. caerulea, become bluish; Foliage glaucous.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths thickened and forming a bulb, persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms 60–130 cm long. Culm-internodes smooth. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.5–1 mm long, truncate or obtuse. Leaf-blades linear, flat, 4–25 cm long, 1–2 mm wide. Leaf-blade venation comprising 7–11 vascular bundles. Leaf-blade surface ribbed, grooved adaxially, glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, loose, 5–10 cm long. Panicle axis pubescent. Panicle branches straight. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 10–13 mm long, 2–3 mm wide, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4.5–5.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume oblong, 5.5–6.5 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 6–7 mm long, 2 mm wide, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins prominent. Lemma apex attenuate, mucronate. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Hilum linear.

**Distribution (TDWG). Continent.** Europe, Africa.

**Region.** Southwestern Europe, Southeastern Europe.

**Country /Province /State.** : Spain. : Italy, Sicily. **Northern Africa.** Algeria, Tunisia.

**Festuca cagiriensis** Timb. *Bull. Soc. Hist. Nat. Toul.*3: 128 (1869).

**TYPE** from France. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Mont Cagiire: Timbal-Lagrave.

**Festuca cajamarcae** Pilger. *Engl. Jahrb.* vli. 513 (1906).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: A. *Weberbauer 3974*, May 1904, Peru: Cajamarca: Pas Coymolache (B; IT: BAA-1171 (fragm.), US-2875389). Collection number incorrectly cited as 3972..

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): from Cajamarca Province, Peru.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 25–40 cm long, 0 -noded. Ligule an eciliate membrane. Leaf-blades involute, 8–15 cm long, 2–5 mm wide, stiff. Leaf-blade apex acute or acuminate.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, lanceolate, 5–10 cm long. Primary panicle branches appressed, bearing spikelets almost to the base. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 10–11 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes glabrous.

**Glumes.** Glumes persistent, similar, with lower narrower than upper, shorter than spikelet. Lower glume lanceolate, 4.5–5.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface asperulous, rough above. Lower glume apex acute. Upper glume lanceolate, 5.5–6.8 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface asperulous, rough above. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 7.5–9 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acute, mucicous or mucronate. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Peru.

**Festuca calabrica** Huter, Porta & Rigo ex Hack. *Monogr.* :190 (1882).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Italy. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Italy, Pollino: Huter, Porta & Rigo.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Calabria, Italy.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Cataphylls evident. Rhizomes elongated. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations extravaginal. Culms 20–40 cm long. Leaf-sheaths open for most of their length, glabrous on surface. Ligule an eciliate membrane, 6–10 mm long. Leaf-blades convolute, 2–5 mm wide, glaucous. Leaf-blade venation comprising 13–15 vascular bundles, with sclerenchyma strands below veins or above all veins, with subepidermal sclerenchyma attached to veins above and below. Leaf-blade surface ribbed.

**Inflorescence.** Inflorescence a panicle. Panicle open. Primary panicle branches ascending. Panicle branches capillary, flexuous, scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9.5–11 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 6.9 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 7.3 mm long, chartaceous, light green, without keel, 5 -veined, more than 3-veined. Lemma lateral veins distinct. Lemma apex acute, muticous. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, obovoid. Hilum linear. Disseminule comprising a caryopsis.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southeastern Europe.

**Country /Province /State.** : Italy.

**Festuca calcarea** Velchev. *Phytologia Balcan.* 8(1): 11 . (2002).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Bulgaria. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Bulgaria, Borov Kamuk: Velchev (SOM holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. *calx*, lime; -*arius*, pertaining to. Growing on limestone soils.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms erect, 20–40 cm long. Culm-internodes channelled, distally pubescent. Leaf-sheaths open for most of their length, with 0.25 of their length closed, glabrous on surface. Leaf-sheath auricles erect. Ligule a ciliolate membrane. Leaf-blades filiform, conduplicate, angular in section, 0.2–0.4 mm wide. Leaf-blade midrib keeled beneath. Leaf-blade venation comprising 5–7 vascular bundles, with 3–5 inner ridges, with sclerenchyma strands below veins, with 5–7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation.

**Inflorescence.** Inflorescence a panicle. Peduncle pubescent above. Panicle contracted, linear, interrupted, 5–7.5 cm long. Panicle axis pubescent. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6–11 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, much thinner on margins, without keels, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.5–5 mm long, 0.9 length of adjacent fertile lemma,

chartaceous, with hyaline margins, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 5–6 mm long, chartaceous, viscid, without keel, 5 -veined, more than 3-veined. Lemma midvein scabrous. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2.5–3 mm long overall, 0.5 length of lemma. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Vegetative proliferation absent, or occurs.

**Distribution (TDWG). Continent.** Europe.

**Region. Southeastern Europe.**

**Country /Province /State. :** Bulgaria.

**Festuca caldasii** (H.B.K.) Kunth, appl incert. *Rev. Gram.* i. 132. (1829).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Ecuador. **Basionym or Replaced Name:** *Bromus caldasii* Kunth, *Nov. Gen. Sp. (quarto ed.)* 1: 151 (1815) [1816]

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: ST: *Humboldt & Bonpland s.n.*, Feb, Ecuador: Pichincha: Conocoto & Sangolqui (P).

ST: *Anonymous s.n.*, no date, Ecuador: Prope Chillo (P; IT: B, US-865519 (fragm. ex P)).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 37, fig 12 (2007)).

**Derivation** (Clifford & Bostock 2007): in honor of Mancisco Josi Caldas (1741–1816) Colombian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, culms solitary or caespitose, clumped loosely. Cataphylls inconspicuous. Rhizomes absent or short, fleshy, not obviously scaly. Basal innovations extravaginal. Culms erect, of moderate stature, straight, 80–100 cm long, without nodal roots. Culm-internodes terete. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves basal and cauline, 3–5 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined, smooth, glabrous on surface. Ligule an eciliate membrane, 2 mm long, membranous, white, erose. Leaf-blade base symmetrical. Leaf-blades straight or flexuous, linear in section, 30–40 cm long, 3–6 mm wide, flaccid, mid-green. Leaf-blade midrib evident. Leaf-blade venation distinct, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scaberulous, glabrous. Leaf-blade margins smooth, glabrous. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle terete, eglandular, glabrous. Panicle open, ovate or pyramidal, continuous, loose or effuse, straight, 15–25 cm long. Primary panicle branches spreading, 2 -nate, moderately divided, naked below. Panicle branches straight or arcuate. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–7(–8) fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 15–17 mm long, 5–7 mm wide, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes scaberulous. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume linear, 3.5–4.5 mm long, 0.66 length of upper glume, chartaceous, pallid or light green, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume lanceolate, 6–7 mm long, 0.8–0.9 length of adjacent fertile lemma, chartaceous, pallid or light green, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, symmetrical, 7–9 mm long, chartaceous, pallid or light green or purple, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex attenuate or setaceously acuminate, muticous or awned, 1 -awned. Principal lemma awn stiff, 1–3 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Western South America.** Colombia, Ecuador.

**Festuca californica** Vasey. *Contrib. U. S. Nat. Herb.* i. 277. (1893).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from USA. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *H.N. Bolander 1505*, 1862, USA: California: Oakland Co.: Oakland hills (US-556212).



**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (411, as subspecies *californica*, *hitchcockiana* & *parishii*).

**Images:** R.Darke, *Ornamental Grasses* (2004);, R.Darke, *The Encyclopaedia of Grasses for Liveable Landscapes* (2007);.

**Derivation** (Clifford & Bostock 2007): *L. -ica*, belonging to. From California, USA.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms 60–130 cm long. Culm-internodes antrorsely scabrous. Lateral branches lacking. Leaves mostly basal. Leaf-sheaths antrorsely scabrous, glabrous on surface, outer margin hairy. Leaf-sheath oral hairs ciliate. Ligule an eciliate membrane, 0.5 mm long. Collar pubescent or pilose. Leaf-blades conduplicate or involute, 2–3 mm wide, stiff. Leaf-blade surface scabrous, glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, loose, 15–25 cm long, with spikelets clustered towards branch tips. Primary panicle branches spreading or drooping, 2-nate. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10–15 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 2 mm long.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4–7 mm long, 0.66–0.8 length of upper glume, chartaceous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 6–8 mm long, 0.66–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 9 mm long, chartaceous, purple, without keel, 5-veined, more than 3-veined. Lemma lateral veins obscure. Lemma surface puberulous. Lemma apex acute, muticous or awned, 1-awned. Principal lemma awn 0–2 mm long overall. Palea 1 length of lemma, 2-veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3.5–5.5 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** Northwest USA, Southwestern USA. Oregon. California.

**Festuca callieri** (Hackel) Markgraf. *Fedde, Repert. Beih.* . III. 278 (1932).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Turkey. **Basionym or Replaced Name:** *Festuca ovina* var. *argaea* Hack., *Ann. Nat. Hofmus. Wien* 20:432 (1903). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Turkey, Endschias Dag: Penther & Zederbauer.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Alexis Callier (1850–1925) who collected in Eastern Europe.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 15–58 cm long. Leaf-sheaths open for most of their length, with flat margins, smooth or scaberulous. Ligule an eciliate membrane. Leaf-blades deciduous at the ligule, filiform, conduplicate, 0.4–0.6 mm wide, stiff, glaucous, pruinose. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with unevenly thickened subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, glabrous, hairless except near base.

**Inflorescence.** Inflorescence a panicle. Peduncle antrorsely scabrous above. Panicle open, dense, 3–7.5 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 7–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 0.7–0.8 length of upper glume, chartaceous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume linear or lanceolate, 3.7–4.6 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, with scarious margins, without keels, 3-veined. Upper glume apex acuminate.

**Florets.** Fertile lemma linear or lanceolate, 4.6–6.1 mm long, chartaceous, glaucous, without keel, 5-veined, more than 3-veined. Lemma apex acuminate, awned, 1-awned. Principal lemma awn 2–3 mm long

overall, 0.33–0.6 length of lemma. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

$2n = 14$  (2 refs TROPICOS).

**Distribution (TDWG). Continent.** Europe, Temperate Asia.

**Region. Southeastern Europe, Eastern Europe.**

**Country /Province /State.** : Bulgaria, Greece, Romania, Yugoslavia. Krym. **Caucasus, Western Asia.** Transcaucasus. Turkey.

**TDWG4.**

### **Festuca calligera** (Piper) Rydb. *Bull. Torrey Bot. Club* 36: 537 (1909).

Regarded by K as a synonym (*F. ovina*).

**Accepted by:** U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from USA. **Basionym or Replaced Name:** *Festuca ovina* subsp. *calligera* Piper, *Contr. U.S. Natl. Herb.* 10(1): 27 (1906)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *H.H.Rusby 901*, 1883, Flagstaff, Arizona (MO).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (439).

**Derivation** (Clifford & Bostock 2007): Gk. kallion, more beautiful; L. gero, bear.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** **Southwestern USA.** Arizona, Utah.

### **Festuca callosa** (Piper) St.-Yves. *Candollea* 2:291 (1925).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Mexico. **Basionym or Replaced Name:** *Festuca ovina* subsp. *callosa* Piper, *Contr. U.S. Natl. Herb.* 17(3): 379 (1913)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Mexico: Puebla: collected on a rocky hill at 2500 m. alt., Esperanza, 28 Aug 1910, *A.S. Hitchcock 6490* (HT: US-691783).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. hard-skinned. Florets in some way thickened.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms erect or geniculately ascending, 50–70 cm long, 2–3 -noded. Lateral branches lacking. Leaf-sheaths open for most of their length, mostly shorter than adjacent culm internode, without keel. Ligule an eciliate membrane, 0.2 mm long. Leaf-blades filiform, conduplicate, 10–20 cm long, 0.3–0.6 mm wide. Leaf-blade surface scaberulous, glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, 8–12 cm long. Primary panicle branches 2 -nate. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 7–12 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 2–3 mm long, 0.6–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume oblong, 3–4 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma ovate, 3.5–5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, muticous. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** **Mexico.** Central Mexico.

Puebla.

**Festuca calva** (Hackel) Richt. *Pl. Eur.* i. 104 (1890).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Yugoslavia. **Basionym or Replaced Name:** *Festuca varia* var. *calva* Hack., *Monogr. Festuc. Eur.* 174 (1882)

T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Yugoslavia, Begunsiga: Hackel (K iso).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms 32–55 cm long. Culm-internodes smooth. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.6–1.2 mm long. Leaf-blades filiform, conduplicate, 0.5–0.95 mm wide, stiff. Leaf-blade venation comprising 7–9 vascular bundles, with 7 inner ridges, with sclerenchyma strands above some veins or above all veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth. Leaf-blade apex pungent.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, nodding, 6–9 cm long. Panicle branches glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9–10.3 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4–6.6 mm long, 0.9 length of adjacent fertile lemma, scarious, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma ovate, 3.5–5 mm long, chartaceous, much thinner on margins, mid-green or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, mucous or mucronate. Palea 1 length of lemma, 2 -veined. Palea surface scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–4 mm long. Caryopsis with adherent pericarp, obovoid. Hilum linear. Disseminule comprising a caryopsis.

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe, Southeastern Europe.

**Country /Province /State.** : Austria. : Italy, Yugoslavia.

**Festuca camerunensis** E.B.Alekseev. *Bot. Zhurn.*, 72(9): 1267 (1987).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Cameroon. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Cameroun, Cameroon Mt.: Stelle 33 (K holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. -ensis*, denoting origin. From Cameroon Mountain or Republic of Cameroon, West Africa.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths withering. Culms 15–35 cm long, 1.5–2 mm diam., 2 -noded, with 0.25 of their length below uppermost node. Culm-internodes smooth. Leaf-sheaths tubular for much of their length, with 0.5–0.66 of their length closed, smooth. Ligule a ciliolate membrane, 0.2–0.5 mm long, truncate. Leaf-blades straight, filiform, conduplicate, angular in section, 5–20 cm long, 0.6–1 mm wide, indurate, dark green. Leaf-blade venation comprising 7 vascular bundles, with 3–5 inner ridges, with 7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 6–9 cm long. Primary panicle branches appressed, 2–4 cm long. Panicle axis smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 9–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 5.2–5.7 mm long, membranous, much thinner on margins, without keels, 3 -veined. Lower glume apex acute. Upper glume lanceolate, 6.5–7 mm long, chartaceous, without keels, 3 -veined. Upper glume apex entire or dentate, 3 -fid, obtuse.

**Florets.** Fertile lemma elliptic, 7.5–8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous. Lemma apex acute, mucicous or awned, 1 -awned. Principal lemma awn 0.8–1.5 mm long overall. Palea 2 -veined. Palea keels scabrous, with 0.33 of their length adorned. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 0.7–1 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear, 1 length of caryopsis.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** West-central tropical Africa. Cameroon.

**Festuca campestris** Rydb. *Mem. N. York Bot. Gard.* i. 57. (1900).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from USA. **Basionym or Replaced Name:** *Festuca scabrella* var. *major* Vasey, *Contr. U.S. Natl. Herb.* 1(8): 278–279 (1893)

. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *W.N. Suksdorf 118*, 1884, USA: Washington: Spokane Co.: on prairies (US-556128; IT: MO).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico Vol 24 Poaceae*, part 1 (2007) (409).

**Derivation** (Clifford & Bostock 2007): L. of the field. Uncultivated.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms erect, 60–100 cm long. Leaf-sheath auricles absent. Ligule a ciliolate membrane. Leaf-blades involute or convolute, 1–2 mm wide, stiff. Leaf-blade surface scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, 12–25 cm long. Primary panicle branches appressed, 2 -nate, 5–7.5 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10–12 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 6 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 8 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex attenuate, mucicous. Palea 0.8 length of lemma, 2 -veined. Palea keels scabrous. Palea apex scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

$2n = 56$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** Western Canada, Northwest USA. British Columbia. Montana, Oregon, Washington.

**Festuca camusiana** St.- Yves, non *F.dissitiflora* Steud.(1879). *Bull. Soc. Bot. Geneve, Ser. II.* xviii. 156 (1926).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Madagascar. **Basionym or Replaced Name:** *Bromus dissitiflorus* Baker, *J. Linn. Soc., Bot.* 20: 301 (1883)

. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Central Madagascar., *Baron 2092* (HT: K).

**Illustrations (Books):** J.Bosser, *Graminees des Paturage et des Cultures a Madagascar* (1969) (185, Fig 65 as subsp. *madecassa*).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating connection. In honor of Aimie Antionette Camus (1879–1965), French botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms geniculately ascending, 50–100 cm long. Leaves mostly basal. Leaf-sheaths smooth, glabrous on surface. Ligule an eciliate membrane. Leaf-blades erect, flat or conduplicate, 6–25 cm long, 1–2 mm wide.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, nodding, 10–30 cm long. Panicle branches capillary. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 8–13 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, (2–)3–4.5 mm long, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, (3.5–)4–6.5 mm long, 0.6–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 7.5–8.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–3 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–3.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Hilum linear.

**Distribution (TDWG).** Continent. Africa.

**Country /Province /State.** West-central tropical Africa, East tropical Africa, Western Indian ocean. Cameroon, Bioko. Kenya, Tanzania, Uganda. Madagascar.

***Festuca capillifolia*** Dufour, ex Roem. & Schult. *Syst. ii.* 735 (1817).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *Dufour s.n., specimen A of Festuca capillifolia*, Jun, H. in rupium fissuris, Moxente, Ri Valentini (BORD). LT designated by Gutierrez Villarias, *Taxon* 41: 332 (1992).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. capillis*, a hair; folium, leaf. Leaf-blades thread-like.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 35–60 cm long. Leaf-sheaths tubular for much of their length, with 0.5–0.75 of their length closed, with infolded margins, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 0.5–1 mm wide. Leaf-blade venation comprising 5–7 vascular bundles, with 1–3 inner ridges, with sclerenchyma strands below veins, with subepidermal sclerenchyma free from veins. Leaf-blade surface scabrous. Leaf-blade apex pungent.

**Inflorescence.** Inflorescence a panicle. Panicle open, 6–10 cm long. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7.5–9 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5.1–5.8 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 5.2–6.2 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, mucous. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3 mm long. Ovary glabrous. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

*N* = 7 (1 ref TROPICOS).

**Distribution (TDWG).** Continent. Europe, Africa.

**Region.** Southwestern Europe.

**Country /Province /State.** : Spain. Northern Africa. Algeria, Morocco.

***Festuca cappadocica*** (Hackel) I. Markgraf-Dannenberg. *Willdenowia*, 11(2): 207: (1981).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Turkey. **Basionym or Replaced Name:** *Festuca violacea* var. *cappadocica* Hack., *Ann. Nat. Hofmus. Wien* 20:432 (1903). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Turkey, Erschias-dagh: Zederbauer (W holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Cappadocia, a region of Central Turkey.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations extravaginal or intravaginal. Culms erect, 22–24 cm long. Culm-internodes scaberulous. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, pubescent. Ligule an eciliate membrane, 0.2 mm long. Leaf-blades filiform, conduplicate, angular in section, 0.35–0.6 mm wide, firm. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous, pilose, hairy adaxially. Leaf-blade apex obtuse or abruptly acute.

**Inflorescence.** Inflorescence a panicle. Peduncle smooth. Panicle open, lanceolate, dense, 4.5–6 cm long. Primary panicle branches bearing 1 fertile spikelets on each lower branch. Panicle branches hispid. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong or ovate, laterally compressed, 6.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous, rough above. Lower glume apex acuminate. Upper glume linear or ovate, 3.4–3.6 mm long, chartaceous, with undifferentiated margins, without keels, 3 -veined. Upper glume surface scabrous, rough above. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 3.9–4.9 mm long, chartaceous, purple, without keel, 5 -veined, more than 3-veined. Lemma surface hispid. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1.2–1.4 mm long overall. Palea 1 length of lemma, 2 -veined. Palea surface pilose, hairy all along. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary with a few apical hairs. Caryopsis with adherent pericarp, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Western Asia. Turkey.

### ***Festuca caprina*** Nees. *Fl. Afr. Austr.* 443. (1841).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: CT: *Drige s.n.*, Caput Bonae Spei (cap.b.sp.) (LE).

**Illustrations (Books):** G.V.Pope et al., *Flora Zambesiaca* 10 (1(1971):58, t. 16), L.K.A. Chippindall, *Grasses and Pastures of South Africa* (1955) (55, Fig 25).

**Derivation** (Clifford & Bostock 2007): L. caper, goat; -ina, belonging to. In contrast to *Festuca ovina* with which the species may be confused.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms 30–90 cm long, 1–2(–3) -noded. Leaf-sheaths smooth, glabrous on surface. Ligule an eciliate membrane, 0.5–1 mm long. Leaf-blades filiform, flat or involute, 4–25 cm long, 0.5–1.5 mm wide. Leaf-blade venation without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth or scaberulous, rough adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, effuse, 5–20 cm long. Primary panicle branches 1–2 -nate. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6(–9) fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10–15 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, 3–5.5 mm long, 0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.5–6.5 mm long, 0.7–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile florets divergent. Fertile lemma elliptic, 5–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, glabrous or pubescent. Lemma apex emarginate or acute, awned, 1 -awned. Principal lemma awn 1–3 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Hilum linear.

*N* = 14 (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe (\*), Africa.

**Region.** Northern Europe (\*).

**Country /Province /State.** : Great Britain (\*). **East tropical Africa, South tropical Africa, Southern Africa.** Tanzania. Malawi, Zambia, Zimbabwe. North-West, Gauteng, Mpumalanga, Swaziland, Free State, Kwazulu-Natal, Lesotho, Eastern Cape.

**Festuca carchiensis** Stanèik. *Folia Geobot.* 39(1): 98 (-100; fig. 1) (2004).

**TYPE** from Ecuador. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Cachi: Laegaard 101716 (AAU holo, PRC, QCA, QCNE).

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Ecuador.

**Festuca carpathica** F. G. Dietr. *Vollst. Lexic. Gaertn. Nachtr.* 3: 333. (1817).

**TYPE** from Romania. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Carpathians: Coll?.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southeastern Europe.

**Country /Province /State.** : Romania.

**Festuca carrascana** Stancik & Renvoize. *Kew Bull.* 62: 486 (2007).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations extravaginal or intravaginal. Culms erect, 130–140 cm long, 3 -noded. Culm-internodes terete, scaberulous. Lateral branches lacking. Leaf-sheaths scaberulous, glabrous on surface. Ligule an eciliate membrane, 2–5 mm long, erose, acute. Leaf-blades flat or involute, 50–60 cm long, 4–7 mm wide. Leaf-blade surface scabrous, rough on both sides, glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 20–25 cm long, 8–12 cm wide. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 7–15 mm long.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 10–12 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 0.5–0.7 mm long, pubescent. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 5–6 mm long, 0.75 length of upper glume, membranous or chartaceous, much thinner on margins, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface asperulous. Lower glume apex acute. Upper glume lanceolate, 6.5–7 mm long, 0.9 length of adjacent fertile lemma, chartaceous, with hyaline margins, without keels, 3 -veined. Upper glume surface asperulous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 7.5–8.5 mm long, chartaceous, much thinner on margins, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex erose, acuminate, mucous. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Palea surface scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–3.6 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Bolivia.

**Festuca carazana** Pilger. *Engl. Jahrb.* vii. 511 (1906).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: A. Weberbauer 3106, 25 May 1903, Peru: Ancash: Cordillera Negra, Caraz, 4400 m (B; IT: BAA-1172 (fragm.), US-2875390).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating location. From Caraz, Peru.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Culms erect, 65–90 cm long, 0-noded. Ligule a ciliolate membrane, 0.5–1 mm long. Leaf-blades conduplicate, 20–55 cm long, 2–5 mm wide, stiff. Leaf-blade surface puberulous, hairy adaxially. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, lanceolate, 20–22 cm long. Primary panicle branches distant. Panicle branches scabrous, glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, scabrous.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 8–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, with lower narrower than upper, shorter than spikelet. Lower glume lanceolate, 3.5–4.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.5–5.8 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6–7 mm long, chartaceous, without keel, 5-veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acute, awned, 1-awned. Principal lemma awn 1–2 mm long overall. Palea 1 length of lemma, 2-veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Peru.

**Festuca carchiense** Stancik. *Folia Geobot.* 39(1): 98 (-100; fig. 1) (2004).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online (as *F. carchia*), W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Ecuador. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Ecuador, Cachi: Laegaard 101716 (AAU holo, PRC, QCA, QCNE).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 90, fig 42 (2007)).

**Derivation** (Clifford & Bostock 2007): L. *ensis*, denoting origin. From Carchi Province, Ecuador.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped moderately. Cataphylls inconspicuous. Basal innovations intravaginal. Culms erect, slender, straight, 50–60 cm long, 1-noded, without nodal roots. Culm-internodes terete, distally glabrous. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves mostly basal, 0–2 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined, glabrous on surface. Leaf-sheath auricles absent. Ligule a ciliolate membrane, 0.5–0.8 mm long, membranous, white, entire. Leaf-blade base symmetrical. Leaf-blades straight or curved, involute, angular in section, 25–40 cm long, 0.4–0.7 mm wide, indurate, light green or mid-green. Leaf-blade midrib indistinct. Leaf-blade venation indistinct, comprising 5 vascular bundles, with 3(–5) inner ridges, with sclerenchyma strands below veins, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma attached to veins below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scaberulous, glabrous. Leaf-blade margins smooth, glabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle terete, eglandular, glabrous. Panicle contracted, linear or lanceolate, continuous, dense, straight, 10–20 cm long, 0.7 cm wide, bearing many spikelets or few spikelets, contracted about primary branches. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 9–10.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes scaberulous, sparsely hairy. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width or with lower wider than upper, shorter than spikelet. Lower glume oblong, 3.5–4.5 mm long, 0.6–0.75 length of upper glume, chartaceous or herbaceous, pallid or light green, without keels, 1-veined. Lower glume lateral veins absent. Lower glume surface asperulous, rough



above. Lower glume apex acute. Upper glume oblong, 5–6.5 mm long, 0.8–0.9 length of adjacent fertile lemma, chartaceous, pallid or light green or purple, without keels, 3 -veined. Upper glume surface asperulous, rough above. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, symmetrical, (6–)7–7.5 mm long, chartaceous, pallid or light green or purple, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn stiff, 0.8–1 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Palea surface scabrous. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, lanceolate, 0.7 mm long. Anthers 3, 1.1–1.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Ecuador.

**Festuca carnuntina** R. Tracey. *Pl. Syst. Evol.*, 128(3–4): 289 (1977).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Austria. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Austria, Hundsheim: Tracey F445 (WU holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ina, belonging to. From Carnuntum, a Roman camp at Petronell, Lower Austria.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 15–23 cm long. Culm-internodes antrorsely scabrous. Leaf-sheaths open for most of their length, with 0 of their length closed, with flat margins, pubescent. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 0.7–1 mm wide, glaucous. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface scabrous, pubescent.

**Inflorescence.** Inflorescence a panicle. Panicle open, 3–4.5 cm long. Primary panicle branches simple. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6–6.4 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.1–3.4 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface pubescent, hairy above. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4.2 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface pubescent. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe.

**Country /Province /State.** : Austria.

**Festuca carpatica** F. Dietr. *Vollst. Lex. Gartn.* 3: 333 (1817).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Rumania. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Rumania, Carpathians: Coll?.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): from Carpatia Montis, that is the Carpathian Mountains.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Cataphylls evident. Rhizomes elongated. Basal innovations extravaginal. Culms 35–70 cm long. Leaf-sheaths open for most of their length,

glabrous on surface. Ligule a ciliolate membrane, 0.25 mm long. Leaf-blades flat or convolute, 2–3 mm wide, glaucous. Leaf-blade venation with sclerenchyma strands below veins or above all veins, subepidermal sclerenchyma attached to veins above and below. Leaf-blade surface ribbed, scabrous, rough adaxially. Leaf-blade margins scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, nodding. Primary panicle branches ascending. Panicle branches smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 1 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 6.3–6.5 mm long, 0.8–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 6.9–7.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acute, mucicous. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, obovoid. Hilum linear. Disseminule comprising a caryopsis.

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe, Southeastern Europe, Eastern Europe.

**Country /Province /State.** : Czechoslovakia, Poland. : Romania. Northwest European Russia, Ukraine.

**TDWG4.**

### **Festuca cartagana** E.B. Alekseev. *Bot. Zhurn.*, 67(9): 1291 (1982).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Costa Rica. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Costa Rica: Cartago: inside crater of Volcan Turrialba, ca. 3100m, in mud and ash of fire hole, 8 Aug 1968, *Pohl & Davidse 10853* (HT: K; IT: F, ISC).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): from Cartagena, Colombia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms 35–70 cm long. Leaf-sheaths open for most of their length, glabrous on surface. Ligule a ciliolate membrane, 0.1–0.3 mm long, truncate. Leaf-blades convolute, 7–15 cm long, 2.4–4 mm wide. Leaf-blade venation with 15–23 secondary veins, 13–21 inner ridges.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 14–22 cm long. Panicle branches smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9–11.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 0.5 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5.7–6.7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acute, mucronate. Palea 2 -veined. Palea keels scaberulous, adorned below, with 0.66–0.75 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.3–3.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Mesoamerica. Costa Rica, Panama.

### **Festuca casapaltensis** Ball. *Journ. Linn. Soc.* xxv. 62. (1885).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Peru: above Casapalta, 1882, *Ball s.n.* (HT: P).

**Illustrations (Journals):** *Ruizia* (13:105, Fig 11a-b (1993)).

**Derivation** (Clifford & Bostock 2007): *L. -ensis*, denoting origin. From Casapalta, Peru.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect or geniculately ascending, 6–15 cm long, 2-noded. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.5 mm long. Leaf-blades straight or curved, involute, 2–6 cm long, 1 mm wide. Leaf-blade surface glabrous. Leaf-blade apex obtuse or abruptly acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong, dense, 3–7 cm long. Primary panicle branches ascending. Panicle branches flexuous, scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, scaberulous.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–9 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes glabrous or sparsely hairy.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 7.5–9 mm long, 0.9 length of upper glume, chartaceous, without keels, 1-veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex setaceously acuminate. Upper glume lanceolate, 8.5–10 mm long, 1.1 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume primary vein scabrous. Upper glume apex setaceously acuminate.

**Florets.** Fertile lemma oblong, 7–9 mm long, chartaceous, without keel, 5-veined, more than 3-veined. Lemma surface scabrous, rough in lines. Lemma apex acute, awned, 1-awned. Principal lemma awn 3–6 mm long overall. Palea 2-veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 0.6–0.8 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Peru.

**Festuca castilloniana** Turpe. *Lilloa*, 33(13): 285 (1973).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Argentina. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Argentina: Tucuman: Dpto. Tafi: cumbres Calchaquies, Portezuelo, 3600 m, Mar 1913, *L. Castillon 2884* (HT: LIL).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. -ana*, indicating connection. In honor of Castillon who collected in Argentina.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 15–25 cm long, 1-noded. Culm-internodes terete, striate, distally glabrous. Lateral branches lacking. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 2–2.3 mm long, entire or lacerate. Leaf-blades conduplicate or involute, 3–7 cm long, 1–1.3 mm wide. Leaf-blade venation comprising 7 vascular bundles, with 5 inner ridges, with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade apex acuminate.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong, dense, 6–10 cm long. Primary panicle branches appressed, 2-nate. Panicle axis glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate or elliptic, laterally compressed, 6–8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 0.5–1 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4.5 mm long, 0.8–0.9 length of upper glume, chartaceous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume surface scabrous, rough above. Lower glume apex acute. Upper glume lanceolate, 5–5.5 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume surface scabrous, rough above. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 4–5 mm long, chartaceous, without keel, 5-veined, more than 3-veined. Lemma surface scabrous. Lemma apex acuminate. Palea 1 length of lemma, 2-veined. Palea keels scabrous. Palea apex dentate, 2-fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 1.8–2.3 mm long. Ovary glabrous. Caryopsis with adherent pericarp, oblong, 2–2.5 mm long. Hilum linear, 0.75 length of caryopsis.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Southern South America. Argentina Northwest.

**TDWG4.** Tucuman.

**Festuca cataonica** (Hackel ex Boiss.) I. Markgraf-Dannenberg. *Willdenowia*, 11(2): 207: (1981).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Turkey. **Basionym or Replaced Name:** *Festuca ovina* subsp. *cataonica* Hack. ex Boiss., *Fl. Or.* 5:617 (1884). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Turkey, Berytdagh: Haussknecht (G hol., W).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Cataonia Province of southern Cappodocia, now Turkey.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms 12–28 cm long. Culm-internodes smooth. Leaf-sheaths tubular for much of their length, with 1 of their length closed, glabrous on surface. Leaf-sheath oral hairs ciliate. Leaf-sheath auricles erect. Ligule an eciliate membrane, 0.2 mm long. Leaf-blades curved, filiform, conduplicate, 0.4–0.7 mm wide, coriaceous, stiff, light green, pruinose. Leaf-blade venation comprising 5 vascular bundles, with 5 inner ridges, with subepidermal sclerenchyma free from veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth, glabrous. Leaf-blade apex obtuse, pungent.

**Inflorescence.** Inflorescence a panicle. Peduncle smooth. Panicle open, lanceolate, 3.5–6 cm long, bearing few spikelets. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 7.5–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or ovate, 3.9–4.4 mm long, chartaceous, with scarious margins, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate or oblong, 4.1–5.2 mm long, 1.7–2.3 mm wide, chartaceous, pruinose, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–1.2 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Western Asia. Turkey.

**Festuca caucasica** (Boiss.) Hack. ex Boiss. *Fl. Orient.* v. 626 (1884).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. **Basionym or Replaced Name:** *Festuca sibirica* var. *caucasica* Boiss., *Fl. Or.* 5:626 (1884). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Russia, Caucasus, Lars: Brotherus (LE isolecto, K).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Caucasus Mountains, former Soviet Union.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations extravaginal. Culms 20–50 cm long. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.5–2 mm long. Leaf-blades convolute, 3–4 mm wide, grey-green. Leaf-blade surface ribbed. Leaf-blade margins scabrous. Dioecious.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong, 7–12 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile.

Spikelets elliptic, laterally compressed, 7–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 5–6 mm long, 0.9 length of upper glume, membranous, pallid, 1-keeled, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 6–7 mm long, 0.9 length of adjacent fertile lemma, membranous, pallid, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume lateral veins obscure. Upper glume apex acute.

**Florets.** Fertile florets female. Fertile lemma oblong, 7–8 mm long, membranous, pallid, keeled, lightly keeled, 5 -veined, more than 3-veined. Lemma lateral veins prominent. Lemma surface puberulous. Lemma apex acute, muticous. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 6 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

Male inflorescence similar to female. Male spikelets resembling female.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** Caucasus, China. Xinjiang.

**TDWG4.**

### **Festuca chalcophaea** Krecz. & Bobr. *Komarov, Fl. URSS*, ii. 513, 768 (1934).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: 2 TT: 23 Jul 1929, see sp. # 1 (LE).

LT: *O. Zedelmejer & T. Hejdemann s. n.*, 25 Jul 1929, [Caucasus]: Armenia: Lk. Sevan: Ajridzha (LE). Orig. label: Transcaucasia, Armenia, distr. Nor-Bajazet, Ajridzha..

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. chalkos, copper; phaeos, grey. Lemmas streaked with brown and purple.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations extravaginal or intravaginal. Culms erect, 15–50 cm long. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, hispid. Ligule an eciliate membrane, scaberulous on abaxial surface. Leaf-blades filiform, conduplicate, 0.25–0.8 mm wide. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 7 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous, pilose.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, interrupted, 3–8 cm long. Primary panicle branches bearing 1–2 fertile spikelets on each lower branch. Panicle branches scabrous, glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong or ovate, laterally compressed, 6.5–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume lanceolate, 3–4.3 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, mid-green or yellow (on margins), without keels, 3 -veined. Upper glume surface scabrous. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 4.6–5.3 mm long, chartaceous, dark green or yellow, bordered with last colour, shiny, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1.2–2.5 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary with a few apical hairs. Caryopsis with adherent pericarp, hairy at apex. Hilum linear, 1 length of caryopsis.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** Caucasus, Western Asia. Transcaucasus. Turkey.

**TDWG4.**

**Festuca changduensis** L. Liou. *Fl. Xizangica* 5: 85 (1987).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China, Xizang, Qamdo: Qinghai-Xizang Exped. 10014 (HP holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. -ensis*, denoting origin. From Changdu, China.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Culms 60–100 cm long, 3–4 -noded. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 3–5 mm long. Leaf-blades 10–20 cm long, 3–5 mm wide. Leaf-blade surface scabrous, rough on both sides.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, effuse, 18–22 cm long. Primary panicle branches spreading, 3–4 -nate, 9–11 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong or ovate, laterally compressed, 6–7 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 0–1.1 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.8–3.2 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume oblong, 3.8–4.7 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels. Upper glume surface scabrous. Upper glume apex acute.

**Florets.** Fertile lemma ovate, 4.8–5.2 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, glabrous or pubescent. Lemma apex acute, muticous. Palea 2 -veined. Palea keels scabrous, adorned above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.5–2 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central, Tibet.

**TDWG4.** Sichuan.

**Festuca chasii** M. Kerguelen & F. Plonka. *Lejeunia*, 142: 12 (1993).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from France. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: France, Lavoisier Haut: Chas.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of Edouard Chas (fl. 1992–1993) French botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 20–60 cm long. Lateral branches lacking. Leaf-sheaths open for most of their length. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, angular in section or elliptic in section, 10–20 cm long, 1–2 mm wide, mid-green or glaucous. Leaf-blade venation comprising 7–9 vascular bundles, with 3(–7) inner ridges, with 3–5 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation or with sclerenchyma strands widened to form a discontinuous subepidermal layer. Leaf-blade surface scaberulous, pubescent, hairy adaxially. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 1.5–8 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 6–7 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or ovate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 3.5–5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface glabrous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–1.5 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : France.

**Festuca chayuensis** L. Liu. *Fl. Reipubl. Popularis Sin.* 9(2): 387 (2002).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Xizang: Zay, grassy mountainsides, 3900m, 26 Sept. 1982, *Qinghai-Xizang Exped. 10706* (HT: PE).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms 15–20 cm long, 1 -noded. Leaf-sheaths smooth. Leaf-sheath auricles erect. Ligule a ciliolate membrane, 0.4–0.6 mm long, truncate. Leaf-blades flat or involute, 5–8 cm long, 1 mm wide. Leaf-blade margins scaberulous.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, loose, 5–7 cm long. Primary panicle branches 1 -nate, 2–3 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong or ovate, laterally compressed, 8–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2–3 mm long, 0.66–0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface smooth. Lower glume apex acute. Upper glume lanceolate, 3–4 mm long, 0.66 length of adjacent fertile lemma, chartaceous, without keels. Upper glume surface smooth. Upper glume apex acute.

**Florets.** Fertile lemma ovate, 5–6 mm long, chartaceous, purple, without keel, 5 -veined, more than 3-veined. Lemma surface puberulous or pubescent. Lemma apex acute, mucronate, 1 -awned. Principal lemma awn 2–3 mm long overall. Palea 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–2.2 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. Tibet.

**Festuca chelungkiangnica** Chang & Skvort. ex S.L. Lu. *Acta Phytotax. Sin.*, 30(6): 539 (1992).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Heilongjiang: grassland steppes, 10 Nov. 1939, *Skvort. s.n.* (HT: FPI).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig.334).

**Derivation** (Clifford & Bostock 2007): L. *-ica*, belonging to. From Heilongjiang (Heilungkiang) Province, China.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, robust, 15–30 cm long. Culm-internodes distally glabrous. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 1 mm long, truncate. Leaf-blades filiform, involute, 7–15 cm long, 0.5 mm wide. Leaf-blade venation comprising 5 vascular bundles, with 3 subepidermal sclerenchyma strands.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, 4 cm long, 0.5–0.8 cm wide. Primary panicle branches 1–2 -nate, 0.5–1 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 5–6 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume lanceolate, 3 mm long, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface pubescent. Lower glume margins ciliate. Lower glume apex acute. Upper glume lanceolate, 4 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface pubescent. Upper glume margins ciliate. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 4.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface pubescent. Lemma apex acuminate, mucicous or mucronate, 1 -awned. Palea 1 length of lemma, 2 -veined. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. Manchuria.

**TDWG4.**

**Festuca chimborazensis** E.B. Alekseev. *Bot. Zhurn.*, 69(11): 1549 (1984).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Ecuador. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Asplund 8446*, 21 Aug 1939, Ecuador: Chimborazo: S slopes of Mt. Chimborazo, 3900 m (S; IT: NY, QCA).

PT: *Asplund 8641*, 7 Sep 1939, Ecuador: Pichincha: Sincholagua, 4200 m (S).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 92, fig 43 (2007) as subsp. *chimborazensis*).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Chimborazo, a volcano in Ecuador.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms erect, 12–25 cm long, 1-noded. Culm-internodes antrorsely scabrous. Lateral branches lacking. Leaf-sheaths open for most of their length, smooth. Ligule a ciliolate membrane, 0.1–0.3 mm long, obtuse. Leaf-blades curved, filiform, conduplicate, 4–10 cm long, 0.5–0.7 mm wide, glaucous. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 5 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation or with sclerenchyma strands widened to form a discontinuous subepidermal layer. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 3.5–6 cm long. Primary panicle branches appressed. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 8–10.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 2.5–3 mm long, 0.75 length of upper glume, scarious, without keels, 1-veined. Lower glume lateral veins absent. Lower glume surface smooth. Lower glume apex acute. Upper glume lanceolate, 3.5–4 mm long, 0.5 length of adjacent fertile lemma, scarious, without keels, 3-veined. Upper glume surface smooth. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6.5–7.2 mm long, chartaceous, much thinner on margins, without keel, 5-veined, more than 3-veined. Lemma surface smooth. Lemma apex acute, awned, 1-awned. Principal lemma awn 0.8–2 mm long overall. Palea 2-veined. Palea keels scabrous, adorned all along. Palea apex dentate, 2-fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 0.7–0.8 mm long. Ovary glabrous. Caryopsis with adherent pericarp, sulcate on hilar side. Hilum linear, 0.66 length of caryopsis.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Ecuador.

**Festuca chiriquensis** Swallen. *Ann. Missouri Bot. Gard.* : 116 (1943).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Panama: Chiriqui: Volcan de Chiriqui, open places in woods, 1300–1500 m, 29–30 Sep 1911, *Hitchcock 8197* (HT: US).

**Illustrations (Books):** W.Burger, *Flora Costaricensis* 15, Gramineae: *Fieldiana Botany New Series* 4 (1980) (241, Fig 84).

**Derivation** (Clifford & Bostock 2007): L. -ense, denoting origin. From Chiriquim Province, Panama.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms 80–130 cm long, 2–3 mm diam. Culm-nodes constricted, brown, glabrous. Lateral branches lacking. Leaf-sheaths antrorsely scabrous, glabrous on surface. Ligule an eciliate membrane, 0.7–2 mm long. Leaf-blades 15–50 cm long, 4–7 mm wide, dark green. Leaf-blade surface scaberulous, glabrous.

**Inflorescence.** Inflorescence a panicle. Peduncle 7–15 cm long. Panicle open, elliptic, nodding, 15–30 cm long, bearing few spikelets. Primary panicle branches 2-nate, 8–15 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.



**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 15–17 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume subulate, 5.5–6.7 mm long, 0.75 length of upper glume, chartaceous, 1 -veined. Lower glume lateral veins absent. Upper glume lanceolate, 8–9.5 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 9–11 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins prominent. Lemma surface scabrous. Lemma apex dentate, 2 -fid, acuminate, awned, 1 -awned. Principal lemma awn from a sinus, 14 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Palea apex awned, awns 1 mm long. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–3.9 mm long, yellow. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Mesoamerica. Costa Rica, Panama.

**Festuca chita** Stancmk. *Darwiniana* 41(1–4): 129 (figs. 13a-f, 18a) (2003).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Colombia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Colombia: Boyaca: Caqon del Chicamocha, Munic. Chita, Vereda Los Colorados, 3300 m, 14 May 1991, *Etter 661* (HT: COL).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 96, fig 45 (2007)).

**Derivation** (Clifford & Bostock 2007): From Chita, Colombia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Cataphylls evident. Basal innovations intravaginal. Culms erect, slender, straight, 40–60 cm long, 1 -noded, without nodal roots. Culm-internodes terete. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves mostly basal, 0–1 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined, glabrous on surface. Leaf-sheath auricles absent. Ligule a ciliolate membrane, 0.3–0.5 mm long, membranous, white, entire, truncate. Leaf-blade base symmetrical. Leaf-blades straight, involute, angular in section, 10–15 cm long, 0.4–0.6 mm wide, indurate, mid-green. Leaf-blade midrib indistinct. Leaf-blade venation indistinct, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma attached to veins below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface glabrous. Leaf-blade margins smooth, glabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle terete, eglandular, glabrous. Panicle contracted, linear or lanceolate, continuous, dense, straight, 8 cm long, 0.3 cm wide. Primary panicle branches ascending, sparsely divided, bearing spikelets almost to the base. Panicle branches straight, scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 8–9 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes scaberulous, pubescent. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume lanceolate, 5.5–6.5 mm long, 0.75 length of upper glume, chartaceous, purple, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 7–8.5 mm long, 1.1 length of adjacent fertile lemma, chartaceous, mid-green or purple, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, symmetrical, 6.5–7.5 mm long, chartaceous, purple, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, glabrous or pubescent. Lemma apex awned, 1 -awned. Principal lemma awn stiff, 0.5–1.5 mm long overall. Palea 0.6–0.8 length of lemma, 2 -veined. Palea surface pilose, hairy above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 0.8–1.1 mm long. Ovary glabrous. Caryopsis with adherent pericarp, lanceolate. Hilum linear, 0.5 length of caryopsis.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Colombia.

**Festuca chitagana** Stancmk. *Darwiniana* 41(1–4): 130 (-131; figs. 12g-k, 17f) (2003).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Colombia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Colombia: Santander: Munic. Cerrito, paramo del Almorzadero, km 15 of the road from Cerrito to Chitaga, 3700 m, 25 Feb 1999, *Stančmk & Medina* 2577 (HT: PRC; IT: COL, FMB).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 67, fig 30 (2007)).

**Derivation** (Clifford & Bostock 2007): From Chitaga, Colombia.

**Classification.** Subfamily Pooideae. Tribe: Poae.

**Habit, Vegetative Morphology.** Perennial, culms solitary or caespitose, clumped loosely. Cataphylls evident. Rhizomes short, fleshy, not obviously scaly. Basal innovations extravaginal or intravaginal. Culms erect, slender, straight, 60–80 cm long, 2–4 -noded, without nodal roots. Culm-internodes terete. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves basal and cauline, 2–3 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined, glabrous on surface. Leaf-sheath auricles absent. Ligule a ciliolate membrane, 0.5–1 mm long, membranous, white, entire, truncate. Leaf-blade base symmetrical. Leaf-blades straight, involute, angular in section, 15–20 cm long, 0.7–0.9 mm wide, firm or flaccid, dark green. Leaf-blade midrib evident. Leaf-blade venation distinct, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface puberulous, moderately hairy, hairy adaxially. Leaf-blade margins smooth, glabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle straight or flexuous, terete, eglandular, glabrous. Panicle open, ovate, continuous, dense, equilateral, straight, 10–12 cm long, 9–12 cm wide. Primary panicle branches spreading, moderately divided, naked below or bearing spikelets almost to the base. Panicle branches straight, glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 6–9 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes scaberulous, pubescent. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume lanceolate, 4–5 mm long, 0.8–0.9 length of upper glume, membranous or chartaceous or herbaceous, dark green or dark brown, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or oblong, 5.5–6.5 mm long, 1 length of adjacent fertile lemma, chartaceous, dark green, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, symmetrical, 5.8–7 mm long, chartaceous, dark green or dark brown, without keel, 5 -veined, more than 3-veined. Lemma surface pilose. Lemma apex setaceously acuminate, muticous or awned, 1 -awned. Principal lemma awn stiff, 0.5–1 mm long overall. Palea 0.8 length of lemma, 2 -veined. Palea surface pubescent. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, lanceolate, 0.8–1 mm long. Anthers 3, 1–1.6 mm long. Ovary glabrous. Caryopsis with adherent pericarp, lanceolate. Hilum linear, 0.8 length of caryopsis.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Colombia.

**Festuca chodatiana** (St.-Yves) E.B. Alekseev. *Bot. Zhurn.*, 71(8): 1113 (1986).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Tanzania. **Basionym or Replaced Name:** *Festuca camusiana* subsp. *chodatiana* St.-Yves, *Bull. Soc. Bot. Geneve*, ser. 2, 18: 158, f. 2 (1926)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IST: *G.Mann* 2089, 1859–1863, West Trop. Africa: 7000 ft. (LE). E.Alexeev det. it as IST for *F.chodatiana*.

LT: *Stolz* 1162, Tanzania: [Malawi] Kyimbala, 1500 m (B; ILT: WAG). LT designated by Alexeev,.

ST: *Volkens* 706, Afrique: Kilimandjaro: territoire de Marangu (B, G).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. *-ana*, indicating connection. In honor of Robert Hippolyte Chodat (1865–1934) Swiss botanist.

**Classification.** Subfamily Pooideae. Tribe: Poae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms geniculately ascending, 50–100 cm long. Leaves mostly basal. Leaf-sheaths smooth, glabrous on surface. Ligule an eciliate membrane. Leaf-blades erect, flat or conduplicate, 6–25 cm long, 1–2 mm wide.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, nodding, 10–30 cm long. Panicle branches capillary. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 8–13 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, (2–)3–4.5 mm long, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, (3.5–)4–6.5 mm long, 0.6–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 6–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 7–12 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.2–2 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Hilum linear.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** West-central tropical Africa, Northeast tropical Africa, East tropical Africa. Cameroon, Rwanda, DRC. Ethiopia (inc. Eritrea), Sudan.

**Festuca christianii-bernardii** M. Kerguelen in H. Coste. *Fl. Descr. Illustr. France, Suppl. 5*: 54 (1979).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from France. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: France, Pezade to Les Rives: Kerguelen & Marechal.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of Christian Bernard (fl. 1974) French botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 20–60 cm long. Lateral branches lacking. Leaf-sheaths open for most of their length. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 2.5–25 cm long, 0.6–1.1 mm wide, stiff, without exudate. Leaf-blade venation comprising 7 vascular bundles, with 1–3 inner ridges, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth. Leaf-blade apex acute, pungent.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 2.5–8.5 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 6–7.1 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or ovate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4.2–5.8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.5–2.3 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : France.

**Festuca chrysophylla** Phil. *Anal. Mus. Nac. Chile* 88. (1891).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Chile. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *R.A.Philippi s.n.*, 22 Feb 1885, Chile: desierto de Atacama, Tarapaca, Incahuasi (SGO-PHIL-297; IT: B, Herb. Parodi (fragm.), SGO-37442, SGO-37446, SGO-63830, SGO-63827, SGO-63814, SGO-68814, US-556557 (fragm. ex SGO-PHIL-297 & photo), US- (photo SGO-37422)).

**Illustrations (Books):** S.A.Renvoize, *Gramineas de Bolivia* (1998) (Fig. 24).

**Derivation** (Clifford & Bostock 2007): Gk. chrysos, yellow; phyllon, leaf. Leaf-blades golden-yellow.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 30–65 cm long, 1-noded. Lateral branches lacking. Leaf-sheaths glabrous on surface. Ligule a ciliolate membrane, 0.3–0.5 mm long, bilobed. Leaf-blades filiform, conduplicate, 7–40 cm long, 0.7–1 mm wide. Leaf-blade venation comprising 7 vascular bundles, with 3 inner ridges, with subepidermal sclerenchyma free from veins (except midrib), with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface pubescent, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle spiciform, linear, 6–10 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 0.8–1 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume ovate, 4.5–5 mm long, 0.8–0.9 length of upper glume, chartaceous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume linear, 5–6.2 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 5.3–6.5 mm long, chartaceous, without keel, 5-veined, more than 3-veined. Lemma surface glabrous or puberulous, hairy below. Lemma apex acuminate. Palea 6 mm long, 1 length of lemma, 2-veined. Palea keels ciliolate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, 0.8–1 mm long. Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America, Southern South America. Bolivia. Argentina Northwest, Chile North, Chile Central.

**TDWG4.** Catamarca, Jujuy, La Rioja, Salta. Tarapaca, Antofagasta. Coquimbo.

**Festuca chumbiensis** E.B. Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 83(4): 118 (1978).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Xizang: wet places, 3300–5000 m.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Chumbi valley, Tibet.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms 20–50 cm long. Culm-internodes smooth or scaberulous. Lateral branches lacking. Leaf-sheaths tubular for much of their length, with 0.4–0.5 of their length closed, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 0.6–0.75 mm wide. Leaf-blade venation with 7 secondary veins, 3–5 inner ridges, 5–7 subepidermal sclerenchyma strands. Leaf-blade surface smooth or scaberulous, rough abaxially.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 3–5 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 5–5.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2 mm long, 0.66 length of upper glume, membranous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3 mm long, 1 length of adjacent fertile lemma, membranous, without keels, 3-veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 3–3.5 mm long, membranous, without keel, 5-veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acuminate, mucronate or awned, 1-awned. Principal lemma awn 0.8–1.8 mm long overall. Palea 1 length of lemma, 2-veined. Palea keels scabrous, with 0.33 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.1–1.3 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. Tibet.

**Festuca chuquisacae** Stacik & Renvoize. *Kew Bull.* 62: 491 (2007).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Cataphylls evident. Rhizomes short. Basal innovations extravaginal. Culms erect, 200 cm long, 4 -noded. Culm-internodes terete, scaberulous. Lateral branches lacking. Leaf-sheaths smooth or scaberulous, glabrous on surface. Ligule an eciliate membrane, 5–8 mm long, lacerate. Leaf-blades 25–35 cm long, 4–10 mm wide. Leaf-blade surface scabrous, glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 20 cm long, 5–6 cm wide. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate or oblong, laterally compressed, 10–12 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1 mm long, pubescent. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume elliptic, 3–3.6 mm long, 0.75 length of upper glume, membranous or chartaceous, light brown, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume elliptic, 4.5–5 mm long, 0.66 length of adjacent fertile lemma, chartaceous, light brown, without keels, 3 -veined. Upper glume lateral veins prominent. Upper glume surface asperulous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 7.5–8.5 mm long, chartaceous, light brown, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acuminate, muticous. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Palea surface scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3.5–3.7 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Bolivia.

**Festuca cinerea** Vill. *Fl. Delphin.* 8; *Hist. Pl. Dauph.* ii. 98 (1787).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from France. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: France, La Batie Neuve, Gap: Coll?.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. ashy-grey. Plant grey due to hairs or wax.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 18–35 cm long. Culm-internodes smooth or scaberulous. Leaf-sheaths open for most of their length, with 0.2–0.25 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 0.5–0.8 mm wide, coriaceous, glaucous, pruinose. Leaf-blade venation comprising 7 vascular bundles, with 3 inner ridges, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with unevenly thickened subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 4–6 cm long. Panicle branches glabrous or puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–7.3 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.2–4.1 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface asperulous, rough above. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 4.6–5.2 mm long, chartaceous, glaucous or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above, glabrous or pubescent, hairy above. Lemma margins eciliate or ciliate, hairy above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 0.7–1.7 mm long overall, 0.15–0.33 length of lemma. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 28$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe, Southeastern Europe.

**Country /Province /State.** : France. : Italy.

**Festuca circinata** Griseb. *Goett. Abh.* xxiv. 288. (1879).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Argentina. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: ST: *Hieronymus* 535, 17 Mar 1876, Argentina: Csrdoaba: cerca de la Cuesta del Cerro, Sierra de Achala (GOET; IST: CORD, US-28765391 (fragm. ex GOET)).

ST: *Hieronymus* 783, 30 Jan 1877, Argentina: Csrdoaba: en las pendientes del Cerro Champaquum, cerca del rmo del Catre (CORD).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. circino*, form into a circle. Leaf-blades coiled.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms erect, 25–50 cm long, 2-noded. Culm-internodes terete, smooth, distally glabrous. Leaf-sheaths tubular for much of their length, glabrous on surface. Ligule a ciliate membrane, 1 mm long, truncate. Leaf-blades curled, filiform, conduplicate, 0.9–1.5 mm wide, stiff, glaucous. Leaf-blade venation comprising 18–20 vascular bundles, with 8–9 inner ridges, with 7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma attached to veins above and below, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface glabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear or oblong, 8–12 cm long. Primary panicle branches appressed, 2-nate. Panicle axis smooth. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate or elliptic, laterally compressed, 9–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4–5 mm long, 0.8–0.9 length of upper glume, chartaceous, without keels, 1-veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5–5.5 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume primary vein scabrous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5.5–6 mm long, chartaceous, without keel, 5-veined, more than 3-veined. Lemma midvein scabrous. Lemma apex acuminate, awned, 1-awned. Principal lemma awn 1 mm long overall. Palea 1 length of lemma, 2-veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear, 0.75 length of caryopsis.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Southern South America. Argentina Northwest, Argentina Northeast.

**TDWG4.** San Luis. Cordoba.

**Festuca circummediterranea** Patzke. *Osterr. Bot. Zeitschr.*, 122(4): 261 (1973).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from France. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: : Based on *F. ovina* subsp. *laevis*; France, Col de Tenda: Bourgeau.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. circum*, about. Growing about the Mediterranean.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms 10–70 cm long. Leaf-sheaths tubular for much

of their length, with 0.5–0.75 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect. Ligule a ciliolate membrane. Leaf-blades filiform, conduplicate, 0.5–1.1 mm wide. Leaf-blade venation comprising 7 vascular bundles, with 3 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense or loose, 3–9.5 cm long. Primary panicle branches spreading, moderately divided. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6–8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.1–5.5 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4–5.8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2–3.7 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southeastern Europe.

**Country /Province /State.** : Albania, Greece, Italy, Crete, Yugoslavia.

### **Festuca cirrosa** (Speg.) L. Parodi. *Rev. Argent. Agron.* xx. 190 (1953).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Argentina. **Basionym or Replaced Name:** *Festuca erecta* var. *cirrosa* Speg., *Anales Mus. Nac. Buenos Aires* 5: 95 (1896)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Argentina: Tierra del Fuego: Isla de los Estados: Puerto Roca, 1882, *Spegazzini* (HT: LP).

**Illustrations (Books):** M.N.Correa, *Flora Patagonica* Parte III, Gramineae (1978) (107, Fig. 63).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms 30–50 cm long. Lateral branches lacking. Leaf-sheaths open for most of their length. Ligule an eciliate membrane or a ciliolate membrane, 1.5–5 mm long. Leaf-blades filiform, conduplicate, 20–40 cm long, 0.8–1.2 mm wide. Leaf-blade surface scabrous, rough adaxially, glabrous.

**Inflorescence.** Inflorescence a panicle, shorter than basal leaves. Panicle contracted, linear, 10–15 cm long. Primary panicle branches appressed. Panicle axis smooth. Panicle branches smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, smooth or scaberulous.

**Fertile Spikelets.** Spikelets comprising 6–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 12–16 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1–2 mm long, pubescent.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 7.5–9 mm long, 0.75 length of upper glume, chartaceous, without keels, 1–3 -veined. Lower glume lateral veins absent or distinct. Lower glume surface puberulous, hairy generally or above. Lower glume apex acuminate. Upper glume lanceolate, 9–11.5 mm long, 1.1 length of adjacent fertile lemma, chartaceous, without keels, 3–5 -veined. Upper glume surface puberulous, hairy generally or above. Upper glume apex acuminate.

**Florets.** Fertile lemma elliptic, 8–10 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface puberulous. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1–4 mm long overall. Palea 0.75 length of lemma, 2 -veined. Palea surface puberulous, hairy above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Southern South America. Argentina South, Chile South.

**TDWG4.** Chubut, Tierra del Fuego. Chiloe, Aisen, Magellanes. Magellanes.

**Festuca claytonii** E.B.Alekseev. *Bot. Zhurn.*, 71(8): 1117 (1986).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Kenya. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Kenya, Mt. Elgon: Thomas 2727 (K holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of William Derek Clayton (1926-) English botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with soft dead sheaths. Culms 25–60 cm long, 1–1.5 mm diam., 2-noded. Culm-internodes smooth. Ligule an eciliate membrane, 0.8–1.5 mm long. Leaf-blades filiform, involute, angular in section, 7–15 cm long, 0.4–0.5 mm wide, flaccid, glaucous. Leaf-blade midrib keeled beneath. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 5 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle, comprising 6–13 fertile spikelets. Panicle open, linear, 5–12 cm long. Primary panicle branches appressed, 2–3 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 7–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.5–3.5 mm long, 0.7–0.8 length of upper glume, chartaceous, much thinner on margins, without keels, 1-veined. Lower glume lateral veins absent. Lower glume surface asperulous, rough above. Lower glume apex acute. Upper glume lanceolate, 3.4–4.7 mm long, 0.6–0.7 length of adjacent fertile lemma, chartaceous, with membranous margins, without keels, 3-veined. Upper glume surface asperulous, rough above. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 6–6.5 mm long, chartaceous, without keel, 5-veined, more than 3-veined. Lemma surface scabrous. Lemma apex awned, 1-awned. Principal lemma awn 1–2 mm long overall. Palea 1 length of lemma, 2-veined. Palea keels scabrous, with 1 of their length adorned. Palea apex dentate, 2-fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear, 1 length of caryopsis.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** East tropical Africa. Kenya.

**Festuca cleefiana** E.B. Alekseev. *Bot. Zhurn.*, 69(11): 1548 (1984).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Colombia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *A.M. Cleef* 6826, 7 Dec 1972, Colombia: Boyaca (US-2785718; IT: COL, U).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 97, fig 46 (2007)).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating connection. In honor of A. M. Cleef (fl. 1972) who collected in Colombia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 70–100 cm long, 2-noded, with 0.33 of their length below uppermost node. Culm-internodes smooth. Culm-nodes glabrous. Lateral branches lacking. Leaf-sheaths open for most of their length, smooth. Ligule an eciliate membrane, 2–2.5 mm long, obtuse. Leaf-blades straight, filiform, conduplicate, 15–30 cm long, 0.55–0.65 mm wide, indurate. Leaf-blade venation comprising 7 vascular bundles, with 5 inner ridges, with subepidermal sclerenchyma attached to veins above and below, with unevenly thickened subepidermal sclerenchyma layer on the underside or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate or oblong, 11–15 cm long. Primary panicle branches 3–7 cm long. Panicle branches smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 8–8.5 mm long, breaking up at maturity, disarticulating below each fertile floret.



**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 4–4.5 mm long, 0.8 length of upper glume, coriaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface smooth. Lower glume apex acute. Upper glume lanceolate, 5–5.7 mm long, 0.9–1 length of adjacent fertile lemma, coriaceous, without keels, 3 -veined. Upper glume surface smooth. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5.5–5.7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.8–1.5 mm long overall. Palea 2 -veined. Palea keels scabrous, with 0.33 of their length adorned. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 2.3–2.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp, sulcate on hilar side. Hilum linear, 0.75 length of caryopsis.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Colombia.

### ***Festuca clementei*** Boiss. *Elench.* 90. (1838).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Spain. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Spain, Sierra Nevada: Boissier 192 (K iso).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of E. Clement (-) who collected in Western Australia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms 15–22 cm long, 1 -noded. Leaf-sheaths with flat margins, transversely wrinkled, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 0.5–0.7 mm wide, stiff. Leaf-blade venation comprising 5–7 vascular bundles, with 3–5 inner ridges, with 5–7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface scabrous, pilose, densely hairy. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong, 3–5.5 cm long. Panicle branches with scattered hairs. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5.6–6 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 2.9–3.1 mm long, 0.75 length of adjacent fertile lemma, chartaceous, with scarious margins, without keels, 3 -veined. Upper glume apex obtuse.

**Florets.** Fertile lemma oblong, 4–4.5 mm long, chartaceous, mid-green or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma apex acute, mucronate or awned, 1 -awned. Principal lemma awn 0.3–0.6 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3 mm long. Ovary glabrous. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : Spain.

### ***Festuca coahuilana*** M. Gonzalez-Ledesma & S.D. Koch. *Novon*, 4(1): 27 (1994).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Mexico. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *Wendt & J. Valdes R. 2042*, Mexico: Coahuila (ANSM).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating location. From Coahuila, Mexico.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Rhizomes short. Butt sheaths withering (or few fibres). Basal innovations extravaginal or intravaginal. Culms erect, 50–60 cm long. Culm-nodes glabrous. Leaf-sheaths glabrous on surface. Leaf-sheath auricles absent. Ligule an eciliate membrane,

0.3–0.7 mm long, bilobed. Leaf-blades flexuous, flat or convolute, 10–25 cm long, 1.5–2.2 mm wide. Leaf-blade venation prominent. Leaf-blade surface scaberulous, rough adaxially, glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, 8–13 cm long. Primary panicle branches appressed, 1–2 -nate. Panicle axis scaberulous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7.8–9.2 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.8–4 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface asperulous, rough at apex. Lower glume apex acute. Upper glume lanceolate, 4.1–6.1 mm long, 0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface asperulous, rough at apex. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5–6.2 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous. Lemma apex acute, scabrous, muticous. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, with a small lateral lobe or irregularly toothed. Anthers 3, 2.5–2.7 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, 3.5 mm long. Hilum linear.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** Mexico. Northeast Mexico.

**TDWG4.** Coahuila.

### **Festuca cochabambana** E.B. Alekseev. *Bot. Zhurn.*, 70(9): 1241 (1985).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Bolivia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *Josi Steinbach 8976*, 29 Jan 1929, Bolivia: Dept. Cochabamba: Prov. Chapare: Incachaca, feuchtige Stellen, 2300 m (HT: S; IT: MO-974946).

**Illustrations (Books):** S.A.Renvoize, *Gramineas de Bolivia* (1998) (Fig. 20).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating location. From Cochabamba Department, Bolivia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, culms solitary. Rhizomes elongated. Culms 90–120 cm long. Culm-nodes swollen. Leaves cauline. Leaf-sheaths pubescent. Ligule an eciliate membrane, 0.2–0.7 mm long. Leaf-blades 20–30 cm long, 4–7 mm wide. Leaf-blade surface scabrous, rough adaxially. Leaf-blade apex acuminate.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 20–25 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 9–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 1.8–2.2 mm long, 0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume lanceolate, 2.7–3.2 mm long, 0.5 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 5.5–6.2 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface asperulous, rough in the middle. Lemma apex acute, awned, 1 -awned. Principal lemma awn 6–12 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1–1.2 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Bolivia.

**Festuca cocuyana** Stancmk. *Darwiniana* 41(1–4): 133, 135 (figs. 12a-e, 17f) (2003).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Colombia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Colombia: Boyaca: Munic. Cocuy & Gican, PNN El Cocuy. Alto de las Cuevas. Grassy paramo with *Calamagrostis effusa*, *Espeletia* sp., *Acaulimlva* sp., etc., 3850m 30 Dec 1999, Stančmk 1886 (HT: PRC; IT: COL, FMB).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (99: 97, fig 47 (2007)).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating connection. From Sierra Nevada del Cocuy, Colombia.

**Classification.** Subfamily Pooideae. Tribe: Poaeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Cataphylls inconspicuous. Basal innovations intravaginal. Culms of moderate stature, straight, 20–50 cm long, 2–3 -noded, without nodal roots. Culm-internodes terete. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves basal and cauline, 2–3 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined, glabrous on surface. Leaf-sheath auricles absent. Ligule an eciliate membrane, 0.6–1 mm long, membranous, white, entire, truncate. Leaf-blade base symmetrical. Leaf-blades straight or flexuous, conduplicate, angular in section, 15–20 cm long, 0.8–2 mm wide, firm or flaccid, dark green. Leaf-blade midrib indistinct or evident. Leaf-blade venation indistinct or distinct, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma free from veins or attached to veins above or attached to veins below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface glabrous. Leaf-blade margins smooth, glabrous. Leaf-blade apex obtuse or attenuate.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle terete, eglandular, glabrous. Panicle open or contracted, lanceolate or elliptic, continuous, dense, straight, 8–12 cm long, 0.8–1.5 cm wide. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 10–13 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes scaberulous, pubescent. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume lanceolate, 7.5–8 mm long, 0.8–9 length of upper glume, chartaceous or scarious, pallid or light green or light brown, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface asperulous. Lower glume apex acute. Upper glume elliptic or oblong, 7.5–10.5 mm long, 1 length of adjacent fertile lemma, chartaceous, light green or mid-green, without keels, 3 -veined. Upper glume surface asperulous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, symmetrical, 8–10 mm long, chartaceous, pallid or mid-green or purple, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex muticous or mucronate, 1 -awned. Principal lemma awn stiff, 0–0.5 mm long overall. Palea 0.75 length of lemma, 2 -veined. Palea surface papillose. Palea apex scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, lanceolate, 1–1.4 mm long. Anthers 3, 0.8–1.1 mm long. Ovary glabrous. Caryopsis with adherent pericarp, lanceolate. Hilum linear, 0.75 length of caryopsis.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Colombia.

**Festuca coelestis** (St.- Yves) Krecz. & Bobr. *Komarov, Fl. URSS*, ii. 514, 770 (1934).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. **Basionym or Replaced Name:** *Festuca ovina* subsp. *coelestis* St.-Yves, *Rev. Bretonne Bot. Pure Appl.* 2: 23, 47 (1927)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Russia, Djoukoutchiak valley: Brocherel 392 (G holo).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig.337).

**Derivation** (Clifford & Bostock 2007): L. coeleste, belonging to heaven. Alpine species.

**Classification.** Subfamily Pooideae. Tribe: Poaeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 5–30 cm long. Ligule an eciliate membrane, 0.4–0.6 mm long. Leaf-blades filiform, conduplicate, 5–13 cm long, 1 mm wide, glaucous. Leaf-blade venation comprising 5 vascular bundles, with 3 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong, 1–5 cm long. Primary panicle branches appressed. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 5–6 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 1.8–2.2 mm long, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 2.6–3.2 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 3.2–4 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1–2 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous, adorned all along or above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1–1.2 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia, Tropical Asia.

**Country /Province /State. Middle Asia, China.** Kazakhstan, Kirgizistan, Turkmenistan, Tadzhikistan. China South Central, Inner Mongolia, China North-Central, Qinghai, Tibet, Xinjiang. **Indian Subcontinent.** Pakistan, West Himalaya.

**TDWG4.** Gansu, Hubei, Sichuan, Yunnan.

## **Festuca coerulescens**

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. coerulesco*, become bluish. Foliage glaucous.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms 15–70 cm long, 3 -noded, with 0.5 of their length below uppermost node. Lateral branches lacking. Leaf-sheaths smooth or scaberulous, glabrous on surface. Ligule an eciliate membrane, 0.2–1 mm long, glabrous on abaxial surface or pubescent on abaxial surface, truncate. Leaf-blades 10–25 cm long, 1–4.5 mm wide. Leaf-blade midrib conspicuous. Leaf-blade venation with 7–11 secondary veins. Leaf-blade surface scabrous, rough adaxially, glabrous. Leaf-blade margins scabrous. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle. Peduncle scaberulous above. Panicle contracted, linear, 5–15 cm long. Primary panicle branches 1 -nate, bearing spikelets almost to the base. Panicle axis pubescent. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 5–6 mm long, 0.8 length of upper glume, chartaceous, much thinner on margins, without keels, 1 -veined. Lower glume primary vein smooth or scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 6–7 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, with scarious margins, without keels, 3 -veined. Upper glume primary vein smooth or scabrous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins prominent. Lemma surface scaberulous. Lemma apex acute, mucronate. Palea 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 4 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, oblong, 5 mm long, hairy at apex. Hilum linear.

**Distribution (TDWG). Continent.** Europe, Africa.

**Region. Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe.**

**Country /Province /State.** : Denmark, Finland, Great Britain, Ireland, Norway, Svalbard. : Austria, Belgium, Czechoslovakia, Germany, Hungary, Netherlands, Poland, Switzerland. : Balears, Corsica, France, Portugal, Sardinia, Spain. : Albania, Bulgaria, Greece, Italy, Crete, Romania, Malta, Sicily, Turkey Europe, Yugoslavia. Estonia, Latvia, Lithuania, Krym, Central European Russia, East European Russia, South European Russia, Northwest European Russia, Ukraine. **Northern Africa.** Algeria, Egypt, Libya, Morocco, Tunisia.

**Festuca colombiana** E.B. Alekseev. *Bot. Zhurn.*, 69(11): 1546 (1984).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Colombia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *A.M. Cleef 181*, 11 Dec 1971, Colombia: Cundinamarca (US-2785658; IT: COL, P, U).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 68, fig 31 (2007)).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating location. From Colombia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Cataphylls evident. Basal innovations extravaginal. Culms erect, 75–150 cm long, 3–4 -noded, with 0.5–0.66 of their length below uppermost node. Culm-internodes smooth. Culm-nodes glabrous. Lateral branches lacking. Leaf-sheaths open for most of their length, smooth. Ligule a ciliolate membrane, 0.5–0.7 mm long. Leaf-blades filiform, conduplicate, 20–40 cm long, 1.3–1.8 mm wide, indurate. Leaf-blade venation comprising 9 vascular bundles, with subepidermal sclerenchyma attached to veins above and below, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface woolly, hairy adaxially. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate or oblong, 12–22 cm long. Primary panicle branches 4–8 cm long. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 9–13 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 2.5–3.5 mm long, 0.66–0.75 length of upper glume, coriaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface smooth. Lower glume apex acute. Upper glume lanceolate, 4–5 mm long, 0.66 length of adjacent fertile lemma, coriaceous, without keels, 3 -veined. Upper glume surface smooth. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acute, mucronate. Palea 2 -veined. Palea keels scabrous, with 0.33–0.5 of their length adorned. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 2.3–3 mm long. Ovary glabrous. Caryopsis with adherent pericarp, sulcate on hilar side. Hilum linear, 1 length of caryopsis.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Colombia.

**Festuca compressifolia** Presl. *Rel. Haenk.* i. 279. (1830).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *T.Haenke*, Peru: mont. Guanoc (PR; IT: US-2875393 (fragm.) ex PR).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. comprimo, squeeze together; folium, leaf. Leaf-blades involute.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms geniculately ascending, 40–80 cm long, 1–2 -noded. Culm-internodes smooth or scaberulous. Leaf-sheaths open for most of their length, glabrous on surface. Ligule a ciliolate membrane, 2–4 mm long, truncate. Leaf-blades involute or convolute, 15–45 cm long, 2–3 mm wide, coriaceous. Leaf-blade surface smooth or scabrous, rough adaxially or on both sides, glabrous. Leaf-blade margins scabrous. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle. Panicle open, elliptic, 15–25 cm long. Primary panicle branches ascending, 7–15 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, scabrous.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–11 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4.5–6 mm long, 0.8–0.9 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein smooth or scaberulous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5.6–7 mm long, 1 length of

adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein smooth or scaberulous. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 5.5–7 mm long, chartaceous, without keel, 4 -veined, more than 3-veined. Lemma surface asperulous. Lemma apex acute, mucicous or mucronate. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Palea surface scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.2–3 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Peru.

### **Festuca contracta** T. Kirk. *Trans. N. Z. Inst.* xxvii. 353. (1895).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), E.Edgar, & H.Connor, *Flora of New Zealand Gramineae* 5 (2000).

**TYPE** from New Zealand. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: A. Hamilton s.n., 1894, New Zealand (WELT-68607).

**Illustrations (Books):** M.N.Correa, *Flora Patagonica* Parte III, Gramineae (1978) (103, Fig. 59).

**Derivation** (Clifford & Bostock 2007): L. contracted. Inflorescence a narrow panicle.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Culms erect, 15–40 cm long. Lateral branches lacking. Leaves distichous. Leaf-sheaths open for most of their length, glabrous on surface. Leaf-sheath auricles erect. Ligule an eciliate membrane, 0.3 mm long. Leaf-blades filiform, 5–25 cm long, 1 mm wide. Leaf-blade surface ribbed, pubescent, hairy adaxially. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 6–10 cm long. Primary panicle branches appressed. Panicle axis scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–11.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1–1.5 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 5–7.5 mm long, 1 length of upper glume, chartaceous, without keels, 3 -veined. Lower glume primary vein scabrous. Lower glume surface asperulous, rough generally or above. Lower glume apex acute. Upper glume lanceolate, 5–7.5 mm long, 0.9–1 length of adjacent fertile lemma, chartaceous, with hyaline margins, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume surface asperulous, rough generally or above. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 5–6 mm long, chartaceous, much thinner on margins, without keel, 5 -veined, more than 3-veined. Lemma surface puberulous. Lemma apex emarginate, awned, 1 -awned. Principal lemma awn 1–3 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Palea surface puberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1–1.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp, 3 mm long, dark brown. Hilum linear, 0.5 length of caryopsis.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Australasia, South America, Antarctica.

**Country /Province /State.** New Zealand. Antipodes Is, Chatham Is, Kermadec Is, New Zealand North I, New Zealand South I, Stewart Is, Campbell Is, Auckland Is, Macquarie Is. **Southern South America.** Argentina South, Chile South. **Subantarctic islands.** Falkland Is (Malvinas), Kerguelen, Macquarie Is, South Georgia.

**TDWG4.** Tucuman. Tierra del Fuego. Chiloe, Aisen, Magellanes. Magellanes.

### **Festuca copei** S.A. Renvoize. *Gramineas de Bolivia*: 117 (1998).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Bolivia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: Renvoize & Cope 4088, (LPB; IT: K).

**Illustrations (Books):** S.A.Renvoize, *Gramineas de Bolivia* (1998) (Fig. 229).

**Derivation** (Clifford & Bostock 2007): In honor of Thomas Arthur Cope (1949-) English botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths papery. Culms 70–120 cm long. Leaves basal and cauline. Ligule an eciliate membrane, 0.5–1 mm long. Leaf-blades 20–40 cm long, 0.5–3 mm wide. Leaf-blade surface scabrous, rough on both sides. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong, loose, 12–25 cm long. Primary panicle branches ascending, 2–10 cm long. Panicle branches flexuous, scabrous, glabrous. Spikelets ascending, solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 6–11 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear or lanceolate, 3–5.5 mm long, 0.75–1 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute or acuminate. Upper glume linear or lanceolate, 4–5.5 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute or acuminate.

**Florets.** Fertile lemma lanceolate, 5.5–6.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acute or acuminate, muticous. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–3 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Bolivia.

**Festuca cordubensis** J.A. Devesa. *Lagasalia* 14(1): 165 (1986).

**TYPE** from Spain. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Sierra de Horconera: Borja (SEV holo).

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : Spain.

**Festuca coromotensis** B.Briceno. *Ernstia*, 4: 76 (1994).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Venezuela. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Venezuela: Edo. Miranda: Dto. Libertador: Parque Nacional Sierra Nevada: Laguna de Coromoto, 3300 m, 3 Jul 1987, B. Briceño & G. Adamo 2003 (HT: MERF; IT: Fac. Cs. ULA).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 21, fig 3 (2007)).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, culms solitary or caespitose, clumped loosely. Cataphylls inconspicuous. Rhizomes short, fleshy, not obviously scaly. Basal innovations extravaginal. Culms erect, of moderate stature, straight or curved, 100–150 cm long, without nodal roots. Culm-internodes terete, 12–34 cm long, distally glabrous. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves basal and cauline, 3–5 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, mostly shorter than adjacent culm internode, wider than blade at the collar, without keel, striately veined, glabrous on surface. Leaf-sheath auricles absent. Ligule a ciliolate membrane, 0.5–0.8 mm long, membranous, white, entire. Leaf-blade base symmetrical. Leaf-blades flexuous, flat or convolute, linear in section, 31 cm long, 3–4 mm wide, flaccid, dark green. Leaf-blade midrib evident. Leaf-blade venation distinct, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous, rough adaxially, glabrous. Leaf-blade margins smooth, glabrous. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle straight or flexuous, terete, eglandular, glabrous. Panicle open or contracted, lanceolate, continuous, dense or loose, secund, straight, 28 cm long, 5 cm wide. Primary panicle branches appressed or ascending, 2 -nate, moderately divided, 10.5 cm long, bearing spikelets almost to the base. Panicle branches straight. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9–11 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes scaberulous. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume subulate or linear, 2.5–3.5 mm long, 0.5–0.6 length of upper glume, scarious or cartilaginous or coriaceous, dark green or purple, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute or acuminate.

Upper glume lanceolate, 6.4 mm long, 0.66 length of adjacent fertile lemma, chartaceous, dark green or purple, without keels, 3 -veined. Upper glume surface scabrous. Upper glume apex acute.

**Florets.** Fertile florets with the lowest dissimilar. Lowest fertile lemma muticous. Fertile lemma lanceolate, symmetrical, 5.5 mm long, chartaceous, dark green, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acute, awned, 1 -awned. Principal lemma awn stiff, 0.7–1 mm long overall. Palea 8.3 mm long, 2 -veined. Palea keels scabrous. Palea surface scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, 1.2 mm long. Anthers 3, 2.2 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Northern South America. Venezuela.

### **Festuca costata** Nees. *Fl. Afr. Austr.* 447. (1841).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *Drige*, Cap. b. sp. (caput CBonae Spei) (LE). IT.

IST: *Ecklon, Zeyher 181*, Cap. b. sp. (LE). IST (CT).

IST: *Ecklon 181*, 1844, Cap. (LE). IST.

**Illustrations (Books):** L.K.A. Chippindall, *Grasses and Pastures of South Africa* (1955) (57, Fig 28), G.E.Gibbs Russell et al, *Grasses of Southern Africa* (1990) (169, Fig 97).

**Derivation** (Clifford & Bostock 2007): *L. costa*, rib; -ata, possessing. Leaf-blades conspicuously longitudinally ribbed.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms 60–100 cm long, 1–3 -noded. Leaf-sheaths smooth, glabrous on surface. Ligule an eciliate membrane, 1–4 mm long. Leaf-blades involute, 15–50 cm long, 2–4 mm wide. Leaf-blade surface smooth. Leaf-blade margins scaberulous. Leaf-blade apex attenuate, filiform.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, effuse, 10–20 cm long. Primary panicle branches 2 -nate. Panicle branches flexuous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10–20 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3.5–6.5 mm long, 0.8–0.9 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4–8 mm long, 0.6–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile florets divergent. Fertile lemma elliptic, 6.5–10 mm long, coriaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous. Lemma apex obtuse, muticous or mucronate. Principal lemma awn subapical. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3.5 mm long. Ovary glabrous or pubescent on apex. Caryopsis with adherent pericarp, glabrous or hairy at apex. Hilum linear.

*N* = 14 (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** East tropical Africa, South tropical Africa, Southern Africa. Kenya, Tanzania. Angola, Malawi, Mozambique, Zimbabwe. Limpopo, Mpumalanga, Swaziland, Free State, Kwazulu-Natal, Lesotho, Eastern Cape.

### **Festuca costei** (St-Yves ex Litard.) I.Markgraf-Dannenber. *Bot. J. Linn. Soc.*, 76(4): 327 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from France. **Basionym or Replaced Name:** *Festuca ovina* subvar. *costei* St.-Yves, *Bull. Soc. Bot. Fr.* 71:39 (1924). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: France, Gironde: Coll?.

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.



**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 35–50 cm long. Leaf-sheaths open for most of their length, with 0.25 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect. Ligule a ciliolate membrane. Leaf-blades filiform, conduplicate, 0.7–1.1 mm wide. Leaf-blade venation comprising 7–9 vascular bundles, with 3 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 5–9 cm long. Primary panicle branches moderately divided. Panicle branches glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4–4.5 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 5.4–6 mm long, chartaceous, mid-green or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1.5–2 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 28$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe, Southwestern Europe, Southeastern Europe.

**Country /Province /State.** : Belgium, Switzerland. : France, Spain. : Italy.

**Festuca coxii** (Petrie) Hackel. *Cheeseman, Man. N. Zeal. Fl.* 919 (1906).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), E.Edgar, & H.Connor, *Flora of New Zealand Gramineae* 5 (2000).

**TYPE** from New Zealand. **Basionym or Replaced Name:** *Agropyron coxii* Petrie, *Trans. & Proc. New Zealand Inst.* 34: 395 (1902)

. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: LT: *L. Cockayne & F.A.D. Cox s.n. [herb. L. Cockayne 4024]*, Jan 1901, New Zealand: rocks near the sea, Chatham Island (AK-2009). LT designated by Connor, *New Zealand J. Bot.* 36: 339 (1998).

**Illustrations (Books):** No illustration found (BKS).

**Images:** R.Darke, *The Encyclopaedia of Grasses for Liveable Landscapes* (2007);

**Derivation** (Clifford & Bostock 2007): in honor of Felix Arthur Douglas Cox (1835–1916) amateur botanist and long-time resident of Chatham Islands.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Rhizomes elongated. Culms erect or geniculately ascending, slender, 15–45 cm long. Culm-internodes smooth. Lateral branches lacking. Leaves basal and cauline. Leaf-sheaths open for most of their length. Ligule a ciliolate membrane, 0.5–1 mm long, truncate. Leaf-blades involute, 1–2 mm wide. Leaf-blade midrib conspicuous. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 5–7.5 cm long. Primary panicle branches indistinct the panicle almost racemose or simple. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, scabrous.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 13–15 mm long, breaking up at maturity, disarticulating below each fertile floret. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, 0.75 length of upper glume, membranous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex setaceously acuminate. Upper glume lanceolate, 0.75 length of adjacent fertile lemma, membranous, without keels, 3 -veined. Upper glume apex setaceously acuminate.

**Florets.** Fertile lemma lanceolate or oblong, 8–9 mm long, membranous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins obscure. Lemma surface asperulous. Lemma apex attenuate, awned, 1 -awned. Principal lemma awn 8–9 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, linear or oblong, sulcate on hilar side. Hilum linear, 0.8 length of caryopsis.

$2n = 56$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Australasia.

**Country /Province /State.** New Zealand. Chatham Is.

**Festuca cratericola** I. Markgraf-Dannenber. *Willdenowia*, 11(2): 203 (1981).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Turkey. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Turkey, Erciyas Dag; Zederbauer (W holotype).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. craterus*, crater; -cola, dweller. From craters in Central Anatolia, Turkey.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths light brown, persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms 10–15 cm long. Culm-internodes smooth, distally glabrous. Leaf-sheaths tubular for much of their length, with 1 of their length closed. Leaf-sheath oral hairs ciliate. Leaf-sheath auricles erect. Ligule a ciliate membrane, 0.2 mm long, scaberulous on abaxial surface. Leaf-blades filiform, conduplicate, angular in section, 0.25–0.5 mm wide, glaucous. Leaf-blade venation comprising 5 vascular bundles, with 1 inner ridges, with 7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth, puberulous, hairy adaxially. Leaf-blade apex obtuse or abruptly acute.

**Inflorescence.** Inflorescence a panicle. Peduncle smooth. Panicle open, oblong, dense, 3–4 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 7–7.3 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or oblong, 4–4.6 mm long, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 4.5–5.2 mm long, chartaceous, mid-green or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.5–2 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.3–2.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Western Asia. Turkey.

**Festuca cretacea** Popov & Prosk. *Bull. Soc. Nat. Voron.* ii. 46 (1927).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: NT: *V.Tichomirov, E. Alexeev s.n.*, 24 Jul 1978, Europ. Russia: Voronezh prov.: Podgornoje dist.: vill.Belgorje (LE). Orig. label: "Prov. Voroneg, distr. Podgornoje, prope pag. Belgorje, montes cretaceis ad ripam dextram fl. Don,...".

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. chalk-white*. Spikelets white.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations extravaginal. Culms 30–50 cm long. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, pubescent. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 0.55–1 mm wide, stiff, glaucous. Leaf-blade venation comprising 7 vascular bundles, with sclerenchyma strands below veins or above all veins, with 5 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface smooth, pubescent, densely hairy. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 7–13 cm long. Primary panicle branches spreading. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8.6–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.4–6.5 mm long, 0.7–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 5–7.1 mm long, chartaceous, mid-green, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.4–1.5 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Dissemisule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region. Eastern Europe.**

**Country /Province /State.** Central European Russia, East European Russia, South European Russia, Ukraine.

**TDWG4.**

### ***Festuca crispatopilosa*** Bor. *Webbia*, xxiii. 585 (1969).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, J.F.Veldkamp, Poaceae ms (*Flora Malesiana*).

**TYPE** from New Guinea. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: New Guinea, Naambota: Hoogland 9970 (K holotype).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. crispo*, curl; *pilosa*, hairy. Panicle axis with short curly hairs.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Rhizomes elongated. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Culms erect, 30–60 cm long. Lateral branches lacking. Leaf-sheaths open for most of their length, smooth, glabrous on surface. Leaf-sheath auricles erect. Ligule an eciliate membrane. Leaf-blades straight or flexuous, filiform, conduplicate, elliptic in section, 5–10 cm long, 0.5–1 mm wide, stiff. Leaf-blade surface puberulous, hairy adaxially. Leaf-blade margins scabrous.

**Inflorescence.** Inflorescence a panicle. Peduncle pilose above. Panicle open, lanceolate, 7–15 cm long. Primary panicle branches ascending. Panicle axis pilose. Panicle branches pilose. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3.5–4 mm long, 0.75 length of upper glume, chartaceous, without keels, 3 -veined. Lower glume surface puberulous, hairy above. Lower glume apex acuminate. Upper glume elliptic or oblong, 5 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, keel-less except near apex, 4–5 -veined. Upper glume lateral veins distinct. Upper glume surface puberulous, hairy above. Upper glume apex obtuse.

**Florets.** Fertile lemma elliptic, 7–7.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma midvein scaberulous. Lemma surface glabrous or puberulous, hairy above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 4–9 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, oblong, hairy at apex. Embryo 0.15 length of caryopsis. Hilum linear, 0.75 length of caryopsis.

**Distribution (TDWG). Continent.** Tropical Asia.

**Country /Province /State. Papuaasia.** New Guinea West Papua (Irian Jaya). New Guinea.

### ***Festuca cryptantha*** T.A. Cope. *Kew Bull.*, 39(4): 834 (1984).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Yemen. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Yemen, Jibla: Wood 1140 (K holotype).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): glumes enclosing the florets.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms erect, 5–35 cm long. Culm-internodes smooth. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane. Leaf-blades curved to flexuous, filiform, conduplicate, 2.5–15 cm long, 0.4–0.6 mm wide. Leaf-blade venation comprising 5 vascular bundles, with 5 inner ridges, with 7 subepidermal sclerenchyma strands. Leaf-blade surface glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 2–10 cm long. Primary panicle branches indistinct the panicle almost racemose. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.3–8.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1.2–1.5 mm long.

**Glumes.** Glumes persistent, similar, reaching apex of florets. Lower glume ovate, 6.5–8 mm long, 1 length of upper glume, chartaceous, without keels, 3 -veined. Lower glume apex acuminate. Upper glume ovate, 6.5–8.5 mm long, 1.5–1.6 length of adjacent fertile lemma, chartaceous, without keels, 3(–5) -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma ovate, 4–5.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.5–1 mm long overall. Palea 2 -veined. Rhachilla extension 2 mm long. Apical sterile florets 1 in number, barren, linear, 0.5 mm long.

**Flower and Fruit.** Anthers 3, 1.7–2 mm long. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Arabian Peninsula. Yemen.

**Festuca cumminsi** Stapf. *Hook. f. Fl. Brit. Ind.* vii. 349. (1896).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N.L.Bor, *Grasses of Burma, Ceylon, India and Pakistan* (1960).

**TYPE** from Bhutan. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: ST: *J.D. Hooker s.n.*,

ST: *Cummins s.n.*, W. Bhutan:

**Illustrations (Books):** H.J.Noltie, *The Grasses of Bhutan* (2000) (541, Fig. 14).

**Derivation** (Clifford & Bostock 2007): L. in honor of Henry Alfred Cummins (1864–1939) Irish-born physician who collected in India.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm. Basal innovations extravaginal or intravaginal. Culms 8–45 cm long, 2–3 -noded, with 0.5 of their length below uppermost node. Culm-internodes smooth. Lateral branches lacking. Leaf-sheaths open for most of their length, glabrous on surface. Leaf-sheath auricles erect. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 3–8 cm long, 0.5–1 mm wide. Leaf-blade venation with 5 secondary veins, 3 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface glabrous. Leaf-blade apex abruptly acute.

**Inflorescence.** Inflorescence a panicle. Peduncle scabrous above. Panicle open, linear or lanceolate, 3–10 cm long. Primary panicle branches 1 -nate. Panicle axis scabrous. Panicle branches flexuous, scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or obovate, laterally compressed, 6–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3–4 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume lanceolate, 4–5 mm long, 0.8–1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 4–6 mm long overall. Palea 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.  $2n = 28$  (2 refs TROPICOS).

**Distribution (TDWG). Continent.** Temperate Asia, Tropical Asia.

**Country /Province /State.** Middle Asia, Western Asia, China, Mongolia, Russia. Kazakhstan, Kirgizistan, Tadzhikistan. Iran. China South Central, Inner Mongolia, China North-Central, Qinghai, Tibet, Xinjiang. Mongolia. **Indian Subcontinent.** Eastern Himalaya, Pakistan.

**TDWG4.** Gansu. Hubei, Sichuan, Yunnan. Bhutan, Sikkim.

**Festuca cundinamarcae** E.B. Alekseev. *Bot. Zhurn.*, 69(11): 1548 (1984).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Colombia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Cuatrecasas 7966*, Colombia (S; IT: COL, U, US).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 101, fig 48 (2007)).

**Derivation** (Clifford & Bostock 2007): from Cundinamarca Department, Colombia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 40–80 cm long, 2 -noded, with 0.25 of their length below uppermost node. Culm-internodes smooth. Culm-nodes glabrous. Lateral branches lacking. Leaf-sheaths open for most of their length. Ligule an eciliate membrane, 0.1–0.2 mm long. Leaf-blades straight, filiform, conduplicate, 15–30 cm long, 0.75–0.85 mm wide, indurate. Leaf-blade venation comprising 9 vascular bundles, with 7 inner ridges, with 11 subepidermal sclerenchyma strands, with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, 14–17 cm long. Primary panicle branches appressed, 3–7 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 9.5–12 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 3–3.5 mm long, 0.75 length of upper glume, coriaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface smooth. Lower glume apex acute. Upper glume lanceolate, 4–4.5 mm long, 0.75 length of adjacent fertile lemma, coriaceous, without keels, 3 -veined. Upper glume surface smooth. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5.4–5.7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface smooth. Lemma apex acute, mucronate. Palea 2 -veined. Palea keels smooth. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 2.2–2.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Colombia.

**Festuca curvula** Gaud. *Agrost. Helv.* i. 239 (1811).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Switzerland. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Switzerland : In M. Thoiry. Miserunt etiam vir ampliss., *Hallerus & Schleicherus s.n.*.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. curvula*, bent; -ula, diminutive. Leaf-blades curved.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 25–40 cm long. Culm-internodes smooth or scaberulous. Leaf-sheaths open for most of their length, with 0.33 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 10–40 cm long, 0.8–1.1 mm wide, without exudate or pruinose. Leaf-blade

venation comprising 7–9 vascular bundles, with 3–5 inner ridges, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with unevenly thickened subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth to scabrous. Leaf-blade apex obtuse, mucicous or pungent.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 5–11 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–11 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4–6.3 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, with undifferentiated margins or hyaline margins, without keels, 3 -veined. Upper glume surface smooth or scabrous, rough above. Upper glume margins eciliate or ciliolate. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 5.5–7.5 mm long, chartaceous, mid-green or glaucous, without keel, 5 -veined, more than 3-veined. Lemma surface smooth or scabrous, glabrous or pubescent, hairy above. Lemma margins eciliate or ciliolate. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2.5–4 mm long overall, 0.5 length of lemma. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 56$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe, Southwestern Europe, Southeastern Europe.

**Country /Province /State.** : Austria, Switzerland. : France. : Italy.

**Festuca cuzcoensis** Stancik & Peterson. *Sida* 20:22 (2002).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Peru. Departamento Cuzco: Provincia Urubamba: above Ollantaytambo, in shade, high up ravine, 3600 m, 5 Dec 1923, A. S. Hitchcock 22532 (HT: US-1164548).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. -ensis*, denoting origin. From Cuzco, now Cusco Region, Peru.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Basal innovations extravaginal. Culms erect, 80–110 cm long, 6–12 -noded. Culm-internodes distally glabrous. Leaf-sheaths open for most of their length, pubescent. Leaf-sheath auricles absent. Ligule an eciliate membrane, 2–3 mm long, lacerate, acuminate. Leaf-blades 12–15 cm long, 3–9 mm wide. Leaf-blade surface ribbed, grooved abaxially, scabrous, rough abaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, 20–25 cm long, 5–10 cm wide. Primary panicle branches drooping. Panicle axis scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1.2–1.4 mm long, pubescent.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, (2–)2.5–4.5 mm long, 0.5–0.75 length of upper glume, chartaceous, purple, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous. Lower glume apex acute. Upper glume lanceolate, 4–6 mm long, 0.6–0.7 length of adjacent fertile lemma, chartaceous, purple, without keels, 3 -veined. Upper glume lateral veins obscure. Upper glume surface scabrous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 7–8.5 mm long, membranous or chartaceous, purple, without keel, 3–5 -veined, 0–3 -veined or more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 3–4(–5) mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, oblong, membranous, 2-toothed. Anthers 3, 1.5–2 mm long. Ovary with a few apical hairs. Caryopsis with adherent pericarp, lanceolate, hairy at apex. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Bolivia, Peru.

**Festuca cyllenica** Boiss. & Heldr. *Diagn. Ser. I.* xiii. 58 (1854).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Greece. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: CT: *Heldr.[eich] s.n.*, Jul. [18]48, Greece: M.Kyllene 5500–6000' (LE; T: L).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Mt Kyllene, Greece.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 27–45 cm long. Leaf-sheaths tubular for much of their length, with 0.33 of their length closed, with flat margins. Ligule an eciliate membrane, 1.4–2.7 mm long, acute or acuminate. Leaf-blades filiform, conduplicate, elliptic in section, 0.7–1.1 mm wide. Leaf-blade venation comprising 9–11 vascular bundles, with 7–9 inner ridges, with subepidermal sclerenchyma attached to veins above, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface ribbed, with rounded ribs. Leaf-blade apex pungent.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 6–8.5 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 8.3–12 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5–5.8 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6.3–7 mm long, chartaceous, mid-green or purple, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 0.2–1 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Hilum linear, 1 length of caryopsis.

**Distribution (TDWG). Continent.** Europe, Temperate Asia.

**Region.** Southeastern Europe.

**Country /Province /State.** : Greece. **Western Asia.** Turkey.

**Festuca cyrnea** (Litard. & St-Yves) I.Markgraf-Dannenberg. *Bot. J. Linn. Soc.*, 76(4): 327 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Corsica. **Basionym or Replaced Name:** *Festuca rubra* var. *cyrnea* St.-Yves & Litard., *Candollea* 1: 62, 19–20 (1922)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *R. Litardihre s.n.*, 17 Jul 1921, Corsica: Cap Corse, Mt. della Cippola; entre le Mte Canetto et le Mte della Cippola (G (herb. St. Yves)). LT designated by Kerguilen, *Lejeunia* n.s. 110: 11 (1983).

ST: *Briquet s.n.*, Environs de Zonza: Fourches de Bavella.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): from Cyrneus, now Corsica.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Rhizomes elongated. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations extravaginal. Culms 30–40 cm long. Culm-internodes distally pubescent. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 0.35–0.55 mm wide. Leaf-blade venation comprising 5 vascular bundles, with subepidermal sclerenchyma free from veins. Leaf-blade surface smooth, glabrous. Leaf-blade apex abruptly acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, 5–7 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally

compressed, 8–9 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume linear, 5 mm long, 0.9 length of adjacent fertile lemma, chartaceous, with scarious margins, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma linear, 5.4–6 mm long, chartaceous, mid-green or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–2.5 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe, Southeastern Europe.

**Country /Province /State.** : Corsica. : Italy.

### ***Festuca dahurica*** (StYves) Krecz. & Bobr. Komarov, *Fl. URSS*, ii. 519, 517, 771 (1934).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. **Basionym or Replaced Name:** *Festuca ovina* var. *dahurica* St.-Yves, *Bull. Soc. Bot. France* 71: 40–41, f. 7 (1924). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: ST: *Tuczaniow s.n.*, Russia: Siberia: Dahuria

ST: *Bunge (herb. Coss.)*, Fl. baical, dah.

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig.334 as ssp *dahurica*).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Dahuria, a region of south-eastern Siberia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms erect, 25–40 cm long. Culm-internodes smooth. Leaf-sheaths open for most of their length, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, elliptic in section, 0.6–0.7 mm wide, stiff. Leaf-blade venation with 3 subepidermal sclerenchyma strands. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong, dense, 5–8 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2–2.5 mm long, 0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3–3.5 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4–5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acute, muticous or mucronate. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Siberia, Russian far east, **China**, and **Mongolia**. Buryatiya, Chita. Inner Mongolia, Manchuria, China North-Central, Qinghai. Mongolia.

**TDWG4.** Gansu, Hebei.

### ***Festuca dalmatica*** (Hack.) Richt. *Pl. Eur.* 1:95 (1890).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Yugoslavia. **Basionym or Replaced Name:** *Festuca ovina* var. *dalmatica* Hack., *Sitzung. Bohm. Ges. Wiss. Math.-Nat. Cl.* 1902(39): 30 (1902)



. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Yugoslavia, Cattaro: Pichler.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Dalmatia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 30–58 cm long. Leaf-sheaths open for most of their length, with 0.2 of their length closed, with flat margins, smooth or scaberulous, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 0.5–0.85 mm wide, pruinose. Leaf-blade venation comprising 5–7 vascular bundles, with 3 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 5–12 cm long. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7.8–8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.6–4.9 mm long, 0.75–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 5.3–6.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 3–4 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 28$  (1 ref TROPICOS), or 42 (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe, Southeastern Europe.

**Country /Province /State.** : Hungary. : Bulgaria, Greece, Yugoslavia.

## **Festuca dasyantha** H. B. & K. *Nov. Gen. et Sp.* i. 154. (1816).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Ecuador. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *F.W.H.Humboldt & A.J.A.Bonpland s.n.*, Jun, Ecuador: Cotopaxi: in Devexis Montis Cotopaxi, 4090 m (P (K photo); IT: B. BAA-1187 (fragm. ex B), B-W-2071, US-2875395 (fragm.), W).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 71, fig 32 (2007)).

**Derivation** (Clifford & Bostock 2007): Gk. dasys, hairy; anthos, flower. Glumes and lemmas densely hairy.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Cataphylls evident. Basal innovations intravaginal. Culms erect, of moderate stature, straight, 40–50 cm long, without nodal roots. Culm-internodes terete. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves mostly basal, 0–1 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined. Ligule an eciliate membrane, 0.5 mm long, membranous, white, entire. Leaf-blade base symmetrical. Leaf-blades straight, filiform, involute, elliptic in section or circular in section, 20–25 cm long, 2–3 mm wide, indurate, stiff, yellowish green or dark green. Leaf-blade midrib indistinct. Leaf-blade venation indistinct, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface hirsute, densely hairy, hairy adaxially. Leaf-blade margins smooth, glabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle terete, eglandular, glabrous. Panicle open or contracted, lanceolate, continuous, dense, straight, 15–25 cm long. Primary panicle branches ascending. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9–11 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes scaberulous. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume lanceolate, 3–3.5 mm long, 0.75 length of upper glume, chartaceous, mid-green or grey, without keels, 1 -veined. Lower glume

lateral veins absent. Lower glume apex acute. Upper glume lanceolate or elliptic, 5 mm long, 0.9–1 length of adjacent fertile lemma, chartaceous, light green or mid-green, without keels, 3 -veined. Upper glume surface pubescent. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, symmetrical, 5–6 mm long, chartaceous, mid-green, without keel, 5 -veined, more than 3-veined. Lemma surface pilose. Lemma apex acute, mucicous. Apical sterile florets resembling fertile though underdeveloped.

**Distribution (TDWG).** Continent. South America.

**Country /Province /State.** Western South America. Ecuador.

**Festuca dasyclada** Hack. ex Beal. *Grasses N. Amer.* ii. 602 (1896).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from USA. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: C.C. Parry 93, 1875, USA: central Utah (US-556197; ILT: F). LT designated by Darbyshire & Pavlick, *Phytologia* 82(2): 76 (1997).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico Vol 24 Poaceae*, part 1 (2007) (442).

**Derivation** (Clifford & Bostock 2007): Gk. dasys, hairy; kladon, branch. Inflorescence branches pubescent.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms 20–40 cm long. Lateral branches lacking. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane. Leaf-blades conduplicate, 10–15 cm long, 1–2 mm wide. Leaf-blade surface glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 7–12 cm long. Primary panicle branches branching divaricately. Panicle branches stiff, pubescent, bearded in axils. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2 fertile florets, with a barren rhachilla extension. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4 mm long, 0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume lanceolate, 6 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 6 mm long, membranous, keeled, lightly keeled, 5 -veined, more than 3-veined. Lemma lateral veins distinct. Lemma surface scaberulous. Lemma apex dentate, 2 -fid, awned, 1 -awned. Principal lemma awn from a sinus, 2 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

$2n = 28$  (1 ref TROPICOS).

**Distribution (TDWG).** Continent. North America.

**Country /Province /State.** Northwest USA, Southwestern USA. Colorado, Wyoming. Utah.

**Festuca debilis** (Stapf) E.B. Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 83(4): 109 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from India. **Basionym or Replaced Name:** *Festuca kashmiriana* var. *debilis* Stapf, *Fl. Brit. India* 7(22): 351 (1897) [1896]

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: India, Kashmir: Duthie (K holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. weak. Culms decumbent often much branched at the base.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Rhizomes elongated. Culms erect or geniculately ascending, 30–65 cm long. Leaf-sheaths open for most of their length. Ligule an eciliate membrane, 0.5 mm long. Leaf-blades flat, 10–25 cm long, 1–3 mm wide, mid-green. Leaf-blade venation comprising 5 vascular bundles, with 11 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, effuse, 8–17 cm long. Primary panicle branches ascending. Panicle branches flexuous, glabrous or pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 9–11 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 2.5–3.5 mm long, 0.5–0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.5–5.5 mm long, 0.8–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma elliptic or oblong, 5.5–6.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2–8 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.7–2.2 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Tropical Asia.

**Country /Province /State. Indian Subcontinent.** India, Pakistan, West Himalaya.

**Festuca decolorata** I. Markgraf-Dannenberg. *Willdenowia*, 11(2): 203 (1981).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Turkey. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Turkey, Ulu Dag: Quezel UD2 (MARS holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. decoloro*, deprive of its natural color. Spikelets lacking the color of those in related taxa.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped moderately. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations extravaginal or intravaginal. Culms 15–32 cm long. Culm-internodes smooth, distally glabrous. Leaf-sheaths open for most of their length, with flat margins, pubescent. Ligule an eciliate membrane, 0.2 mm long. Leaf-blades filiform, conduplicate, angular in section, 0.25–0.35 mm wide. Leaf-blade venation comprising 4–5 vascular bundles, with 3 inner ridges, with 7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth, pilose, hairy adaxially. Leaf-blade apex obtuse or abruptly acute.

**Inflorescence.** Inflorescence a panicle. Peduncle smooth, pubescent above. Panicle open, lanceolate, interrupted, 4–7 cm long. Panicle branches pilose. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 7 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume lanceolate or oblong, chartaceous, much thinner on margins, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume lanceolate, 3.5–3.6 mm long, chartaceous, with scarious margins, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 3.7–4.2 mm long, chartaceous, purple, without keel, 5 -veined, more than 3-veined. Lemma surface pubescent, hairy above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1.7 mm long overall. Palea 1 length of lemma, 2 -veined. Palea surface pilose, hairy above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. Western Asia.** Turkey.

**Festuca deflexa** Connor. *N. Z. J. Bot.* 36:341 (1998).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), E.Edgar, & H.Connor, *Flora of New Zealand Gramineae* 5 (2000).

**TYPE** from New Zealand. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: New Zealand: Mt. Baldy, Mt. Arthur Range, NW Nelson, 4700 ft, tussockland, Mar 1982, *A.P.Druce s.n.* (HT: CHR-389142).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. bent abruptly downwards. Inflorescence branches drooping.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths yellow or red or purple. Basal innovations extravaginal. Culms erect, of moderate stature or slender, 15–65 cm long, rooting from lower nodes. Culm-internodes distally glabrous. Culm-nodes glabrous. Leaf-sheaths 3–12 cm long, keeled, smooth or scaberulous, glabrous on surface. Leaf-sheath oral hairs ciliate. Leaf-sheath auricles erect, 0.4–0.7 mm long. Ligule a ciliolate membrane, 0.4–0.7 mm long, erose. Leaf-blades filiform, involute, angular in section, 15–25 cm long, 0.4–0.7 mm wide, glaucous. Leaf-blade venation comprising 5 vascular bundles, with 7 subepidermal sclerenchyma strands. Leaf-blade surface smooth or scaberulous, rough abaxially, puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle, comprising 7–25 fertile spikelets. Panicle open, 7–16 cm long. Primary panicle branches spreading or reflexed, distant, 1–2 -nate, 5–8 cm long, bearing 4–8 fertile spikelets on each lower branch. Panicle axis 4–10 noded, scabrous. Panicle branches scabrous, with prominent pulvini. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 4–6 mm long, scaberulous.

**Fertile Spikelets.** Spikelets comprising 5–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 8–14 mm long, 3–4 mm wide, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1–1.5 mm long, pubescent. Floret callus 0.2–0.75 mm long, pilose, disarticulating transversely.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3–4.5 mm long, 0.7–0.9 length of upper glume, membranous, much thinner on margins, light green or purple, 1-keeled, 1 -veined. Lower glume primary vein scaberulous. Lower glume lateral veins absent. Lower glume apex truncate. Upper glume oblong, 3.5–6.5 mm long, 0.7–1 length of adjacent fertile lemma, membranous, with hyaline margins, light green or purple, 1-keeled, 3 -veined. Upper glume primary vein scaberulous. Upper glume lateral veins distinct or prominent. Upper glume apex truncate.

**Florets.** Fertile lemma lanceolate, 5–6.75 mm long, membranous, purple, without keel, rounded except near apex, 5 -veined, more than 3-veined. Lemma lateral veins distinct. Lemma margins ciliolate. Lemma apex acute, mucronate or awned, 1 -awned. Principal lemma awn 0.2–1.75 mm long overall. Palea 5.5–7.5 mm long, 2 -veined. Palea keels scabrous. Palea surface puberulous, hairy on back, hairy above. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, 0.7–1.1 mm long, membranous, ciliate, entire or 2-toothed. Anthers 3, 3–4 mm long, yellow or purple. Ovary pubescent on apex. Caryopsis with adherent pericarp, 3–3.5 mm long, hairy at apex. Embryo 0.25 length of caryopsis. Hilum linear, 0.66 length of caryopsis.

**Distribution (TDWG). Continent.** Australasia.

**Country /Province /State.** New Zealand. New Zealand South I.

**Festuca degenii** (St-Yves) I. Markgraf-Dannenberg. *Bot. J. Linn. Soc.*, 76(4): 328 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from France. **Basionym or Replaced Name:** *Festuca ovina* subvar. *degenii* St.-Yves, *Ann. Cons. Jard. Bot. Geneve* 17:80 (1913). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: France, Esterel aux Survières: StYves.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Arpad Degen (1866–1934) Hungarian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 25–50 cm long. Culm-internodes distally pubescent. Leaf-sheaths open for most of their length, with 0.4–0.5 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 0.4–0.8 mm wide, stiff, glaucous, pruinose. Leaf-blade venation comprising 7 vascular bundles, with 1–3 inner ridges, with subepidermal sclerenchyma free from veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, pilose, hairy adaxially. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, 4.5–9 cm long. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7.5–9.1 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.5–4.9 mm long, 0.75–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 4.5–5.6 mm long, chartaceous, glaucous, without keel, 5 -veined, more than 3-veined. Lemma surface glabrous or pubescent. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 0.7–1.7 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : France.

**Festuca densiflora** Tovar. *Mem. Mus. Hist. Nat. Javier Prado*, 16: 71 (1972).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *W. Rauh & G. Hirsch P1223*, 5 Dec 1954, Peru: Cuzco (US-2180734).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. densus*, dense; flos, flower. Inflorescences congested.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 50–70 cm long, 2 -noded. Leaf-sheaths 15–30 cm long, glabrous on surface. Ligule a ciliate membrane, 1 mm long, erose. Leaf-blades involute, 15–30 cm long, 2–3 mm wide, coriaceous, stiff. Leaf-blade surface scabrous, rough abaxially, pubescent. Leaf-blade margins scaberulous. Leaf-blade apex pungent.

**Inflorescence.** Inflorescence a panicle. Panicle spiciform, linear, 15–18 cm long, 1.5–2 cm wide. Primary panicle branches appressed, 5–9 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, smooth.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3–3.5 mm long, 0.9 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.5–4 mm long, 0.66 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 5.5–5.8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acuminate, muticous. Palea 2 -veined. Palea keels scabrous. Palea surface puberulous, hairy below. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–2.7 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Peru.

**Festuca densipaniculata** E.B. Alekseev. *Bot. Zhurn.*, 69(11): 1551 (1984).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Ecuador. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Asplund 8397*, Ecuador (S).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 103, fig 50 (2007)).

**Derivation** (Clifford & Bostock 2007): *L. densus*, dense; paniculus, panicle; -ata, possessing. Inflorescence contracted.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 20–40 cm long. Culm-internodes antrorsely scabrous. Lateral branches lacking. Leaf-sheaths open for most of their length, mostly shorter than adjacent culm internode, antrorsely scabrous. Ligule a ciliolate membrane, 1.5–3.5 mm long, obtuse. Leaf-blades straight, filiform, conduplicate, 20–30 cm long, 1.3–1.6 mm wide, indurate, glaucous. Leaf-blade venation comprising 13–17 vascular bundles, with 11–15 inner ridges, with subepidermal sclerenchyma attached to veins above and below, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, rough abaxially. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 6–10 cm long, 1.5–2.5 cm wide. Primary panicle branches appressed. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 9–11.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 3.5–4.2 mm long, 0.75 length of upper glume, coriaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous. Lower glume apex acute. Upper glume lanceolate, 4.5–5 mm long, 0.66 length of adjacent fertile lemma, coriaceous, without keels, 3 -veined. Upper glume surface scabrous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 7–9 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex emarginate or acute, awned, 1 -awned. Principal lemma awn 0.7–1.3 mm long overall. Palea 2 -veined. Palea keels scabrous, adorned all along. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 2.3–2.7 mm long. Ovary glabrous. Caryopsis with adherent pericarp, sulcate on hilar side. Hilum linear, 0.5 length of caryopsis.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Peru.

### **Festuca dentiflora** Stancik & Peterson. *Sida* 20:1016 (2003).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Peru: Dept. Huanuco, Prov. Baqos, *Wilkes [U.S. Exploring Expedition]* 5 (HT: US-1006459).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. dens*, tooth; *flos*, flower. The lemma and palea apices are bifid.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Basal innovations extravaginal. Culms erect, 100 cm long, 2–4 -noded. Culm-internodes distally glabrous. Leaf-sheaths open for most of their length, glabrous on surface. Ligule an eciliate membrane, 3.5–4 mm long, lacerate, acute. Leaf-blades 3–4 mm wide. Leaf-blade surface glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 20 cm long, 10–15 cm wide. Primary panicle branches ascending, 2 -nate. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 11–12 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1.2–1.8 mm long, pilose. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4.5–6 mm long, 0.66–0.75 length of upper glume, chartaceous, much thinner on margins, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 7–8 mm long, 0.75 length of adjacent fertile lemma, chartaceous, with membranous margins, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 8.5–10 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface pubescent. Lemma apex dentate, 2 -fid, awned, 1 -awned. Principal lemma awn from a sinus, 6–8 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Palea surface scaberulous. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, oblong. Anthers 3, 4.5–5 mm long, purple. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Peru.

**Festuca deserti** (Coss. & Dur.) Trabut. *Fl. Alg. Monocot.* :215 (1895).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Algeria. **Basionym or Replaced Name:** *Festuca rubra* var. *deserti* Coss. & Dur., *Expl. Sci. Algeria* 2: 301 (1867)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Algeria, Zahres: Reboud.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. desertum*, desert. Species of the desert.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Stolons present. Butt sheaths persistent and investing base of culm. Basal innovations intravaginal. Culms erect, 30–90 cm long, 2–3 -noded. Lateral branches lacking. Leaf-sheaths tubular for much of their length, with 0.5–1 of their length closed, with infolded margins, smooth or scaberulous, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, 0.5–1 mm wide, stiff. Leaf-blade surface glabrous. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear or lanceolate, 5–30 cm long. Primary panicle branches appressed, 1–2 -nate. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate or elliptic, laterally compressed, 9–12 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 0.75–1.5 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein smooth or scaberulous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 0.5–0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein smooth or scaberulous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acute, mucicous or mucronate or awned, 1 -awned. Principal lemma awn 0–1 mm long overall. Palea 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3.5–4 mm long, yellow. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** Northern Africa. Algeria, Morocco, Tunisia.

**Festuca deserticola** Phil. *Fl. Atac.* 56. (1860).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Chile. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *R.A.Philippi s.n.*, Chile (SGO-PHIL-289; IT: B, CONC, SGO-37446, SGO-63830, SGO-63827, US-1939378 (fragm. ex SGO-37446 & photo) ).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. desertum*, desert; -cola, dweller. Growing in arid places.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 30–35 cm long, 1–2 -noded. Lateral branches lacking. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.2–0.3 mm long, bilobed. Leaf-blades erect, filiform, convolute, 8–10 cm long, 1–1.5 mm wide. Leaf-blade venation comprising 9–10 vascular bundles, with 9–10 inner ridges, with subepidermal sclerenchyma free from veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle, comprising 4–10 fertile spikelets. Panicle spiciform, linear, 4–6 cm long, bearing few spikelets. Primary panicle branches 1–2 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–9 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 0.7 mm long.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3.5 mm long, 0.8–1 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume

apex acute. Upper glume lanceolate, 3.5–4 mm long, 0.5 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 6–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate or setaceously acuminate, awned, 1 -awned. Principal lemma awn 1–3 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels ciliolate, adorned above. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, 0.7 mm long. Anthers 3, 3.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Southern South America.** Argentina Northwest, Chile North.

**TDWG4.** Jujuy, Salta. Tarapaca, Antofagasta, Atacama.

### ***Festuca dichoclada*** Pilger. *Engl. Jahrb.* vii. 514 (1906).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *A.Weberbauer* 3230, 9 Jun 1903, Peru: Dep. Ancachs: in declivibus montium Cordillera Blanca supra Caraz. (B; IT: BAA-1196 (fragm. ex B), US-2875396 (fragm. ex B)).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. *dicha*, in two; *klados*, branch.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Rhizomes elongated. Culms erect, robust, 80–120 cm long, 3–5 -noded. Culm-internodes scaberulous. Leaf-sheaths scaberulous, glabrous on surface. Ligule an eciliate membrane, 8–12 mm long, lacerate. Leaf-blades involute, 20–40 cm long, 2–3 mm wide, coriaceous. Leaf-blade surface scabrous, rough abaxially. Leaf-blade margins scabrous. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 27–45 cm long. Primary panicle branches ascending, 10–20 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, scabrous.

**Fertile Spikelets.** Spikelets comprising 5–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10–13 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 5–7.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface asperulous, rough above. Lower glume apex acute. Upper glume lanceolate, 6.5–9 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface asperulous, rough above. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 8–11 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins prominent. Lemma surface scaberulous or scabrous. Lemma apex acuminate, mucous. Palea 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 4–5 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Western South America.** Peru.

### ***Festuca diclina*** S.J. Darbyshire. *Novon*, 5(2): 129 (1995).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Mexico. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Mexico: Chihuahua: Mun. Guadalupe y Calvo: Cerro de Mohinora, S. de Guadalupe y Calvo, 3300 m, alpina-subalpina, en ladera rocosa, 27 Aug 1987, *McDonald & Martinez* 2392 (HT: DAO-661232; IT: TEX, MEXU).

**Illustrations (Journals):** *Novon* (5:130, Fig.1 (1995)).

**Derivation** (Clifford & Bostock 2007): Gk *dis*, twice; *kline*, bed. Lower florets pistillate, upper florets staminate.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms erect, 30–70 cm long. Culm-nodes brown or black, glabrous. Leaf-sheaths antrorsely scabrous. Leaf-sheath auricles absent. Ligule an eciliate membrane, 0.2–0.5 mm long. Leaf-blades conduplicate or convolute, 10–25 cm long, 1.2–1.5 mm wide.



Leaf-blade venation comprising 7(–9) vascular bundles, with 5–7 inner ridges, with subepidermal sclerenchyma attached to veins below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous, rough adaxially, glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, pyramidal, 8–15 cm long. Primary panicle branches ascending, 1–2 -nate, 5–9 cm long. Panicle axis smooth. Panicle branches flexuous, smooth or scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–12 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes pubescent, with 0.1–0.3 mm long hairs.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.4–4 mm long, 0.75 length of upper glume, chartaceous, much thinner on margins, without keels, 1 -veined. Lower glume primary vein smooth or scaberulous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.5–5 mm long, 0.66 length of adjacent fertile lemma, chartaceous, with hyaline margins, without keels, 3 -veined. Upper glume primary vein smooth or scaberulous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6–8 mm long, chartaceous, without keel, 1–3(–5) -veined, 0–3 -veined or more than 3-veined. Lemma lateral veins obscure. Lemma surface smooth or scaberulous, rough above. Lemma apex setaceously acuminate, scabrous, mucous. Palea 5.5–7 mm long, 1 length of lemma, 2 -veined. Palea keels ciliolate. Palea surface pilose, hairy on back, hairy above. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 3–4.2 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** Mexico. Northeast Mexico.

**TDWG4.** Chihuahua.

### **Festuca diffusa** Dum. *Obs. Gram. Belg* 106. (1823).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Belgium. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Belgium: Coll?.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. widely spreading. Inflorescence an open panicle.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Stolons present. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations extravaginal. Culms 50–100 cm long, 1.7–2.7 mm diam. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, pubescent. Ligule an eciliate membrane. Leaf-blades flat or conduplicate, 0.6–1.35 mm wide. Leaf-blade midrib keeled beneath. Leaf-blade venation comprising 7–11 vascular bundles, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma free from veins. Leaf-blade surface ribbed, smooth. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, effuse, 9–15 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–12 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.7–6.3 mm long, 0.8–1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 5–7.5 mm long, chartaceous, mid-green or glaucous or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma apex acute, mucronate or awned, 1 -awned. Principal lemma awn 0.3–2 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$N = 28$  (1 ref TROPICOS).  $2n = 48$  (1 ref TROPICOS), or  $56$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region. Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe.**

**Country /Province /State.** : Denmark, Finland, Foroyar, Great Britain (\*), Norway, Svalbard, Sweden. : Austria, Belgium, Czechoslovakia, Germany, Hungary, Switzerland. : France. : Italy, Romania.

**Festuca dimorpha** Guss. *Pl. Rar.* 34. t. 6. (1826).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Italy. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Italy, Massif des Abruzzes: Gussone.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. dis, twice; morphe, appearance. Spikelets of two kinds.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Cataphylls evident. Rhizomes elongated. Basal innovations extravaginal. Culms 30–60 cm long. Leaf-sheaths open for most of their length, glabrous on surface. Ligule a ciliolate membrane. Leaf-blades filiform, flat or conduplicate, 1 mm wide, glaucous. Leaf-blade venation comprising 7 vascular bundles, with 7 inner ridges, with sclerenchyma strands below veins or above all veins, with subepidermal sclerenchyma attached to veins above and below. Leaf-blade surface ribbed, pubescent. Leaf-blade margins scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, nodding, 6–10 cm long. Panicle branches capillary. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9–11 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 3 -veined. Lower glume apex acute. Upper glume lanceolate, 7.3–7.5 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 7.3–7.5 mm long, chartaceous, dark green, without keel, 5 -veined, more than 3-veined. Lemma apex acute, muticous. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, obovoid. Hilum linear. Disseminule comprising a caryopsis.

$2n = 28$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region. Southwestern Europe, Southeastern Europe.**

**Country /Province /State.** : France. : Italy.

**Festuca dinirica** Stancik. *Novon* 14: 341 (2004).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 105, fig 51 (2007)).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Caespitose, clumped densely. Cataphylls inconspicuous. Rhizomes short, fleshy, not obviously scaly. Basal innovations intravaginal. Culms slender, straight, without nodal roots. Culm-internodes terete. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves mostly basal, 0–1 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined. Ligule a ciliolate membrane, membranous, white, entire. Leaf-blade base symmetrical. Leaf-blades straight, circular in section, firm, dark green. Leaf-blade midrib indistinct. Leaf-blade venation indistinct, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma attached to veins below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface glabrous. Leaf-blade margins smooth, glabrous. Leaf-blade apex obtuse or acute.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle terete, eglandular, glabrous. Panicle contracted, lanceolate, continuous, dense, straight, 10–12 cm long, 0.5–1.5 cm wide, bearing many spikelets or few spikelets, evenly furnished or contracted about primary branches.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate or elliptic, laterally compressed, 8–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes scaberulous. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume linear, 3.4–4 mm long, 0.5–0.65 length of upper glume, membranous or chartaceous, pallid or light green, without keels, 1 -veined. Lower glume apex acute. Upper glume lanceolate, 5.5–6 mm long, 0.9 length of adjacent fertile lemma, herbaceous or scarious, dark green, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, symmetrical, 6–7 mm long, coriaceous, dark green. Lemma apex muticous.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Northern South America. Venezuela.

### ***Festuca dissitiflora*** Griseb. *Abh. Ges. Wiss. Goett.* 24:287 (1879).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Argentina. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *Lorentz & Hieronymus 71*, 19–23 Mar 1873, Argentina: Salta: Nevado del Castillo (CORD).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): panicles few-flowered.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 30–50 cm long, 2 -noded, with 0.5 of their length below uppermost node. Culm-internodes terete, smooth or scaberulous. Leaf-sheaths tubular for much of their length, with 0.5 of their length closed, striately veined, smooth or scaberulous, glabrous on surface. Leaf-sheath auricles erect. Ligule a ciliolate membrane. Leaf-blades filiform, conduplicate, 15–25 cm long, 1 mm wide. Leaf-blade venation comprising 11 vascular bundles, with 5–6 inner ridges, with 19 subepidermal sclerenchyma strands, with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface pubescent, hairy abaxially. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear or oblong, nodding, 5–8 cm long, bearing few spikelets. Primary panicle branches 1 -nate, indistinct the panicle almost racemose. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3.5–4 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume margins ciliolate. Lower glume apex acute. Upper glume lanceolate, 4.5–5 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume margins ciliolate. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface smooth or scaberulous. Lemma apex dentate, 2 -fid, awned, 1 -awned. Principal lemma awn from a sinus, 1–1.5 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels ciliolate. Palea surface pubescent. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 4–4.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America, Southern South America. Bolivia. Argentina Northwest.

**TDWG4.** Jujuy, Mendoza, Salta, San Luis, Tucuman. Cordoba.

### ***Festuca distichovaginata*** Pilger. *Engl. Jahrb.* vii. 511 (1906).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *A.Weberbauer 3317*, 10 Jul 1903, Peru: Huanuco: en Mont. Monzon, 3700–3800 m, 10 Jul 1903 (B; IT: US-2875400 (fragm.) ex B).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. distichos, in two rows; L. vagina, sheath; -ata, possessing. Leaf-sheaths conspicuously distichous.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 40–80 cm long, 0–1 -noded, with 0.33 of their length below uppermost node. Culm-internodes terete, smooth or scaberulous. Leaves distichous, differentiated into sheath and blade. Leaf-sheaths 10–20 cm long, glabrous on surface. Ligule a ciliolate membrane, 2 mm long. Leaf-blades erect, filiform, conduplicate, 8–20 cm long, 0.8–1.5 mm wide, stiff. Leaf-blade venation comprising 8 vascular bundles, with 7 inner ridges, with 7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma attached to veins above and below, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade apex acute, pungent.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, dense, 10–20 cm long. Primary panicle branches appressed, 2 -nate. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate or elliptic, laterally compressed, 9–13 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1–1.5 mm long, scaberulous, pubescent.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4.5–5.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein scaberulous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or ovate, 6–7 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acute.

**Florets.** Fertile lemma ovate, 6.5–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma margins ciliate, hairy above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–1.5 mm long overall. Palea 6–6.5 mm long, 0.9 length of lemma, 2 -veined. Palea keels ciliolate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3 mm long, purple. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America, Southern South America. Peru. Argentina Northwest.

**TDWG4.** Jujuy, Salta, Tucuman.

**Festuca divergens** Tovar. *Mem. Mus. Hist. Nat. Javier Prado*, 16: 51 (1972).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *E. Cerrate* 2326, 29 May 1954, Peru: Ancash (US-2207342).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. divergo*, go in different directions.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms erect, 20–34 cm long, 0 -noded. Leaf-sheaths smooth, glabrous on surface. Ligule an eciliate membrane, 0.5–1 mm long, truncate. Leaf-blades filiform, involute or convolute, 5–14 cm long, 1 mm wide, 5–7 cm long at summit of culm. Leaf-blade surface pubescent, sparsely hairy, hairy adaxially. Leaf-blade margins scabrous. Leaf-blade apex obtuse or abruptly acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 6–7 cm long. Primary panicle branches appressed, bearing spikelets almost to the base. Panicle branches smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, smooth or scaberulous.

**Fertile Spikelets.** Spikelets comprising 3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 12–14 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes smooth.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 5.5–6 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous. Lower glume apex acute. Upper glume lanceolate, 7–8 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume lateral veins prominent. Upper glume surface scabrous. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 10–12 mm long, membranous, without keel, 5 -veined, more than 3-veined. Lemma midvein thickened. Lemma apex attenuate, awned, 1 -awned. Principal lemma awn 4–7 mm long overall. Palea 3.5–4 mm long, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.3–1.7 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG).** Continent. South America.  
**Country /Province /State.** Western South America. Peru.

**Festuca djimilensis** Boiss. & Bal. *Bull. Soc. Bot. Fr.* xxi. 18 (1874).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Turkey. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Turkey, Djimil: Balansa 629 (G holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From valliee de Djimil.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Rhizomes elongated. Butt sheaths dark brown. Basal innovations extravaginal. Culms erect, 30–70 cm long. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with infolded margins. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 30–60 cm long, 0.9–1 mm wide, stiff. Leaf-blade venation comprising 9 vascular bundles, with 7 inner ridges, with 9 subepidermal sclerenchyma strands, with subepidermal sclerenchyma attached to veins above, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, effuse, nodding, 7–15 cm long. Panicle branches flexuous, scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 6–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate or oblong, laterally compressed, 9–11 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume oblong, 4 mm long, 0.7–0.8 length of upper glume, chartaceous, much thinner on margins, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume lanceolate, 4.5–5.5 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, with scarios margins, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 6–7.3 mm long, chartaceous, mid-green or mid-green or purple, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acuminate, mucronate or awned, 1 -awned. Principal lemma awn 0.5–1 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Hilum linear, 1 length of caryopsis.

$2n = 28$  (1 ref TROPICOS).

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** Caucasus, Western Asia. Iran.

**TDWG4.**

**Festuca dolichantha** Keng ex P.C. Keng. *Acta Bot. Yunnanica*, 4(3): 274 (1982).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Lijiang, ad alpinum montem crescens, 10 May 1922, *J.F. Rock 5962* (HT: NJU).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 318).

**Derivation** (Clifford & Bostock 2007): Gk *dolichos*, long; *anthos*, flower. Spikelets narrow.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, culms solitary or caespitose. Culms erect, 100 cm long, 3–4 mm diam., 2–3 -noded. Culm-internodes distally pruinose. Leaf-sheaths 30 cm long, smooth or scaberulous. Ligule an eciliate membrane, 3–5 mm long, lacerate, acute. Leaf-blades flat or involute, 10–20 cm long, 6 mm wide, glaucous. Leaf-blade surface scabrous, rough on both sides.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong, 20 cm long. Primary panicle branches 2 -nate, 6–11 cm long, bearing 2–4 fertile spikelets on each lower branch. Panicle branches smooth or scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile.

Spikelets lanceolate, laterally compressed, 11–14 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet, similar to fertile lemma in texture. Lower glume linear, 4–5.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume linear, 5.5–7 mm long, 0.5 length of adjacent fertile lemma, chartaceous, without keels, 1 -veined. Upper glume lateral veins absent. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 10–11 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins obscure. Lemma surface scabrous. Lemma apex acute, mucicous. Palea 1 length of lemma, 2 -veined. Palea keels smooth. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–4 mm long. Ovary glabrous. Caryopsis with adherent pericarp, 6 mm long, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**TDWG4.** Sichuan, Yunnan.

### ***Festuca dolichophylla* J. & C. Presl. *Rel. Haenk.* i. 258. (1830).**

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *T.Haenke s.n.*, Peruvia? Chili? (PR; IT: US-2875401 (fragm.) ex PR, LE-TRIN-2799.01, W).

**Illustrations (Books):** W.Burger, *Flora Costaricensis* 15, Gramineae: *Fieldiana Botany New Series* 4 (1980) (243, Fig 85).

**Illustrations (Journals):** *Ruizia* (13:105, Fig 11f-h (1993)).

**Derivation** (Clifford & Bostock 2007): Gk. dolichos, narrow; phyllon, leaf. Leaf-blades long and narrow.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 65–110 cm long, 2–4 mm diam. Culm-nodes constricted, brown, glabrous. Lateral branches lacking. Leaves mostly basal. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 1–2.5 mm long. Leaf-blades erect, filiform, involute, 25–50 cm long, 2–5 mm wide. Leaf-blade venation with 6–12 inner ridges. Leaf-blade surface ribbed, smooth or scaberulous, rough abaxially, glabrous or puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Peduncle 8–15 cm long, smooth or scaberulous above. Panicle open, elliptic, nodding, 10–25 cm long, 3–4 cm wide. Primary panicle branches ascending, 2 -nate, 6–12 cm long. Spikelets appressed, solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–7 fertile florets, with a barren rhachilla extension or with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10–17 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, 4–6 mm long, 0.66–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 6–7.2 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6.5–8 mm long, chartaceous, purple, without keel, 5 -veined, more than 3-veined. Lemma lateral veins distinct. Lemma surface scaberulous. Lemma apex acuminate, mucicous or awned, 1 -awned. Principal lemma awn 0–1 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Rhachilla extension 3–4 mm long. Apical sterile florets rudimentary.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Mesoamerica, Western South America.** Bolivia, Colombia, Peru.

### ***Festuca donax* Lowe. *Trans. Camb. Phil. Soc.* iv. (1831).**

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Madeira. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Madeira: Mandon 278 (K iso).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): reed-like in habit.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms 60–120 cm long. Leaf-sheaths without keel, glabrous on surface. Ligule an eciliate membrane, 3–5 mm long. Leaf-blades 5–10 mm wide. Leaf-blade margins scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, elliptic, nodding, 18–30 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 5.5–6.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume lanceolate, 4.5–5.3 mm long, 0.8–0.9 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume lanceolate, 5–6.2 mm long, 1.1–1.2 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma ovate, 4.4–5.2 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous. Lemma apex acute, muticous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3 mm long. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear.

$2n = 14$  (4 refs TROPICOS).

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** Macaronesia. Madeira.

**Festuca dracomontana** H.P. Linder. *Bothalia*, 16(1): 59 (1986).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Lesotho. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Lesotho, Letsing La Lestie slopes: du Toit 2714 (PRE holo, K, MO).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating location. From the Drakensbergs of Natal and Transvaal, South Africa.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Rhizomes elongated. Culms erect, 50–80 cm long. Leaves cauline. Leaf-sheaths open for most of their length, with flat margins. Ligule an eciliate membrane, 0.5–1 mm long. Leaf-blades 50–80 cm long, 2–8 mm wide.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, 5–25 cm long. Primary panicle branches bearing 1–5 fertile spikelets on each lower branch. Panicle branches flexuous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 10–12 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 0.5–0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.5–5 mm long, 0.9–1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2–4 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** Southern Africa. Limpopo, Gauteng, Lesotho.

**Festuca drymeja** Mert. & Koch. *Deutschl. Fl.* i. 670 (1823).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Austria. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Austria, Vienna: Coll?.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. drymeios, of oak woods. Growing in oak woods.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Cataphylls evident. Rhizomes elongated. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations extravaginal or intravaginal. Culms erect, 70–130 cm long. Leaf-sheaths open for most of their length, with flat margins. Ligule an eciliate membrane, 1.5–3 mm long, lacerate. Leaf-blades flat, 20–30 cm long, 6–15 mm wide. Leaf-blade venation without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous. Leaf-blade margins scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, pyramidal, nodding, 10–30 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 7–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 3 mm long, 0.7–0.8 length of upper glume, scarious, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.6–3.9 mm long, 0.7–0.8 length of adjacent fertile lemma, scarious, without keels, 1–3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate or ovate, 4.2–5 mm long, chartaceous, keeled, lightly keeled, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex obtuse or acute, muticous. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Hilum linear, 0.5 length of caryopsis.

$2n = 14$  (8 refs TROPICOS).

**Distribution (TDWG). Continent.** Europe, Africa, Temperate Asia.

**Region. Middle Europe, Southeastern Europe, Eastern Europe.**

**Country /Province /State.** : Austria, Czechoslovakia, Hungary, Poland. : Albania, Bulgaria, Greece, Italy, Romania, Sicily, Turkey Europe, Yugoslavia. Northwest European Russia, Ukraine. **Northern Africa.** Algeria, Morocco, Tunisia. **Caucasus, Western Asia.** Iran.

**TDWG4.**

**Festuca durandii** Clauson. *Billot, Annot.* 163 (1855).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Algeria. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Algeria, Zaccar-Gharbi: Clauson.

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths thickened and forming a bulb. Basal innovations intravaginal. Culms 50–110 cm long. Culm-internodes smooth. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.4–4.6 mm long, bilobed. Leaf-blades filiform, convolute, 10–45 cm long, 0.4–1 mm wide. Leaf-blade venation without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface glabrous. Leaf-blade margins smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear or oblong, dense, 8–20 cm long. Panicle axis smooth. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 7.5–10 mm long, 3.5–5.5 mm wide, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3.5–5.1 mm long, 0.7–0.9 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume oblong, 5–6 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6–7.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous. Lemma apex acute or acuminate. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.



**Flower and Fruit.** Anthers 3, 2.5–4 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, glabrous. Hilum linear.

*N* = 7 (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : Portugal, Spain.

**Festuca durata** B.S. Sun & H. Peng. *Guihaia* 13(3): 223, f. 1. 1993.

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Guizhou: Hezhang, Jiucaiping, roadside, 2500 m, 25 Oct. 1989, *West Guizhou Exped. 1864b* (HT: HGAS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig.332).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Guizhou, Yunnan.

**Festuca duriotagana** J. do Amaral Franco & M.L. Rocha Afonso. *Bol. Soc. Brot.*, 54: 91 (1980).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Portugal. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: Portugal: valleys of the Douro and Tagus (LISI).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. *-ana*, indicating connection. From the valleys of the Durio, now Douro and Tagus Rivers of Portugal.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Stolons absent or present. Butt sheaths dark brown or red, persistent and investing base of culm, with fibrous dead sheaths. Basal innovations extravaginal. Culms 20–60 cm long, 1–1.5 mm diam. Leaf-sheaths tubular for much of their length, without keel, puberulous. Ligule a ciliolate membrane. Leaf-blades erect or ascending, flexuous, aciculate, conduplicate, 0.3–0.6 mm wide. Leaf-blade venation comprising 5 vascular bundles, with 7 subepidermal sclerenchyma strands. Leaf-blade surface pilose, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Peduncle smooth. Panicle open, oblong or ovate, 7–14 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 8–12 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1–2 mm long, eventually visible between lemmas, sparsely hairy.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3–5 mm long, 0.7–0.8 length of upper glume, chartaceous, mid-green and purple, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.5–6 mm long, 0.7–0.9 length of adjacent fertile lemma, chartaceous, with scarious margins, mid-green and purple, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6–6.5 mm long, chartaceous, much thinner on margins, without keel, 5 -veined, more than 3-veined. Lemma surface glabrous or puberulous, hairy above. Lemma apex acute, mucronate or awned, 1 -awned. Principal lemma awn 0.5–1.5 mm long overall. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : Portugal.

**Festuca durissima** (Hack.) Kerguilen. *Fl. France*, xiv. 214 (1913).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from France. **Basionym or Replaced Name:** *Festuca ovina* subvar. *durissima* Hack., *Monogr.* :92 (1882). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: France, Pyrenees, Caranca: Gautier (K iso) ; France, Pyrenees, Canigou: Godron.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. durus*, hard; -issima, most. Foliage harsh.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 25–48 cm long. Culm-internodes distally glabrous. Leaf-sheaths open for most of their length, with 0.25–0.33 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades curved, filiform, conduplicate, circular in section, 0.6–1.2 mm wide, stiff, light green or glaucous, without exudate or pruinose. Leaf-blade venation comprising 7–9 vascular bundles, with 1 inner ridges, with subepidermal sclerenchyma free from veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade apex acute, pungent.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 3–6 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.5–5.7 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 5.5–7.1 mm long, chartaceous, glaucous, without keel, 5 -veined, more than 3-veined. Lemma margins eciliate or ciliate, hairy above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2.5–3.5 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Dissemimule comprising a caryopsis and palea.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : France, Spain.

***Festuca duvalii*** (StYves) Stohr. *Wiss. Zeitschr. Univ. Halle* 4:732 (1955).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Germany. **Basionym or Replaced Name:** *Festuca ovina* var. *duvalii* St.-Yves, *Bull. Soc. Bot. France* 71: 38 (1924)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Germany, Durckheim: StYves.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Joseph Duval-Jouve (1810–1883) French educator and botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 30–40 cm long. Culm-internodes smooth. Leaf-sheaths open for most of their length, with 0 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 0.5–1.1 mm wide, stiff, glaucous, pruinose. Leaf-blade venation comprising 7 vascular bundles, with 3–5 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with unevenly thickened subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 3.5–6 cm long. Panicle branches smooth or scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6–7 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.4 mm long, 0.66–0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 4–5.5 mm long, chartaceous, glaucous, without keel, 5 -veined, more than 3-veined. Lemma surface smooth or scabrous, rough above. Lemma margins ciliate. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–2 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 28$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe, Southwestern Europe.

**Country /Province /State.** : Belgium, Czechoslovakia, Germany, Poland. : France.

**Festuca earlei** Rydb. *Bull. Torr. Bot. Club*, 1905, 608. (1905).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from USA. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *C.F. Baker et al.* 920, 11 Jul 1898, USA: Colorado: La Plata Canyon (US-2875402).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico Vol 24 Poaceae*, part 1 (2007) (421).

**Derivation** (Clifford & Bostock 2007): in honor of Franklin Summer Earle (1856–1929) United States plant collector.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Rootstock evident. Basal innovations extravaginal. Culms slender, 30 cm long. Leaf-sheaths 3–5 cm long, striately veined, smooth. Ligule an eciliate membrane, truncate. Leaf-blades filiform, involute, 3–10 cm long, 0.5–1 mm wide.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 3–5 cm long. Primary panicle branches appressed. Panicle branches smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2 mm long, 0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or ovate, 3 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, muticous or awned, 1 -awned. Principal lemma awn 0.5–1 mm long overall. Apical sterile florets resembling fertile though underdeveloped.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** Northwest USA. Colorado.

**Festuca edlundiae** S.G. Aiken, L.L. Consaul & L.P. Lefkovich. *Syst. Bot.*, 20(3): 381 (1995).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Canada. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Canada: Northwest Territories: Bathurst Island, Polar Bear Pass, 75.12N 98.23W, marine reworked carbonate ridge, beach gravel on the ridge on the north side of a broad valley west of the Godsir River, large sample for the area collected from an area receiving additional nitrogen at the back of the Museum Research laboratory, growing besides *F. baffinensis*, 11 Aug 1985, *S.G. Aiken 3949* (HT: CAN-502531; IT: CAN, DAO).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico Vol 24 Poaceae*, part 1 (2007) (433).

**Derivation** (Clifford & Bostock 2007): In honor of Sylvia A. Edlund (fl. 1984–1997) Canadian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Rhizomes absent. Butt sheaths green, persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal.

Culms erect, 2.5–14 cm long. Culm-nodes glabrous. Leaf-sheaths open for most of their length, longer than adjacent culm internode, without keel, glabrous on surface. Leaf-sheath oral hairs lacking. Leaf-sheath auricles erect. Ligule a ciliolate membrane, 0.2–0.5 mm long. Collar glabrous. Leaf-blades conduplicate, 1.5–9 cm long, 0.5–0.9 mm wide, 1.5–3.5 cm long at summit of culm, light green. Leaf-blade venation comprising 5–7 vascular bundles, with 5 inner ridges, with sclerenchyma strands below veins, with 3–5 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface puberulous, hairy adaxially or on both sides.

**Inflorescence.** Inflorescence a panicle, subtended by an inflated leaf-sheath. Panicle contracted, linear, dense, 1.5–3.5 cm long, with spikelets clustered towards branch tips. Primary panicle branches appressed, 1–2-nate, 0.4–0.7 cm long, bearing 1–2 fertile spikelets on each lower branch, naked below to bearing spikelets almost to the base. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets laterally compressed, 4.5–8.5 mm long, 3–4 mm wide, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, dissimilar. Lower glume 1.8–3.1 mm long, 1-veined. Lower glume surface glabrous. Lower glume margins ciliate. Upper glume 2.9–4.3 mm long, 3-veined. Upper glume surface glabrous. Upper glume margins ciliate.

**Florets.** Fertile lemma 3.6–5.2 mm long, without keel, 5-veined, more than 3-veined. Lemma lateral veins obscure. Lemma surface puberulous, hairy above. Lemma apex awned, 1-awned. Principal lemma awn 1.1–2.9 mm long overall. Palea 3.8–5.5 mm long. Palea surface pubescent, hairy on back. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, 0.8–1 mm long, glabrous. Anthers 3, 0.6–1.1 mm long. Ovary glabrous. Caryopsis with adherent pericarp, 2.5–3 mm long, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State. Subarctic America.** Nunavut, Greenland.

**Festuca eggleri** R. Tracey. *Pl. Syst. Evol.*, 128(3–4): 290 (1977).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Austria. T:<Type of Basionym>; *fide* TROPICOS and Kew Synonymy Database: Austria, Pernegg: Tracey F487 (WU holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Joseph Egger (1896–1963) Austrian phytosociologist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 27–44 cm long. Culm-internodes distally glabrous. Leaf-sheaths open for most of their length, with 0.25–0.33 of their length closed, with flat margins, glabrous on surface or puberulous. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 0.56–0.6 mm wide, light green. Leaf-blade midrib keeled beneath. Leaf-blade venation comprising 7 vascular bundles, with 1 inner ridges, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scaberulous, rough adaxially. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 4.5–6.5 cm long. Primary panicle branches spreading. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5.8–6.7 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 2.6–3.6 mm long, 0.75–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 3.4–3.9 mm long, chartaceous, light green, without keel, 5-veined, more than 3-veined. Lemma apex acuminate, awned, 1-awned. Principal lemma awn 1–2 mm long overall. Palea 2-veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 28$  (2 refs TROPICOS).

**Distribution (TDWG).** Continent. Europe.

**Region.** Middle Europe.

**Country /Province /State.** : Austria.

**Festuca elata** Keng ex E.B. Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 82(3): 97 (1977).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: IT: *Loh Hoh Tsien et Ling Yun Hsien* 368, 9 May 1933, China: Guangxi: (LE).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig.326).

**Derivation** (Clifford & Bostock 2007): L. tall. Culms taller than those of related species.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Rhizomes absent or short. Basal innovations extravaginal. Culms 60–85 cm long. Culm-internodes distally glabrous. Leaf-sheaths with 0.2–0.5 of their length closed, glabrous on surface. Leaf-sheath auricles absent. Ligule an eciliate membrane, 1.5–3.5 mm long. Leaf-blades flat, 4–9 mm wide. Leaf-blade surface scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong, 12–26 cm long. Panicle axis scaberulous. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 8–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet, similar to fertile lemma in texture. Lower glume linear, 2.5–3.2 mm long, 0.66–0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume lanceolate, 4–4.8 mm long, 0.5–0.66 length of adjacent fertile lemma, chartaceous, without keels. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 7.5–8.2 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 8–13 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous, with 0.33 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.7–2 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, 3 mm long. Hilum linear.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** China. China South Central, China Southeast.

**TDWG4.** Guangxi. Guizhou, Sichuan.

**Festuca elbrusica** Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 78(3): 107 (1973).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *G. I. Kos s. n.*, 8 Jul 1953, [Caucasus]: Kabarda: Mt. Elbrus: elev. 2300 m (LE). Orig. label: Flora Kabardinskoy ASSR, Terskol, El'brus, s vys. 2300 m, sukhie polyany i otkosy..

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Elbrus, a mountain in Georgia, former Soviet Union.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Leaf-sheaths open for most of their length, with 0.1–0.15 of their length closed, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, 0.4–0.55 mm wide, glaucous. Leaf-blade venation comprising 5(–7) vascular bundles, with 5 secondary veins, with 3 inner ridges, with 4 subepidermal sclerenchyma strands. Leaf-blade surface smooth, puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 5–8 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5.5–7.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper

glume lanceolate, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 3.5–4 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–1.7 mm long overall. Palea 2 -veined. Palea keels ciliolate, adorned above, with 0.33 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.7–3.2 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Caucasus. North Caucasus.

**TDWG4.**

### **Festuca elegans** Boiss. *Elench.* 92. (1838).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Spain. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *Boissier s.n.*, Jul 1837, Spain: in Sierra Nevada loco dicto Pra de la Yegua, alt. 900–10000' (G-BOISS-196; ILT: G, LE (2 sheets. 1 sheet from herb. Fischer)). LT designated by Burdet et al., *Candollea* 36: 565 (1981).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. elegant.* Inflorescence attractive.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms 50–100 cm long. Culm-internodes antrorsely scabrous. Leaf-sheaths smooth or antrorsely scabrous, glabrous on surface. Ligule an eciliate membrane, 1.8–4.5 mm long, entire or lacerate. Leaf-blades filiform, convolute, 7–45 cm long, 0.3–1 mm wide. Leaf-blade surface scabrous, rough abaxially, pubescent, hairy adaxially. Leaf-blade margins scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear or oblong, dense, 8–15 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets obovate, laterally compressed, 6–10 mm long, 2–3 mm wide, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume obovate, 1.7–2.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous. Lower glume apex acute. Upper glume obovate, 2.5–3.2 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface scabrous. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 3–4.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface smooth or scaberulous, rough above. Lemma apex acute. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–2.6 mm long. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear.

$2n = 28$  (2 refs TROPICOS).

**Distribution (TDWG). Continent.** Europe, Africa.

**Region.** Southwestern Europe.

**Country /Province /State.** : Portugal, Spain. **Northern Africa.** Morocco.

### **Festuca elgonensis** E.B.Alekseev. *Bot. Zhurn.*, 72(9): 1266 (1987).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Uganda. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Uganda, Mt. Elgon: Thomas 644 (K holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. -ensis*, denoting origin. From Mt. Elgon on the border of Kenya and Uganda.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths withering. Culms 35–70 cm long, 2–3 -noded. Culm-internodes smooth. Leaf-sheaths open for most of their length, with 0.33–0.5 of their length closed, smooth. Ligule an eciliate membrane, 0.2–0.5 mm long, truncate. Leaf-blades curved, filiform, conduplicate, angular in section, 30–40 cm long, 0.5–0.6 mm wide, indurate. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 7 subepidermal sclerenchyma strands, with

subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 14–20 cm long. Primary panicle branches appressed, 3–10 cm long. Panicle axis scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 9–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 6–7.5 mm long, membranous, much thinner on margins, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 7.5–8 mm long, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 6.5–8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous. Lemma apex emarginate or acute, mucicous or awned, 1 -awned. Principal lemma awn 1.5–2.5 mm long overall. Palea 2 -veined. Palea keels scabrous, with 0.33 of their length adorned. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.7–3.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear, 1 length of caryopsis.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** East tropical Africa. Uganda.

**Festuca elmeri** Scribn. & Merrill. *Bull. Torr. Bot. Club*, 1902, 468. (1902).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from USA. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *A.D.E. Elmer 2101*, Apr 1901, USA: California: Santa Clara Co.: Stanford University (US-556198).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (405).

**Derivation** (Clifford & Bostock 2007): in honor of Adolph Daniel Edward Elmer (1870–1942) United States botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Culms 40–100 cm long. Lateral branches lacking. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane. Leaf-blades 2–4 mm wide. Leaf-blade surface puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 10–20 cm long. Primary panicle branches drooping, 5–10 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets cuneate, laterally compressed, 8–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2–2.5 mm long, 0.5–0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume lanceolate, 3–4 mm long, 0.5–0.66 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 6 mm long, membranous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins prominent. Lemma surface hispidulous. Lemma apex dentate, 2 -fid, awned, 1 -awned. Principal lemma awn from a sinus, 2–8 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** Northwest USA, Southwestern USA. Oregon. California.

**Festuca elviae** B.Briceno. *Ernstia*, 4: 77 (1994).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Venezuela. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Venezuela: Edo. Mirida: Dto. Liberator: Paramo La Gulata, camino hacia Laguna Tapada, 3300 m, *B. Bricego* & *G. Adamo 1114* (HT: MERF; IT: Fac. Cs. ULA).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 23, fig 4 (2007)).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, culms solitary or caespitose, clumped loosely. Cataphylls inconspicuous. Rhizomes short, fleshy, not obviously scaly. Basal innovations extravaginal or intravaginal. Culms erect, of moderate stature, straight, 50–100 cm long, 2–4 -noded, without nodal roots. Culm-internodes terete, 4.8–16 cm long, distally glabrous. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves mostly basal, 0–2 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, mostly shorter than adjacent culm internode, as wide as blade at the collar or wider than blade at the collar, without keel, striately veined. Leaf-sheath auricles absent. Ligule an eciliate membrane, 0.3–0.6 mm long, membranous, white, erose. Leaf-blade base symmetrical. Leaf-blades straight or flexuous, involute, linear in section or angular in section, 6–16 cm long, 0.7 mm wide, firm, mid-green or dark green. Leaf-blade midrib indistinct or evident. Leaf-blade venation indistinct or distinct, comprising 8–15 vascular bundles, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma attached to veins below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface glabrous. Leaf-blade margins smooth, glabrous. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle straight or flexuous, terete, eglandular, glabrous. Panicle contracted, linear or lanceolate, continuous, dense, straight, 8–19 cm long, 0.8–3 cm wide, bearing many spikelets or few spikelets. Primary panicle branches 2–3 -nate, bearing spikelets almost to the base. Panicle axis smooth or scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–9 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes scaberulous. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume lanceolate, 0.6–2.5 mm long, 0.33–0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume linear or lanceolate, 1.8–3.8 mm long, 0.66 length of adjacent fertile lemma, chartaceous, dark green or purple, without keels, 1–3 -veined. Upper glume lateral veins absent or obscure. Upper glume margins scabrous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, symmetrical, 4.5–6.1 mm long, chartaceous, dark green or purple, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous. Lemma apex acute or acuminate, awned, 1 -awned. Principal lemma awn stiff, 1–2.2 mm long overall. Palea 4–6 mm long, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, 1.6 mm long. Anthers 3, 0.9–1.8 mm long, yellow or purple. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG).** Continent. South America.

**Country /Province /State.** Northern South America. Venezuela.

**Festuca elwendiana** I. Markgraf-Dannenber. *Willdenowia*, 11(2): 208 (1981).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Iran. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: : Based on *F. ovina* subvar. *asperrima*; Iran, Mt. Elwend: Pichler (W holo, K, LE).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating location. From Elwend or Alwand, a mountain in south-west Iran.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with soft dead sheaths. Basal innovations intravaginal. Culms 30–45 cm long. Culm-internodes antrorsely scabrous. Leaf-sheaths open for most of their length, with 0 of their length closed, antrorsely scabrous. Leaf-sheath auricles erect. Ligule an eciliate membrane, 0.2 mm long. Leaf-blades deciduous at the ligule, filiform, conduplicate, circular in section, 0.3–0.65 mm wide, glaucous, pruinose. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with unevenly thickened subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, glabrous. Leaf-blade apex obtuse or abruptly acute.

**Inflorescence.** Inflorescence a panicle. Peduncle smooth. Panicle open, lanceolate, loose, 3–10.5 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.



**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 8.2–9.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume linear or lanceolate, 4.2–5.5 mm long, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5.4–6.5 mm long, 2–2.3 mm wide, chartaceous, light green or glaucous, shiny, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2.5–3 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Western Asia. Turkey.

**Festuca engleri** Pilger. *Engl. Jahrb.* xl. 85. (1907).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Tanzania. **Basionym or Replaced Name:** *Pseudobromus engleri* (Pilger) Clayton, *Kew Bull.* 23: 293 (1969). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Tanganyika: West-Usumbara: Magamba oberhalb Kwai, Hohenwald. 200–2600 M. n. M.,.

**Illustrations (Books):** R.M.Pohill, F.T.E.A., *Gramineae* (1(1970):55, Fig.20as *Pseudobromus engleri*), G.V.Pope et al., *Flora Zambesiaca* 10 (1(1971):53, t. 14 as *Pseudobromus engleri*).

**Derivation** (Clifford & Bostock 2007): in honor of Heinrich Gustav Adolph Engler (1844–1930) German botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Rhizomes short, knotty. Culms 130–200 cm long. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane. Leaf-blades 30–45 cm long, 7–20 mm wide, flaccid. Leaf-blade venation with obscure cross veins.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 30–40 cm long. Primary panicle branches spreading. Panicle branches flexuous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, filiform.

**Fertile Spikelets.** Spikelets comprising 2–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, subterete, 9–13 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes eventually visible between lemmas. Floret callus pubescent, obtuse.

**Glumes.** Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture. Lower glume lanceolate, 4–6 mm long, 0.7–0.9 length of upper glume, membranous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume lanceolate, 6–8 mm long, 0.8 length of adjacent fertile lemma, membranous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 7–9 mm long, membranous, without keel, 3–5 -veined, 0–3 -veined or more than 3-veined. Lemma lateral veins with distinct primaries but obscure intermediates. Lemma apex entire or dentate, 2 -fid, awned, 1 -awned. Principal lemma awn subapical, flexuous, 7–10 mm long overall. Palea 1 length of lemma. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Embryo 0.15–0.2 length of caryopsis. Hilum linear, 1 length of caryopsis.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** West-central tropical Africa, East tropical Africa, South tropical Africa. Rwanda. Kenya, Tanzania. Zimbabwe.

**Festuca eriobasis** H. Scholz. *Willdenowia* 18(2): 431 (1989).

**TYPE** from Nepal. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Langschica Karka: Mieke 11830 (B holotype).

**Distribution (TDWG). Continent.** Tropical Asia.

**Country /Province /State.** Indian Subcontinent. Nepal.

**Festuca eriostoma** Hack. *Oesterr. Bot. Zeitschr.* 53, 32. (1903).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Argentina. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: ST-LT mix: *G.H.E.Hieronymus & G.Niederlein 392 & 781*, 26 Jan 1879, Argentina: La Rioja, Cueva de Perez: et la altura del Espiritu Santo (W; IST: CORD, US (fragm. ex W)).

LT: *Hieronymus & Niederlein 781*, 26 Jan 1879, Argentina: La Rioja: Sierra de Famatina, (US "La Altura del Espiritu Santo") entre la Mina Yareta y la altura de Espiritu Santo (W; ILT: B, K, S, CORD, US-2875407a (fragm. ex W)). LT designated by Alexeev, *Bot. Zhurn.* 69: 348 (1984).

ST: *Hieronymus & Niederlein 780*, 26 Jan 1879, Argentina: La Rioja: Sierra de Fatamina, entre la Mina (CORD).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. erion, wool; stoma, mouth. Orifice of leaf-sheath woolly-tomentose.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms 10–18 cm long, 2-noded. Leaves distichous. Leaf-sheaths longer than adjacent culm internode, glabrous on surface. Ligule a ciliolate membrane, 0.5 mm long. Leaf-blades filiform, conduplicate, 5–9 cm long, 1 mm wide, stiff. Leaf-blade venation with subepidermal sclerenchyma attached to veins above and below, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface pubescent, hairy adaxially. Leaf-blade apex pungent.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 4–8 cm long. Primary panicle branches appressed, 2-nate, simple. Panicle axis smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 8–9 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1 mm long, smooth.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 5–6 mm long, 0.8 length of upper glume, chartaceous, without keels, 1-veined. Lower glume primary vein smooth. Lower glume lateral veins absent. Lower glume margins ciliolate. Lower glume apex acute. Upper glume lanceolate, 6–7 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume primary vein smooth. Upper glume margins ciliolate. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6–7 mm long, chartaceous, without keel, 5-veined, more than 3-veined. Lemma lateral veins obscure. Lemma margins ciliate. Lemma apex acute, mucous. Palea 2-veined. Palea keels ciliolate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Southern South America.** Argentina Northwest.

**TDWG4.** Catamarca, Jujuy, La Rioja, Salta, Tucuman.

**Festuca eskia** Ram. ex DC. *Fl. Fr.* 3: 52 (1805).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from France. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *Ramond s.n.*, France; Pyrenies (G). LT designated by Nhgre, *Candollea* 30: 317 (1975).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): vernacular name of the species in Spain.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms 22–50 cm long, 1–2.2 mm diam. Leaf-sheaths smooth, glabrous on surface. Ligule an eciliate membrane, 3–7 mm long. Leaf-blades straight or curved, conduplicate, 0.7–1.6 mm wide, stiff, glaucous. Leaf-blade venation comprising 9–11 vascular bundles, with 5–11 inner ridges, with sclerenchyma strands below veins or above all veins. Leaf-blade surface ribbed, smooth, glabrous. Leaf-blade apex pungent.

**Inflorescence.** Inflorescence a panicle. Panicle open, interrupted, nodding, 5–9.5 cm long. Panicle branches glabrous or puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9–10.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5.1 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 6–6.9 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, muticous or awned, 1 -awned. Principal lemma awn 0–1.5 mm long overall. Palea 2 -veined. Palea keels ciliolate, adorned above. Palea surface glabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, obovoid. Hilum linear. Disseminule comprising a caryopsis.

$2n = 14$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe, Southeastern Europe.

**Country /Province /State.** : France, Spain. : Romania.

**Festuca eugenii** P.V. Kulikov. *Bot. Zhurn.*, 85(3): 124 (2000).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Russia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Russia, Caucasus, Abrau: Kulikov (LE holo).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms 20–35 cm long. Culm-internodes distally pubescent. Leaf-sheaths tubular for much of their length, with 1 of their length closed, 3–4.5 cm long, puberulous. Ligule an eciliate membrane. Collar pubescent. Leaf-blades filiform, conduplicate, elliptic in section or circular in section, 15–23 cm long, 0.5–0.65 mm wide. Leaf-blade venation comprising (5–)7 vascular bundles, with 3 inner ridges, with unevenly thickened subepidermal sclerenchyma layer on the underside or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface pilose, hairy abaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, loose, 6–7 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 4.5–5.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn (1.9–)2.5–3.5 mm long overall. Palea 2 -veined. Palea keels scaberulous, adorned above, with 0.33 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.6–1.7 mm long. Ovary glabrous.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Caucasus. North Caucasus.

**Festuca exaristata** E.B.Alekseev. *Bot. Zhurn.*, 71(8): 1116 (1986).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Lesotho. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Lesotho, Sani Pass: McCallum-Webster 483b (K holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. *ex-*, without; *arista*, bristle; *-ata*, possessing. Lemmas awnless or almost so.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with soft dead sheaths. Culms 20–35 cm long, 0.5–1 mm diam., 2 -noded, with 0.15–0.25 of their length below uppermost node. Culm-internodes smooth. Leaf-sheaths tubular for much of their length, with 0.66–0.75 of their length closed, smooth. Ligule a ciliolate membrane, 0.3–0.7 mm long. Leaf-blades filiform, involute, circular in section, 5–25 cm long, 0.6–0.9 mm wide, stiff, glaucous. Leaf-blade midrib scarcely raised beneath. Leaf-blade venation comprising 7 vascular bundles, with 5 inner ridges, with 7

subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth or scaberulous, rough abaxially, puberulous, hairy adaxially. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 6–10 cm long. Primary panicle branches appressed, 1–3 cm long. Panicle branches smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 5.5–6 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear or lanceolate, 2–2.5 mm long, 0.75 length of upper glume, coriaceous, much thinner on margins, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface smooth. Lower glume apex acute. Upper glume lanceolate, 2.7–3 mm long, 0.6–0.7 length of adjacent fertile lemma, coriaceous, with membranous margins, without keels, 3 -veined. Upper glume surface smooth. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 4–4.2 mm long, chartaceous, light green, without keel, 5 -veined, more than 3-veined. Lemma surface smooth or scaberulous, rough above. Lemma apex muticous. Palea 1 length of lemma, 2 -veined. Palea keels scabrous, with 0.5 of their length adorned. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.5–1.8 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** Southern Africa. Lesotho.

### ***Festuca extremorientalis*** Ohwi. *Bot. Mag., Tokyo*, xlv. 194. (1931).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Korea. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Korea, Kivaisanryon: Ohwi 500.

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig.327).

**Derivation** (Clifford & Bostock 2007): *L. extremus*, extreme; oriens, the east; -alis, pertaining to. From the Far East, that is Eastern Asia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, mat forming, clumped loosely. Culms 40–130 cm long. Leaf-sheaths scaberulous. Ligule an eciliate membrane. Leaf-blades flat, 4–12 mm wide. Leaf-blade surface scabrous, rough on both sides, glabrous or pilose, sparsely hairy.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong, nodding, 20–30 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 5–7 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet, similar to fertile lemma in texture. Lower glume linear, 3 mm long, 0.5–0.66 length of upper glume, chartaceous, much thinner on margins, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous, rough above. Lower glume apex acuminate. Upper glume lanceolate, 4.5–5 mm long, 0.8–1.1 length of adjacent fertile lemma, chartaceous, with membranous margins, without keels, 3 -veined. Upper glume surface scabrous, rough above. Upper glume apex acuminate.

**Florets.** Fertile lemma ovate, 4–6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma midvein scabrous. Lemma margins scabrous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 4–5 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 0.7–1.2 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, 3 mm long. Hilum linear.

$2n = 28$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Siberia, Russian far east, **China, Eastern Asia.** Altay, Buryatiya, Chita, Irkutsk, Tuva. Amur, Kuril Is, Primorye, Sakhalin. China South Central, Inner Mongolia, Manchuria, China North-Central, Qinghai. Japan, Korea.

**TDWG4.** Gansu, Hebei, Shaanxi, Shanxi. Sichuan, Yunnan.

**Festuca fabrei** M. Kerguelen & F. Plonka. *Bull. Soc. Bot. Centre-Ouest*, n.s., 19: 18 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from France. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: France, Moureze\to Salasc: Kerguelen & Plonka.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of G. Fabre (fl. 1980) French botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 15–30 cm long. Lateral branches lacking. Leaf-sheaths open for most of their length, with 0.33–0.5 of their length closed. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section or circular in section, 5–10 cm long, 0.7–1.1 mm wide, stiff, glaucous, pruinose. Leaf-blade venation comprising 7 vascular bundles, with 1–3 inner ridges, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth. Leaf-blade apex acute, pungent.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 1.5–5 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5(–7) fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 6.5–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or ovate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4.3–5.1 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface glabrous or puberulous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–2.4 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : France.

**Festuca fascinata** S.L. Lu. *Acta Phytotax. Sin.*, 30(6): 533 (1992).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Sichuan:, *K.L. Chu* 7525 (HT: NJU).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig.324).

**Derivation** (Clifford & Bostock 2007): *L. fascino*, bewitch. Sufficiently different from related species to draw attention to itself.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Culms erect, robust, 60–80 cm long, 1 mm diam., 2–3 -noded, with 0.5 of their length below uppermost node. Culm-internodes smooth. Leaf-sheaths 17–20 cm long, mostly shorter than adjacent culm internode, smooth, glabrous on surface. Ligule an eciliate membrane, 0.5 mm long, truncate. Leaf-blades involute, 14–27 cm long, 1.5–2.5 mm wide. Leaf-blade venation comprising 5–7 vascular bundles. Leaf-blade surface puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle, embraced at base by subtending leaf. Panicle open, lanceolate, nodding, 11–20 cm long. Primary panicle branches appressed or ascending, 9–11 cm long, bearing 4–10 fertile spikelets on each lower branch. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 9–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1–1.5 mm long, scaberulous.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume lanceolate, 2–3 mm long, 0.4–0.5 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume lanceolate, 5–6 mm long, 0.8–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate or oblong, 6–7 mm long, chartaceous, much thinner on margins, without keel, 5 -veined, more than 3-veined. Lemma lateral veins with distinct primaries but obscure intermediates. Lemma surface scabrous, rough above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 4–8 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.5 mm long, yellow. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central, China North-Central, Tibet.

**TDWG4.** Gansu, Shaanxi. Hubei, Sichuan, Yunnan.

### **Festuca fiebrigii** Pilger. *Engl. Jahrb.* vii. 510 (1906).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Bolivia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: ST: *K. Fiebrig 3117*, 10 Mar 1904, Bolivia: Tarija (B; IST: US-601293).

ST: *Fiebrig 3117*, 10 Mar 1904, Bolivia: Pinos bei Tarija, 2800 m (B; IST: BAA-1217 (fragm. ex B)).

**Illustrations (Books):** S.A.Renvoize, *Gramineas de Bolivia* (1998) (Fig. 28).

**Derivation** (Clifford & Bostock 2007): in honor of Karl Fiebrig Gertz (1869–1951) German-born South American botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 40–70 cm long, 2 -noded. Culm-internodes terete. Leaf-sheaths glabrous on surface. Ligule a ciliolate membrane, 1 mm long, truncate. Leaf-blades filiform, involute, 15–25 cm long, 1.4–1.5 mm wide. Leaf-blade venation comprising 13 vascular bundles, with 5 inner ridges, with 23 subepidermal sclerenchyma strands, with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scaberulous. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong, 10–25 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate or elliptic, laterally compressed, 8–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, 4–5 mm long, 0.8–0.9 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5–6 mm long, 1.2–1.3 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acute.

**Florets.** Fertile lemma ovate, 4–4.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–2 mm long overall. Palea 5–5.5 mm long, 1.2 length of lemma, 2 -veined. Palea keels ciliolate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3 mm long, purple. Ovary glabrous. Caryopsis with adherent pericarp, oblong, 3.5 mm long, glabrous. Hilum linear, 0.75 length of caryopsis.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America, Southern South America. Bolivia, Peru. Argentina Northwest.

**TDWG4.** Jujuy, Tucuman.

### **Festuca fimbriata** Nees. *Agrost. Bras.* 472. (1829).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Uruguay. **Basionym or Replaced Name:** *Festuca ampliflora* Doell, *Mart. Fl. Bras.* 2(3) 116 (1878). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *F. Sellow s.n.*, Brasilia

meridionalis: Montevideo (B; IT: K, LE-TRIN-2806.01, LE-TRIN-2806.02, US-557541 (ex B), US-1441522 (ex B), US- 1126679 (fragm. ex W), W).

**Illustrations (Books):** L.B. Smith, D.C. Wasshausen, R.M. Klein *Flora Illustrada Catarinensis Gramineas* (1981–1982) (214, Fig. 46 as *F. ampliflora*), B.Rosengurtt, *Gramineas Uruguayas I* (1970) (114, Fig. 41 as *F. ampliflora*), H.M. Longhi-Wagner, *Flora Illustrada do Rio Grande do Sul, Gramineae, Poeae* (1987) (as *F. ampliflora*).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 53, fig 22 (2007)).

**Derivation** (Clifford & Bostock 2007): *L. fimbriae*, fringe; *-ata*, possessing. With ligule fringed.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Rhizomes elongated. Culms 100–200 cm long, 3–4 mm diam. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane. Leaf-blades 30–50 cm long, 5–10 mm wide.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 20–40 cm long. Panicle branches flexuous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 7–10 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 12–14 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 0.75–1 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 0.75–1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6–8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, muticous. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Brazil, Southern South America. Brazil Southeast, Brazil South. Paraguay, Uruguay.

**TDWG4.** Minas Gerais, Rio de Janeiro, Espirito Santo, Sao Paulo Parana, Catarina, Rio Grande do Sul. Corrientes, Misiones.

**Festuca flacca** Hack ex E.B. Alekseev. *Bot. Zhurn.*, 69(11): 1543 (1984).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Ecuador. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Sodiro 36/11*, Ecuador: Pichincha (W; IT: QPLS, W).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 25, fig 5 (2007)).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Rhizomes short. Culms erect, 110–150 cm long, 2–4 mm diam., 3–8 -noded, with 0.5–0.66 of their length below uppermost node. Culm-internodes smooth. Culm-nodes glabrous. Lateral branches lacking. Leaf-sheaths open for most of their length, smooth. Leaf-sheath auricles absent. Ligule an eciliate membrane, 2–4.5 mm long, lacerate. Leaf-blades 25–40 cm long, 4–9 mm wide. Leaf-blade venation with subepidermal sclerenchyma attached to veins above and below. Leaf-blade surface scabrous, rough on both sides.

**Inflorescence.** Inflorescence a panicle. Panicle open, elliptic, loose, 20–30 cm long. Primary panicle branches 10–15 cm long. Panicle branches smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 7–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume subulate, coriaceous, 1 -veined. Lower glume lateral veins absent. Upper glume linear, 2.3–3.5 mm long, coriaceous, without keels, 1 -veined. Upper glume lateral veins absent. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4.5–5.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex awned, 1 -awned. Principal lemma awn 6–12 mm long overall. Palea 2 -veined. Palea keels scabrous, adorned all along, with hairs 4 mm long. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 0.9–1.2 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, sulcate on hilar side. Hilum linear, 0.66 length of caryopsis.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Ecuador.

**Festuca flavescens** Bell. *Mem. Acad. Turin*. v. 1790, 1791, 217 (1793).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Italy. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Italy, Le Piemont: Bellardi.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. flavescens*, become yellow. Foliage yellowish.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms 30–50 cm long, 0.8–1.2 mm diam. Culm-internodes yellow. Leaf-sheaths open for most of their length, glabrous on surface. Ligule a ciliolate membrane, 0.6–1 mm long, obtuse. Leaf-blades curved, filiform, 0.4–0.5 mm wide. Leaf-blade venation comprising 5 vascular bundles, with 1 inner ridges, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous.

**Inflorescence.** Inflorescence a panicle. Peduncle antrorsely scabrous above. Panicle open, ovate, 7–9.5 cm long. Panicle branches glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9–11 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5.3 mm long, 0.75–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex obtuse or acute.

**Florets.** Fertile lemma oblong, 5.5–7 mm long, chartaceous, yellow, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, mucicous or mucronate or awned, 1 -awned. Principal lemma awn 0–0.8 mm long overall. Palea 2 -veined. Palea keels ciliolate. Palea surface scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, obovoid. Hilum linear. Disseminule comprising a caryopsis.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe, Southeastern Europe.

**Country /Province /State.** : France. : Italy.

**Festuca fontqueri** St.- Yves. *Cavanillesia*, iii. 5 (1930).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Morocco. **Basionym or Replaced Name:** *Festuca yvesii* Litard., non Sennen & Pau (1917), *Bull. Soc. Hist. Nat. Afr. Nord*, 14: 337 (1923). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Morocco, Tidiguin Mt.: Font-Quer.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of Pes Font-Quer (1888–1964) Spanish botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Stolons present. Basal innovations extravaginal and intravaginal. Culms erect or geniculately ascending, slender, 20–40 cm long, 2–3 -noded, with 0.25–0.33 of their length below uppermost node. Culm-internodes striate, smooth, distally glabrous. Culm-nodes black. Leaf-sheaths tubular for much of their length, with 0.75–1 of their length closed, without keel, striately veined, smooth, glabrous on surface to pubescent. Ligule an eciliate membrane, 1 mm long, erose, truncate. Leaf-blades flat or conduplicate, 5–10 cm long, 1.5–2.5 mm wide. Leaf-blade midrib conspicuous. Leaf-blade venation with 10–16 secondary veins, 3 subepidermal sclerenchyma strands (midrib & margins). Leaf-blade surface ribbed, glabrous or pubescent, hairy adaxially. Leaf-blade margins scabrous. Leaf-blade apex abruptly acute or acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear or lanceolate, 3–8 cm long. Primary panicle branches 1–2 -nate, 1.5–4 cm long, bearing 2–4 fertile spikelets on each lower branch. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, tip rectangular.



**Fertile Spikelets.** Spikelets comprising 3–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate or elliptic, laterally compressed, 7 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 0.6–0.7 mm long, scaberulous.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume linear, 3–3.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface smooth or asperulous. Lower glume apex acute. Upper glume lanceolate, 4–4.5 mm long, 0.75–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface smooth or asperulous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5 mm long, 1.5–2 mm wide, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex dentate, 2 -fid, awned, 1 -awned. Principal lemma awn from a sinus, 2 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3 mm long. Ovary glabrous. Caryopsis with adherent pericarp, sulcate on hilar side, glabrous. Hilum linear, 0.66 length of caryopsis.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** Northern Africa. Morocco.

### ***Festuca formosana*** Honda. *Bot. Mag., Tokyo*, xlii. 134. (1928).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Taiwan: Nai-taroko, limestone areas, 1917, *B. Hayata s.n.* (HT: ?).

**Illustrations (Books):** C-C Hsu, *Flora of Taiwan*, Vol 5 (1978) (312), C-C Hsu, *Taiwan Grasses* (1975).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating location. For Formosa, now Taiwan.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Culms 40 cm long, 1 mm diam. Ligule an eciliate membrane, 2 mm long, scaberulous on abaxial surface, truncate. Leaf-blades 15 cm long, 6–15 mm wide. Leaf-blade apex acuminate.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 1.5–6 mm long.

**Fertile Spikelets.** Spikelets comprising 1–2 fertile florets, with diminished florets at the apex. Spikelets of 1 fertile floret with or without additional sterile florets, or of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 3 mm long, 0.8–0.9 length of upper glume, chartaceous, much thinner on margins, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous. Lower glume apex acute. Upper glume lanceolate, 3.5 mm long, 0.4 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface scabrous. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 8 mm long, membranous, without keel, 5 -veined, more than 3-veined. Lemma apex acute. Palea 7 mm long, 0.9 length of lemma, 2 -veined. Palea keels ciliolate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3 mm long. Ovary glabrous. Caryopsis with adherent pericarp, fusiform, 5 mm long, hairy at apex. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China, Eastern Asia. Taiwan.

### ***Festuca forrestii*** St.- Yves. *Rev. Bret.* No. 2:16, 72 (1927).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan/Xizang;.,

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig.335).

**Derivation** (Clifford & Bostock 2007): In honor of George Forrest (1873–1932) who collected in China.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Culms erect, 30–60 cm long, 2 -noded, with 0.66 of their

length below uppermost node. Culm-internodes distally glabrous. Culm-nodes glabrous. Leaf-sheaths open for most of their length, striately veined, smooth, glabrous on surface. Leaf-sheath auricles erect. Ligule an eciliate membrane, 0.3–0.5 mm long. Leaf-blades curved, filiform, conduplicate, 10–30 cm long, 0.75 mm wide, stiff. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous. Leaf-blade apex hardened.

**Inflorescence.** Inflorescence a panicle. Peduncle smooth or scaberulous above. Panicle contracted, oblong, 3–9 cm long. Primary panicle branches ascending, 1-nate, bearing 2–4 fertile spikelets on each lower branch. Panicle axis scabrous. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 6–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate or elliptic, laterally compressed, 9–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1 mm long, scaberulous.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume linear, 2.5–3.5 mm long, 0.66 length of upper glume, chartaceous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4–6 mm long, 0.75–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5.5–7 mm long, chartaceous, purple, without keel, 5-veined, more than 3-veined. Lemma midvein scabrous. Lemma apex acuminate, awned, 1-awned. Principal lemma awn 4–7 mm long overall. Palea 1 length of lemma, 2-veined. Palea keels scaberulous. Palea surface scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central, Qinghai, Tibet.

**TDWG4.** Sichuan, Yunnan.

### **Festuca fragilis** (Luces) B. Briceno. *Ernstia*, 4: 78: (1994).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Venezuela. **Basionym or Replaced Name:** *Helleria fragilis* Luces, *Journ. Wash. Acad. Sci.* 32:157 (1942). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Venezuela: State of Miranda: Sierra Nevada de Miranda: Paramo de Tucani, 4500 m, 17 Dec 1910, A. Jahn 62 (HT: VEN; IT: US).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 50, fig 20 (2007)).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms 30–35 cm long. Culm-internodes elliptical in section, smooth or scaberulous. Culm-nodes glabrous. Leaf-sheaths open for most of their length, longer than adjacent culm internode, without keel, glabrous on surface. Ligule an eciliate membrane, 3–5 mm long, scaberulous on abaxial surface, acuminate. Leaf-blades filiform, involute, 5–11 cm long, 1–1.5 mm wide, stiff. Leaf-blade surface ribbed, scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate or ovate, 7–9 cm long, 2–4 cm wide, bearing few spikelets. Primary panicle branches simple. Panicle axis angular, scaberulous. Spikelets in pairs. Fertile spikelets pedicelled. Pedicels present, angular, unequal, 4–5 mm long or 8–15 mm long, scabrous.

**Fertile Spikelets.** Spikelets comprising 5–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets cuneate, laterally compressed, 30–40 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes zig-zag, scaberulous.

**Glumes.** Glumes persistent, similar, with lower narrower than upper, shorter than spikelet, thinner than fertile lemma. Lower glume lanceolate, 7–10 mm long, 0.66 length of upper glume, membranous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume surface scabrous. Lower glume apex acuminate. Upper glume lanceolate, 11–15 mm long, 0.5 length of adjacent fertile lemma, membranous, without keels, 3-veined. Upper glume primary vein scabrous. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 22–30 mm long, chartaceous, without keel, 5-veined, more than 3-veined. Lemma surface scaberulous. Lemma apex acuminate, awned, 1-awned. Principal lemma awn 5–7 mm long overall. Palea 0.66 length of lemma, 2-veined. Palea keels scaberulous. Palea surface scaberulous. Palea apex acuminate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp, lanceolate or oblong, concavo-convex, 3.5 mm long, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Northern South America, Western South America. Venezuela. Colombia.

**Festuca francoi** Fern.Prieto, C.Aguiar, E.Días & M.I.Gut. *Bot. J. Linn. Soc.* 157(3): 497 (2008).

**TYPE** from Azores. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Azores, Terdeira, Serra de Santa Barbara: *Dias et al* AZU 12035 (AZU holo).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Basal innovations extravaginal. Culms 30–60 cm long. Leaf-sheaths open for most of their length. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, angular in section, 0.5–0.75 mm wide. Leaf-blade venation comprising 7 vascular bundles, with 5 inner ridges, with sclerenchyma strands below veins and above all veins, with subepidermal sclerenchyma attached to veins below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface ribbed, with rounded ribs.

**Inflorescence.** Inflorescence a panicle. Panicle open, (5–)7–11 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising (3–)4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets cuneate, laterally compressed, 7–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, (4–)5–8.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 6–9.5 mm long, 1–1.4 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute, mucronate or awned, 1 -awned, awn (0.5–)1–2 mm long.

**Florets.** Fertile lemma oblong, 6–7 mm long, 1.3–2 mm wide, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn (1.5–)2.3–5.5(–8) mm long overall. Palea (4.3–)5–6.5 mm long, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–3.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** Macaronesia. Azores.

**Festuca frederikseniae** E.B. Alekseev. *Novosti Sist. Vyssh. Rast.*, 22: 28 (1985).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Greenland. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: : Based on *F. vivipara* var. *hirsuta* ; : Based on *F. ovina* var. *hirsuta* Lange ; Greenland: Vahl 1828 (C lecto).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (435).

**Derivation** (Clifford & Bostock 2007): in honor of Signe Frederiksen (1942-) Danish botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Rhizomes absent. Butt sheaths green, persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms erect, 15–30 cm long, 1 -noded. Culm-nodes glabrous. Leaf-sheaths open for most of their length, longer than adjacent culm internode, without keel, glabrous on surface. Leaf-sheath oral hairs lacking. Leaf-sheath auricles erect. Ligule a ciliolate membrane, 0.25–0.5 mm long. Collar glabrous. Leaf-blades erect, conduplicate, 4–11 cm long, 0.3–0.75 mm wide, 1.5–3 cm long at summit of culm, stiff, glaucous. Leaf-blade venation comprising 5–7 vascular bundles, with 1 inner ridges, with sclerenchyma strands below veins, with 5–7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface glabrous. Leaf-blade margins glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 1.5–4 cm long. Primary panicle branches appressed, 1 -nate, 0.2–0.7 cm long, bearing 1–2 fertile spikelets on each lower branch. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 1–5 fertile florets. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets laterally compressed, 10–35 mm long, 2–3.5 mm wide, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar. Lower glume 2–3 mm long, 1 -veined. Lower glume surface puberulous. Lower glume margins ciliate. Upper glume 3–4.6 mm long, 3 -veined. Upper glume surface puberulous. Upper glume margins ciliate.

**Florets.** Fertile lemma 4.3–5.5 mm long, without keel, 5 -veined, more than 3-veined. Lemma surface puberulous. Lemma apex acuminate, mucicous or mucronate. Palea 5.3 mm long. Palea surface pubescent, hairy on back.

**Flower and Fruit.** Lodicules 2, 0.9 mm long, glabrous. Anthers 3, 2.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp, glabrous.

Vegetative proliferation occurs.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** Subarctic America, Western Canada, Eastern Canada, and Northwest USA. Nunavut, Greenland. Labrador, Newfoundland.

### ***Festuca frigida*** (Hack.) Richt. *Pl. Eur.* 1:97 (1890).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Spain. **Basionym or Replaced Name:** *Festuca ovina* subsp. *frigida* Hack., *Monogr.* :114 (1882). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Spain, Sierra Nevada: Boissier (K iso).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. cold. Growing at high altitudes.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms 4–7 cm long. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect, acuminate. Ligule an eciliate membrane, acute. Leaf-blades filiform, conduplicate, 0.25–0.5 mm wide, pruinose. Leaf-blade venation comprising 5 vascular bundles, with 1 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, 1 cm long. Primary panicle branches simple, bearing 1 fertile spikelets on each lower branch. Panicle branches glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5.6–6 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3–3.2 mm long, 0.9–1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 3–3.6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.7–1.9 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : Spain.

### ***Festuca galicicae*** I. Horvat ex I. Markgraf-Dannenberg. *Bot. J. Linn. Soc.*, 76(3): 324 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Turkey. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Turkey, Galicia Planina: Horvat (ZA holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): from Galicica Planina, Macedonia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms 40–65 cm long. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 1.5–2.3 mm long. Leaf-blades filiform, conduplicate, 0.5–1.1 mm wide. Leaf-blade venation comprising 7–11 vascular bundles, with 5–7 inner ridges,

with sclerenchyma strands below veins or above all veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth. Leaf-blade apex pungent.

**Inflorescence.** Inflorescence a panicle. Panicle open, 6–8 cm long. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8.5–11.7 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 5.2–6.9 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 6.2–7.8 mm long, chartaceous, light green, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, mucronate or awned, 1 -awned. Principal lemma awn 0.2–0.8 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels ciliate, adorned all along. Palea surface scabrous, glabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3.5–4 mm long. Caryopsis with adherent pericarp, obovoid. Hilum linear. Disseminule comprising a caryopsis.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southeastern Europe.

**Country /Province /State.** : Yugoslavia.

### **Festuca gamisansii** M. Kerguelen. *Lejeunia*, 120: 95 (1987).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Corsica. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Corsica, Asco: Litardiere.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of Jaques Gamisans (1944-) Catalanian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 10–53 cm long. Lateral branches lacking. Leaf-sheaths open for most of their length. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 2–32 cm long, 0.7–1.2 mm wide, stiff, glaucous, without exudate. Leaf-blade venation comprising (5–)7(–9) vascular bundles, with 1–3 inner ridges, without layer of subepidermal sclerenchyma masking vein striation or with sclerenchyma strands widened to form a discontinuous subepidermal layer or with unevenly thickened subepidermal sclerenchyma layer on the underside or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth or scaberulous. Leaf-blade apex acute, pungent.

**Inflorescence.** Inflorescence a panicle. Panicle open or contracted, linear or oblong, 3.5–7 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 8–12 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or ovate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5.5–7.6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface glabrous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.8–3.8 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : Corsica.

### **Festuca gautieri** (Hack.) K. Richter. *Pl. Eur.*, 1: 105: (1890).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Spain. **Basionym or Replaced Name:** *Festuca varia* var. *gautieri* Hack., *Monogr. Festuc. Eur.* 181 (1882)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *Godron s.n.*, Iberia: Col de Nourry (Pyrinies orient.) (W). LT designated by Fuente et al., *Candollea* 43: 520 (1988).

**Illustrations (Books):** No illustration found (BKS).

**Images:** R.Darke, *The Encyclopaedia of Grasses for Liveable Landscapes* (2007);.

**Derivation** (Clifford & Bostock 2007): in honor of Marie Climent Gaston Gautier (1841–1911) French botanist.

**Classification.** Subfamily Pooideae. Tribe: Poae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms 20–50 cm long, 0.9–1.7 mm diam. Leaf-sheaths tubular for much of their length, with 0.66–0.75 of their length closed, glabrous on surface. Ligule a ciliate membrane, 0.5–1 mm long, obtuse. Leaf-blades straight or curved, filiform, 0.4–0.7 mm wide. Leaf-blade venation comprising 5–7 vascular bundles, with 1 inner ridges, without layer of subepidermal sclerenchyma masking vein striation or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth. Leaf-blade apex pungent.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, 4.5–7 cm long, bearing few spikelets. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9–11 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.9–5.8 mm long, 0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 6–7.3 mm long, chartaceous, yellow or mid-green, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, muticous or mucronate. Palea 2 -veined. Palea keels ciliate. Palea surface smooth (except tip). Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, obovoid. Hilum linear. Disseminule comprising a caryopsis.

$2n = 28$  (1 ref TROPICOS).

**Distribution (TDWG), Continent.** Europe.

**Region.** Northern Europe (\*), Southwestern Europe.

**Country /Province /State.** : Great Britain. : France, Spain.

**Festuca georgii** Alexeev. *Bull. Mosk. Obsh. Ispyt. Prirod., Biol.* 83,5:94 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China, Yunnan, Lichiang Range: Forrest 2797 (K holo).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007).

**Derivation** (Clifford & Bostock 2007): in honor of George Forrest (1873–1932) Scottish-born traveller and plant collector.

**Classification.** Subfamily Pooideae. Tribe: Poae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Basal innovations extravaginal. Culms erect, robust, 65–75 cm long. Culm-internodes distally glabrous. Leaf-sheaths open for most of their length, with 0.33–0.5 of their length closed, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, angular in section, 15–30 cm long, 0.7–0.9 mm wide. Leaf-blade venation comprising 7–9 vascular bundles, with 5–7 inner ridges, with sclerenchyma strands below veins or above all veins, with 16–20 subepidermal sclerenchyma strands, with subepidermal sclerenchyma attached to veins below. Leaf-blade surface puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, 14–19 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 8.5–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume lanceolate, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 6.7–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 0.8–1.5 mm long overall. Palea 1

length of lemma, 2 -veined. Palea keels scabrous. Palea apex entire. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.8–3.3 mm long. Ovary with a few apical hairs. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

**Festuca gilbertiana** Alexeev ex S.M. Phillips. *Nordic J. Bot.*, 14(6): 649 (1994).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Ethiopia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Ethiopia: Gonder Prov.: Semien Mountains, slopes opposite and below Geech, 3240 m, *De Wilde & Gilbert 47* (HT: K; IT: ETH, WAG).

**Illustrations (Books):** S.Phillips, *Poaceae* (Gramineae) in I.Hedberg & S.Edwards, *Flora of Ethiopia and Eritrea* (1995) (25, Fig 11).

**Derivation** (Clifford & Bostock 2007): L. *-ana*, indicating connection. In honor of Michael George Gilbert (1943-) English botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms erect, 30–35 cm long, wiry. Leaf-sheaths smooth, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 0.5–0.8 mm wide, stiff. Leaf-blade venation comprising 9 vascular bundles, with 5–7 inner ridges, with sclerenchyma strands below veins or above all veins, with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, 6–7.5 cm long, bearing few spikelets. Primary panicle branches indistinct the panicle almost racemose. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 3–6 mm long.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9.5–10.2 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.5–3 mm long, 0.66 length of upper glume, chartaceous, 1(–3) -veined. Lower glume lateral veins absent or obscure. Lower glume apex acute. Upper glume lanceolate, 4.2–4.5 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate or oblong, 5.5–6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1.3–2.5 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Hilum linear.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** Northeast tropical Africa. Ethiopia (inc. Eritrea).

**Festuca glabrata** Tovar. *Mem. Mus. Hist. Nat. Javier Prado*. 16: 30 (1972).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: IT: A.S. Hitchcock 22453, 29 Nov 1923, Peru: Cuzco (US-1164510).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. *glaber*, smooth; *-ata*, possessing. Plant glabrous in whole or in part.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Culms erect, 50–70 cm long, 1 -noded. Culm-internodes smooth. Leaf-sheaths open for most of their length, smooth, glabrous on surface. Ligule a ciliolate membrane, 0.5 mm long, truncate. Leaf-blades conduplicate or involute or convolute, 12–35 cm long, 2 mm wide. Leaf-blade surface smooth, puberulous, hairy adaxially. Leaf-blade margins smooth. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, elliptic, 33 cm long. Primary panicle branches ascending, 7–15 cm long. Panicle branches smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, smooth.

**Fertile Spikelets.** Spikelets comprising 4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes pubescent.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3.3–3.6 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface smooth or asperulous, rough above. Lower glume apex attenuate. Upper glume lanceolate, 0.66 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface smooth or asperulous, rough above. Upper glume apex attenuate.

**Florets.** Fertile lemma oblong, 6.5–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex attenuate, awned, 1 -awned. Principal lemma awn 2 mm long overall. Palea 2 -veined. Palea keels scabrous. Palea surface puberulous, hairy above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.2–2.5 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Peru.

**Festuca glacialis** (Mieg. ex Hack.) Richt. *Pl. Eur.* 1:97 (1890).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from France. **Basionym or Replaced Name:** *Festuca ovina* var. *glacialis* Hack., *Monogr.* :115 (1882). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: France, Pyrenees: Miegewille.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. frozen. Growing at high altitudes.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 8–20 cm long. Leaf-sheaths thickened at base, tubular for much of their length, with 1 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule a ciliolate membrane, obtuse. Leaf-blades filiform, conduplicate, 0.4–0.7 mm wide, pruinose. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 2–3.5 cm long. Primary panicle branches simple, bearing 1–2 fertile spikelets on each lower branch. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.3–6.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.9–4.3 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex obtuse or acute.

**Florets.** Fertile lemma oblong, 4.5–4.7 mm long, chartaceous, purple, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, mucronate or awned, 1 -awned. Principal lemma awn 0.3–1.3 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.3–2.8 mm long. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 14$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : France, Spain.



**Festuca glauca** Vill. *Hist. Pl. Dauph.* 2:99 (1787).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from France. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: NT: *Herb. de Jussieu* 2397, "h. v. Paris *Festuca glauca* Lmk. 1787" (P). NT designated by Auquier & Kerguelen, *Lejeunia*, n.s., 89: 1–92 (1977).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico Vol 24 Poaceae*, part 1 (2007) (425).

**Images:** R.Darke, *Ornamental Grasses* (2004);, R.Darke, *The Encyclopaedia of Grasses for Liveable Landscapes* (2007);.

**Derivation** (Clifford & Bostock 2007): *L. glauca*, bluish-green. Whole plant or any of its parts glaucous.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 18–46 cm long. Leaf-sheaths open for most of their length, with 0.33–0.4 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 0.5–0.85 mm wide, glaucous, pruinose. Leaf-blade venation comprising 7 vascular bundles, with 1 inner ridges, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth, pilose, hairy adaxially. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, 4.4–5.5 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6–8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume ovate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 3.5–4.2 mm long, 0.8–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma ovate, 4.2–4.7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface pubescent. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1.4–1.5 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 30$  (2 refs TROPICOS), or 42 (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : France.

**Festuca glaucispicula** I. Markgraf-Dannenberg. *Willdenowia*, 11(2): 203 (1981).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Turkey. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Turkey, Ak Dag: Bornmuller 473 (B holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. glaucus*, bluish-green; spica, thorn; -ula, diminutive. Spikelets, glaucous to pruinose.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations extravaginal. Culms geniculately ascending, slender, 54 cm long, 2 -noded. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, without keel, hispid. Ligule a ciliolate membrane, 0.2 mm long. Leaf-blades filiform, conduplicate, angular in section, 0.4–0.7 mm wide. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma strands enlarged at midrib or enlarged at leaf margins, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth, pilose, hairy adaxially. Leaf-blade apex obtuse or abruptly acute.

**Inflorescence.** Inflorescence a panicle. Peduncle smooth. Panicle open, oblong or ovate, dense, 10 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 9.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume lanceolate, 0.9 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume linear or lanceolate, 3.9 mm long, chartaceous, with undifferentiated margins, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 5.5 mm long, 2 mm wide, chartaceous, glaucous, pruinose, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 0.7–1.2 mm long overall. Palea 1 length of lemma, 2 -veined. Palea surface pubescent. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary with a few apical hairs. Caryopsis with adherent pericarp, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Western Asia. Turkey.

**Festuca glumosa** Hack. ex E.B. Alekseev. *Bot. Zhurn.*, 69(11): 1549 (1984).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Ecuador. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Sodiro 36/4*, 1886, Ecuador (W).

PT: *Jameson 21*, Quito (LE).

PT: *s.c. 493*, 1–1881, Ecuador: Pichincha: 4–500 m. (LE).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 107, fig 53 (2007)).

**Derivation** (Clifford & Bostock 2007): L. gluma, husk; -osa, abundance. Spikelets with conspicuous glumes.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms erect, 25–45 cm long, 1–2 -noded. Culm-internodes antrorsely scabrous. Lateral branches lacking. Leaf-sheaths open for most of their length, mostly shorter than adjacent culm internode, smooth or scaberulous. Ligule a ciliolate membrane, 1–1.5 mm long, 0.7–1 mm long on basal shoots, obtuse. Leaf-blades straight, filiform, conduplicate, angular in section, 7–15 cm long, 0.8–1.2 mm wide, indurate, glaucous. Leaf-blade venation comprising 7(–11) vascular bundles, with 3–5(–7) inner ridges, with 7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous, rough abaxially. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 7–20 cm long. Primary panicle branches appressed, sparsely divided, 1.5–3.5 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 8.5–10.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 4–6.5 mm long, 0.5 length of upper glume, coriaceous, much thinner on margins, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface smooth or asperulous, rough above. Lower glume apex acute. Upper glume lanceolate, 7–8.5 mm long, 1 length of adjacent fertile lemma, coriaceous, with membranous margins, without keels, 3 -veined. Upper glume surface smooth or asperulous, rough above. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 7–8.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex emarginate or acute, awned, 1 -awned. Principal lemma awn 0.8–1.5 mm long overall. Palea 2 -veined. Palea keels scabrous, adorned all along. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 0.5–0.8 mm long. Ovary glabrous. Caryopsis with adherent pericarp, sulcate on hilar side. Hilum linear, 0.66 length of caryopsis.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Colombia, Ecuador.

**Festuca glyceriantha** Pilger. *Engl. Jahrb.* vii. 516 (1906).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: A. Weberbauer 3275, 15 Jun 1903, Peru: Ancash: Yungay, Yanganuco, 4100 m (B; IT: BAA-1228 (fragm. ex B), US-2875417).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 110, fig 54 (2007)).

**Derivation** (Clifford & Bostock 2007): Gk. anthos, flower. Spikelets resemble those of *Glyceria*.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 35–60 cm long, 0-noded. Leaf-sheaths smooth, glabrous on surface. Ligule an eciliate membrane, 0.6 mm long, pubescent on abaxial surface. Leaf-blades conduplicate, 8–25 cm long, 2–3 mm wide. Leaf-blade surface scabrous, rough adaxially. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 8–25 cm long. Primary panicle branches appressed, bearing spikelets almost to the base. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9–14 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 2–3 mm long, smooth.

**Glumes.** Glumes persistent, similar, with lower narrower than upper, shorter than spikelet. Lower glume lanceolate, 3.5–4.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex obtuse or acute. Upper glume lanceolate, 4.5–6 mm long, 0.66–0.75 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume lateral veins prominent. Upper glume apex obtuse or acute.

**Florets.** Fertile lemma oblong, 7–8 mm long, chartaceous, without keel, 5-veined, more than 3-veined. Lemma lateral veins obscure. Lemma surface scaberulous, rough above. Lemma apex obtuse, mucicous or mucronate. Palea 2-veined. Palea keels ciliolate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–3.7 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Peru.

**Festuca goloskokovii** E. B. Alekseev. *Novosti Sist. Vyssh. Rast.*, 13: 25 (1976).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from Kazakhstan. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Alatau Mountains, high mountain slopes,.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Vitalis Petrovich Goloskokov (1913-) Russian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms 6–20 cm long. Culm-internodes distally glabrous. Leaf-sheaths tubular for much of their length, with 0.5 of their length closed, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 2–3 cm long, 0.55–0.7 mm wide. Leaf-blade venation with 7 secondary veins, 3–5 inner ridges, 3 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth, puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, 1.5–2.5 cm long. Panicle axis smooth. Panicle branches smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 4–5.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 0.75 length of upper glume, chartaceous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume apex acute.

**Florets.** Fertile lemma ovate, 3.5–4 mm long, chartaceous, light brown, shiny, without keel, 5-veined, more than 3-veined. Lemma apex acute, awned, 1-awned. Principal lemma awn 1–1.7 mm long overall. Palea 2-veined. Palea keels scabrous, adorned above, with 0.33 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1–1.2 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. Middle Asia.** Kazakhstan.

**TDWG4.**

**Festuca gracilior** (Hackel) I. Markgraf-Dannenbergh. *Bot. J. Linn. Soc.*, 76(4): 325 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from France. **Basionym or Replaced Name:** *Festuca ovina* subvar. *gracilior* Hack., *Monogr. Festuc. Eur.* 90 (1882)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: France, Bouyon: Burnat.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. more slender. In some respect more slender than related species.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 20–35 cm long. Culm-internodes distally glabrous. Leaf-sheaths open for most of their length, with 0.25–0.5 of their length closed, with flat margins, glabrous on surface or puberulous. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades curved, filiform, conduplicate, circular in section, 0.5–0.8 mm wide, pruinose. Leaf-blade venation comprising 7 vascular bundles, with 3 inner ridges, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 4–7.5 cm long. Primary panicle branches spreading. Panicle branches smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.5–7.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume oblong, 3.5–4.5 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate or oblong, 4–4.4 mm long, chartaceous, mid-green, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, mucronate or awned, 1 -awned. Principal lemma awn 0.2–1.5 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Dissemínule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region. Southwestern Europe, Southeastern Europe.**

**Country /Province /State. :** France. : Italy.

**Festuca gracillima** Hook. f. *Fl. Antarct.* 383. (1847).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Chile. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Capt. King*, Chile: Tierra del Fuego, Port Famine (K; IT: US-2875418 (fragm. ex K), B, P, Montp.(US-2875418b fragm. ex Montp.)).

**Illustrations (Books):** M.N.Correa, *Flora Patagonica* Parte III, Gramineae (1978) (*Fl. Pat.* 3: 107, Fig. 64 (1978)).

**Derivation** (Clifford & Bostock 2007): L. very delicate. Of slender habit.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms slender, 30–80 cm long. Lateral branches lacking. Leaf-sheaths open for most of their length, glabrous on surface. Ligule an eciliate membrane, 0.5–1 mm long, truncate. Leaf-blades straight, filiform, conduplicate, 10–40 cm long, 0.5–0.7 mm wide. Leaf-blade surface puberulous, hairy adaxially. Leaf-blade apex acute, pungent.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, equilateral or nodding, 6–12 cm long. Primary panicle branches 1 -nate. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, scabrous.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 14–15 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4.5–6.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 6.5–8 mm long, 0.66–1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 6.5–12 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1–5 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels ciliolate. Palea surface puberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear, 0.75 length of caryopsis.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Southern South America.** Chile Central, Chile South.

**TDWG4.** Santa Cruz, Tierra del Fuego. Chiloe, Aisen, Magallanes. Biobio. Aisen, Magallanes.

**Festuca graeca** (Hack.) I. Markgraf-Dannenberg. *Veroff. Geobot. Inst. Rubel*, 56: 162 (1976).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Greece. **Basionym or Replaced Name:** *Festuca varia* subvar. *graeca* Hack., *Monogr. Festuc. Eur.* 174 (1882)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Mt. Tymphresto: Heldreich (K iso).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): from Graecia now Greece.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms 30–60 cm long. Leaf-sheaths open for most of their length, with 0.25–0.5 of their length closed, pubescent. Ligule an eciliate membrane, 0.4–1.1 mm long, pubescent on abaxial surface. Leaf-blades filiform, conduplicate, 0.4–0.75 mm wide, glaucous, without exudate or pruinose. Leaf-blade venation comprising 7(–9) vascular bundles, with 5 inner ridges, with sclerenchyma strands above some veins or above all veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface ribbed, smooth, puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 4–6 cm long. Panicle branches flexuous, scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8.5–12 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 4.1–6 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface scabrous. Upper glume apex obtuse.

**Florets.** Fertile lemma elliptic, 5.8–7.1 mm long, chartaceous, much thinner on margins, mid-green, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acuminate, mucronate or awned, 1 -awned. Principal lemma awn 0.1–1.1 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–3.5 mm long. Caryopsis with adherent pericarp, obovoid. Hilum linear. Disseminule comprising a caryopsis.

**Distribution (TDWG). Continent.** Europe.

**Region. Southeastern Europe.**

**Country /Province /State. :** Greece.

**Festuca grandiaristata** I. Markgraf-Dannenberg. *Veroff. Geobot. Inst. Rubel*, 56: 10 (1976).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Greece. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Greece, Chalkidike: Rechinger 17253 (W holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. grandis*, large; arista, bristle; -ata, possessing. Lemma long-awned.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 30–40 cm long. Culm-internodes smooth. Leaf-sheaths open for most of their length, with 0 of their length closed, with flat margins, puberulous. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 0.45–0.8 mm wide, glaucous. Leaf-blade venation comprising 7 vascular bundles, with 3 inner ridges, with subepidermal sclerenchyma free from veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, rough adaxially. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, loose, 9 cm long. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8.5–9.7 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume linear, 5.6 mm long, 0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 6.9–7.3 mm long, chartaceous, yellow, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 3.5 mm long overall, 0.5 length of lemma. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region. Southeastern Europe.**

**Country /Province /State.** : Greece.

**Festuca graniticola** M. Kerguelen & C. Morla Juaristi. *An. Jard. Bot. Madrid*, 42(1): 156 (1985).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online.

**TYPE** from Spain. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Spain, Orense: Morla MA 278879 (MA holo, JACA, LG).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. -cola*, dweller. Growing on granitic soils.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms geniculately ascending, 20–80 cm long. Culm-internodes distally pruinose. Leaf-sheaths open for most of their length, with 0–0.15 of their length closed, smooth, glabrous on surface. Ligule a ciliolate membrane. Leaf-blades filiform, conduplicate, circular in section, 20–50 cm long, 0.35–1.4 mm wide, pruinose. Leaf-blade venation comprising 7–9 vascular bundles, with 3–5 inner ridges, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth, glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong, 5–15 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong or ovate, laterally compressed, 7–11 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.5–4 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume margins ciliolate. Lower glume apex acute. Upper glume lanceolate or oblong, 3.2–5.25 mm long, 0.66–0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume margins eciliate or ciliolate. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate or oblong, 5–7 mm long, 1.8–2.2 mm wide, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above, puberulous, hairy above. Lemma margins ciliolate. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn straight or curved, 0.4–3.9 mm long

overall. Palea 1 length of lemma, 2 -veined. Palea apex dentate, 2 -fid, ciliate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3.8 mm long. Caryopsis with adherent pericarp, linear or oblong, 3.4–3.5 mm long, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** Europe.

**Region. Southwestern Europe.**

**Country /Province /State. :** Spain.

**Festuca gredensis** Fuente & Ortunez. *Lazaroa* 21: 4 (2001).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Spain. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Spain, Sierra de Villafraanca: Fuente & Ortunez (MAF holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Sierra de Gredos, Spain.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 18–57 cm long. Leaf-sheaths tubular for much of their length, with 0.5–0.75 of their length closed, glabrous on surface or pilose, with reflexed hairs. Leaf-sheath auricles erect, 0.2–0.3 mm long, obtuse. Ligule a ciliolate membrane, 0.2–0.3 mm long, truncate. Leaf-blades erect, conduplicate, elliptic in section, 7–29 cm long, 0.5–1.5 mm wide, pruinose. Leaf-blade venation comprising 7–9 vascular bundles, with 2–5 inner ridges, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade apex abruptly acute.

**Inflorescence.** Inflorescence a panicle, comprising 12–34 fertile spikelets. Panicle open, lanceolate or oblong, 3.5–10 cm long. Primary panicle branches 2–5 in number. Panicle axis scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 6–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2–4 mm long, 0.66–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3–6 mm long, 0.66–0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate or oblong, 3.8–7.3 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma midvein scabrous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.8–2.4 mm long overall. Palea 3.5–5.5 mm long. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous.

**Distribution (TDWG). Continent.** Europe.

**Region. Southwestern Europe.**

**Country /Province /State. :** Spain.

**Festuca griffithiana** (St.-Yves) Krivot. *Not. Syst. Herb. Inst. Bot. Acad. Sci. URSS*, xvii. 70 (1955).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, N.L.Bor, *Grasses of Burma, Ceylon, India and Pakistan* (1960) (as *Leucopoa karatavica*), N.Tsvelev, *Grasses of the Soviet Union* (1983) (as *Festuca karatavica*).

**TYPE** from Afghanistan. **Basionym or Replaced Name:** *Festuca subspicata* var. *griffithiana* St.-Yves, *Candollea* 3: 423, f. 46 (1928)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *Herb. Griffith. 6627*, Distributed at the Royal Bot. Gards.,Kew. 1869, Afghan[istan] (LE). E.Alexeev det. it as Isotype of F.griffithiana II-1977.

**Recent Synonyms:** *Leucopoa karatavica* (Bunge) Krecz. & Bobr., in Komarov, *Fl. URSS*, 2: 496 (1934).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating connection. In honor of William Griffith (1810–1845), English-born surgeon-botanist in India and southeast Asia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect or decumbent, 50–140 cm long. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 1.5–5 mm long. Leaf-blades 20–45 cm long, 2–10 mm wide, stiff, glaucous. Leaf-blade surface smooth, glabrous. Leaf-blade apex acuminate.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear or oblong, 9–18 cm long. Primary panicle branches 1–3 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 7–9 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong or cuneate, laterally compressed, 8–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet, thinner than fertile lemma. Lower glume lanceolate, 3.5–4 mm long, 0.8–0.9 length of upper glume, scarious, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 4–5 mm long, 0.6–0.8 length of adjacent fertile lemma, scarious, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 6 mm long, membranous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous. Lemma apex acute, muticous. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, membranous. Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Middle Asia, Western Asia, China. Turkmenistan. Afghanistan. Xinjiang. TDWG4.

**Festuca groenlandica** (Schol.) S. Frederiksen. *Nordic J. Bot.*, 2(6): 533: (1983).

Regarded by K as a synonym (*F. brachyphylla*).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Greenland. **Basionym or Replaced Name:** *Festuca brachyphylla* var. *groenlandica* Schol., *Skr. Svalbard Nordishavet* 62: 72 (1934)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: ST: *Devold & Scholander s.n.*, 24 Jul 1932, In Akorninarmiut in S.E. Greenland, g. Dronning Marias Dal

ST: *Devold & Scholander s.n.*, 12 Aug 1932, In Akorninarmiut in S. E. Greenland, g. Dronning Marias Del

ST: *Devold & Scholander s.n.*, 14 Aug 1932, In Akorninarmiut in S. E. Greenland, Finnsbu.

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (433).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Groenland, that is Greenland.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** Subarctic America. Greenland.

**Festuca guaramacalana** Stancik. *Novon* 14: 343 (2004).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Venezuela. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Trujillo, Municipio Boncono, Parque Nacional Guaramacal, 09°14'15"N, 70°11'14"W, andean mountain forest, margin of teh brook with ~*Neurolepis*~ sp., ~*Cortaderia*~ sp., 2880 m, 29 Nov 2000 , *D. Stancik* 4286 HT: PCR; IT: CAR, COL

**Illustrations (Journals):** *Novon* (14: 342 Fig 1 (2004)), *Contrib. U.S.Nat. Herbarium* (56: 27, fig 7 (2007)).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Culms solitary or caespitose, clumped loosely. Cataphylls inconspicuous. Rhizomes short, fleshy, not obviously scaly. Basal innovations extravaginal or intravaginal. Culms of moderate stature, straight or curved, without nodal roots. Culm-internodes terete. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves basal and cauline, 3–5 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined. Ligule an eciliate membrane, membranous, translucent or white, entire, acute. Leaf-blade base symmetrical. Leaf-blades straight or flexuous, linear in section, firm or flaccid, dark green or purple. Leaf-blade midrib evident. Leaf-blade venation indistinct or distinct, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma attached to



veins above and below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface glabrous. Leaf-blade margins smooth, glabrous. Leaf-blade apex acute or attenuate.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle straight or flexuous, terete, eglandular, glabrous. Panicle open or contracted, linear or lanceolate, continuous, loose, straight, 15–20 cm long, 2–5 cm wide. Primary panicle branches ascending, moderately divided, bearing spikelets almost to the base. Panicle branches straight.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, (10–)12–15 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes scaberulous. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume subulate or linear, 3.7–4.7 mm long, 0.75 length of upper glume, coriaceous, purple or black, without keels, 1 -veined. Lower glume apex acute or acuminate. Upper glume lanceolate, 5–7 mm long, 0.6–0.75 length of adjacent fertile lemma, coriaceous, dark green or purple, without keels, 3 -veined. Upper glume apex acute or acuminate.

**Florets.** Fertile lemma lanceolate, symmetrical, 9.5–10.5 mm long, coriaceous, purple. Lemma surface smooth. Lemma apex awned, 1 -awned. Principal lemma awn stiff.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Northern South America. Venezuela.

**Festuca guestphalica** Boenning. ex Reichb. *Fl. Germ. Excurs.* 140(3) (1830).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Germany. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Germany, Westphalia: Weihe 264 (H lecto, LE).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Guestphalia, Westfalia, Germany.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 30–60 cm long. Culm-internodes antrorsely scabrous, distally glabrous or pubescent. Leaf-sheaths open for most of their length, with 0 of their length closed, with flat margins, glabrous on surface or hirsute. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 0.6–0.7 mm wide, glaucous. Leaf-blade venation comprising 7 vascular bundles, with 1 inner ridges, with subepidermal sclerenchyma free from veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, rough adaxially or on both sides. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 5–12 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6–7.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 2.8–4.4 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface smooth or asperulous, rough above. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 3.6–5.3 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above, glabrous or pubescent, hairy above. Lemma margins ciliate. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.2–2.5 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$N = 14$  (2 refs TROPICOS).  $2n = 28$  (2 refs TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe.

**Country /Province /State.** : GB Aliens (Ryves et al). : Austria, Belgium, Czechoslovakia, Germany, Netherlands, Poland, Switzerland. : France. : Romania.

**Festuca halleri** All. *Fl. Pedem.* ii. 253 (1785).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Switzerland. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Switerland, Mont Fouly: Haller.

**Illustrations (Books):** G.Hegi, *Flora von Mitteleuropa* 1 (1909).

**Derivation** (Clifford & Bostock 2007): in honor of Albrecht Haller (1708–1777) Swiss botanist, physiologist and poet.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm. Basal innovations intravaginal. Culms 6–15 cm long. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, glabrous on surface or pubescent. Leaf-sheath auricles erect. Ligule a ciliolate membrane. Leaf-blades filiform, conduplicate, 0.5–0.7 mm wide, glaucous, pruinose. Leaf-blade venation comprising 7 vascular bundles, with 1–3 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 1–3 cm long. Primary panicle branches simple, bearing 1–2 fertile spikelets on each lower branch. Panicle branches glabrous or puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6–7.6 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.4–5.1 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 3.7–5.7 mm long, chartaceous, purple, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2–5 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe, Southwestern Europe, Southeastern Europe.

**Country /Province /State.** : Austria, Switzerland. : France. : Italy, Yugoslavia.

**Festuca hallii** (Vasey) Piper. *Contrib. U. S. Nat. Herb.* x. 31 (1906).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from USA. **Basionym or Replaced Name:** *Melica hallii* Vasey, *Bot. Gaz.* 6(12): 296–297 (1881)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *E. Hall* 7, 1862, USA: Colorado: Rocky Mts., Lat. 39: -- 41: (US-556130; ILT: US-556129, US-556131).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (409).

**Derivation** (Clifford & Bostock 2007): in honor of Elihu Hall (1822–82) United States farmer and amateur botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms erect, 30–90 cm long, 2 -noded. Culm-internodes smooth or scaberulous. Leaf-sheaths tight, antrorsely scabrous. Leaf-sheath auricles absent. Ligule a ciliolate membrane. Leaf-blades involute, 10–50 cm long, 1–2 mm wide, stiff. Leaf-blade surface scabrous. Leaf-blade apex acute, pungent.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, equilateral or nodding, 3–15 cm long. Primary panicle branches appressed or ascending, 1–2 -nate. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–12 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 7–8 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume

apex acute. Upper glume lanceolate, 8–9 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 8–10 mm long, chartaceous, without keel, rounded except near apex, 5 -veined, more than 3-veined. Lemma surface scaberulous. Lemma apex acute, mucronate. Palea 1 length of lemma, 2 -veined. Palea keels pubescent. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

$2n = 28$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** Subarctic America, Western Canada, Northwest USA, North-central USA, and Southwestern USA. Alberta, Manitoba, Saskatchewan. Colorado, Montana, Wyoming. Utah.

***Festuca handelii*** (St.-Yves) E.B.Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 82(3): 95 (1977).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. **Basionym or Replaced Name:** *Festuca modesta* subsp. *handelii* St.-Yves, *Symb. Sin.* 7(5): 1289–1290, pl. 39, f. 2 (1936). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Sichuan: 'Eichenwalder der kalttemperierte (Subalpine) Stufe unter der Alm Bado bei Muli, Sandstein', 3600–3700 m., 31 July 1915, *Handel-Mazzetti 7370* (HT: ?).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, culms solitary or caespitose, clumped loosely. Basal innovations extravaginal. Culms erect, 60–85 cm long, 2–3 -noded. Ligule an eciliate membrane, 2.5–3.5 mm long. Leaf-blades flat or convolute, 3–4(–6) mm wide. Leaf-blade venation with sclerenchyma strands below veins and above all veins.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 15–30 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 9–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1–1.5 mm long.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 2.5–3 mm long, 0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4–4.5 mm long, 0.5 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 6.4–8 mm long, chartaceous, without keel, 3 -veined, 0–3 -veined. Lemma surface smooth. Lemma apex acuminate, mucous. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.8–3.2 mm long. Ovary pubescent on apex.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Sichuan, Yunnan.

***Festuca hartmannii*** (Markgr.-Dannenb.) E.B.Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 83(4): 121 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Pakistan. **Basionym or Replaced Name:** *Festuca ovina* var. *hartmannii* Markgr.-Dann., *Bot. Jahrb.* 85:376 (1966). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Pakistan, Baltistan, Baintha: Hartmann.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Hans Hartmann (fl. 1962) who collected in Karakoram.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 10–35 cm long. Ligule an eciliate membrane, 0.3 mm long. Leaf-blades filiform, conduplicate, elliptic in section, 5–15 cm long, 1 mm wide, mid-green. Leaf-blade venation comprising 5–7 vascular bundles, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, oblong, 2–6 cm long. Primary panicle branches appressed. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 4.5–7 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 2.2–3 mm long, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3–4.2 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 3.3–4.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1–2 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous, adorned above, with 0.33–0.66 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.4–1.8 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Tropical Asia.

**Country /Province /State. Indian Subcontinent.** Pakistan, West Himalaya.

**Festuca hatico** Stancmk. *Darwiniana* 41(1–4): 119 (-120; figs. 12-l-p, 17f) (2003).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Colombia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *D. Stančik* 4290, 1 Dec 2000, Colombia: Norte de Santander: Munic. Chilos: Vereda Hatico, on road Bucaramanga-Pamplona, 3500–3700 m (US; IT: COL, P, U).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 73, fig 33 (2007)).

**Derivation** (Clifford & Bostock 2007): From Verado hatico, Colombia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, culms solitary or caespitose, clumped loosely. Cataphylls evident. Rhizomes short, fleshy, not obviously scaly. Basal innovations extravaginal or intravaginal. Culms erect, slender, straight, 60–70 cm long, 2–3 -noded, without nodal roots. Culm-internodes terete. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves mostly basal, 0–2 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined. Leaf-sheath auricles absent. Ligule an eciliate membrane, 0.3–0.5 mm long, membranous, white, bilobed, obtuse. Leaf-blade base symmetrical. Leaf-blades straight, involute, angular in section, 30–40 cm long, 0.7–0.9 mm wide, indurate, firm, dark green or purple. Leaf-blade midrib indistinct. Leaf-blade venation indistinct, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface pilose, moderately hairy, hairy adaxially. Leaf-blade margins smooth, glabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle terete, eglandular, glabrous. Panicle contracted, lanceolate or elliptic, continuous, loose, straight, 10–20 cm long, 0.5–1 cm wide, bearing many spikelets or few spikelets. Primary panicle branches ascending or spreading, sparsely divided, naked below. Panicle branches straight, scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 9 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes scaberulous, glabrous. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume lanceolate, 3.2–3.6 mm long, 0.75 length of upper glume, chartaceous, dark green or purple, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.7 mm long, 0.75 length of adjacent fertile lemma, chartaceous, dark green or purple, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, symmetrical, 6–6.5 mm long, chartaceous, dark green or purple, without keel, 5 -veined, more than 3-veined. Lemma surface papillose. Lemma apex dentate, 2 -fid, awned, 1 -awned. Principal lemma awn from a sinus, stiff, 0.3–0.7 mm long overall. Palea 0.8 length of lemma, 2 -veined. Palea surface papillose, pilose, hairy above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, 1.7 mm long. Anthers 3, 3.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Western South America.** Colombia.

**Festuca hawaiiensis** Hitchcock. *Mem. Bishop Mus., Honolulu*, viii. 115 (1922).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), W.D.Clayton & N.Snow, *Key to Pacific Grasses* (2010).

**TYPE** from Hawaii. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *A.S. Hitchcock 14446*, 27 Aug 1916, Hawaii: Hawaii I., Hawaii Co.: Puu Huluhulu (US-836317; IT: LE).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Hawaii.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 100–150 cm long. Ligule an eciliate membrane, 1–2 mm long, lacerate. Leaf-blades 20–30 cm long, 3–5 mm wide. Leaf-blade surface scabrous, rough adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 30–40 cm long. Primary panicle branches spreading or drooping, 4–5 -nate, 8–15 cm long, bearing 3–5 fertile spikelets on each lower branch. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 5–10 mm long.

**Fertile Spikelets.** Spikelets comprising 4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9–12 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes pubescent.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, 3–5 mm long, 0.5–0.66 length of upper glume, membranous, without keels, 1 -veined. Lower glume primary vein scaberulous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume linear, 6–7 mm long, 0.75 length of adjacent fertile lemma, membranous, without keels, 3 -veined. Upper glume primary vein scaberulous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 7–9 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex cuspidate, muticous or awned, 1 -awned. Principal lemma awn 0–1 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid or oblong, dorsally compressed, 4–5 mm long. Hilum linear.

**Distribution (TDWG). Continent.** Pacific.

**Country /Province /State.** North-central Pacific. Hawaii.

**Festuca hedbergii** E.B.Alekseev. *Bot. Zhurn.*, 71(8): 1113 (1986).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Tanzania. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: : Based on *F. abyssinica* var. *supina* ; Tanzania, Kilimanjaro: Uhlig 1129 (B syn) ; Tanzania, Kilimanjaro: Uhlig 203 (EA isosyn).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of Karl Olov Hedberg (1923-) Swedish botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths withering. Culms 15–60 cm long. Leaf-sheaths open for most of their length. Ligule an eciliate membrane, truncate. Leaf-blades erect, filiform, conduplicate, circular in section, 3–25 cm long, 1 mm wide, indurate. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 8–20 cm long. Primary panicle branches appressed. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 9–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, membranous, much thinner on margins, without keels, 1–3 -veined. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, (7–)7.5–9 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, muticous or awned, 1 -awned. Principal lemma awn 1–1.7 mm long overall. Palea 2 -veined. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–3 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Africa.  
**Country /Province /State.** East tropical Africa. Tanzania.

**Festuca hedgei** (Bor) E.B. Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 82(3): 100 (1977).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Afghanistan. **Basionym or Replaced Name:** *Leucopoa hedgei* Bor, *Fl. Iranica* 70: 100 (1970).  
T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: PT: K.H. Rechinger, 23 Jun 1967, C-Afghanistan: Bamian: Shahtu summis: Panjao, Naiak (LE).

IT: *Hedge & Wendelbo* 4925, 1 Jul 1962, Afghanistan, Bamian, in the vicinity of Panjao, on limestone slopes, 2700 m, (E; IT: K).

**Illustrations (Books):** N.L.Bor, *Gramineae* in K.H.Rechinger, *Flora Iranica*. No. 70/30 (1970) (Tab. 9 as *Leucopoa*).

**Derivation** (Clifford & Bostock 2007): in honor of Ian Charleson Hedge (1928-) Scots botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Rhizomes elongated. Butt sheaths woolly. Culms geniculately ascending, 20–45 cm long, 2-noded. Lateral branches lacking. Ligule an eciliate membrane. Leaf-blades flat or involute, 3–6 cm long, 2 mm wide, glaucous. Leaf-blade surface puberulous, hairy on both sides. Leaf-blade apex acute or acuminate.

**Inflorescence.** Inflorescence a panicle. Peduncle pubescent above. Panicle open, linear, 6 cm long, 1 cm wide. Primary panicle branches ascending, 1–2 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume oblong, 4 mm long, 0.66 length of upper glume, hyaline, pallid, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 6 mm long, 1 length of adjacent fertile lemma, hyaline, pallid, without keels, 3-veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 6 mm long, membranous, without keel, 5-veined, more than 3-veined. Lemma apex erose, acute, muticous. Palea 2-veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 4–5 mm long, purple. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Western Asia. Afghanistan.

**Festuca henriquesii** Hack. *Monog. Fest.* 126. (1881).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Portugal. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Portugal, Serra de Estrela: Henriques (K iso).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Julio Augusto Henriquez (1838–1928) Portuguese botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms 20–40 cm long. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane. Leaf-blades flat, 10–22 cm long, 2–2.5 mm wide. Leaf-blade venation comprising 7–9 vascular bundles, with sclerenchyma strands above all veins.

**Inflorescence.** Inflorescence a panicle. Panicle open. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–8.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes eventually visible between lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4–6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2.5–4 mm long overall. Palea 2 -veined. Palea surface granular. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3.4 mm long. Ovary glabrous. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 14$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : Portugal.

### ***Festuca hephaestophila*** Nees ex Steud. *Syn. Pl. Gram.* 310. (1854).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Guatemala. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Plantae Hartwegiane lect.* 629, Oct. 1841, Guatemala: In oratore montis ingnivomi, Volcan de Agua (P; IT: BM, LE).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. Hephaistos, God of fire; phileo, love. Growing on the slopes of the crater of Volcan de Agna, Guatemala.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms 10–40 cm long. Lateral branches lacking. Leaves mostly basal. Leaf-sheaths tubular for much of their length. Ligule an eciliate membrane, 0.5 mm long. Leaf-blades filiform, conduplicate, 2–10 cm long, 0.5 mm wide. Leaf-blade surface scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open or contracted, linear or lanceolate or elliptic, 2–12 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3 mm long, 0.75 length of upper glume, membranous, without keels. Lower glume apex acute. Upper glume lanceolate, 4 mm long, 0.75–1 length of adjacent fertile lemma, membranous, without keels. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4–5 mm long, membranous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, mucous or awned, 1 -awned. Principal lemma awn 0–1.5 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** North America, South America.

**Country /Province /State.** **Mexico.** Central Mexico, Northeast Mexico, Gulf (Mexico), Southeast Mexico. **Mesoamerica.** Costa Rica, Guatemala.

Mexico State, Puebla, Tlaxcala. Neuvo Leon, Tamaulipas. Veracruz. Chiapas.

### ***Festuca hercegovinica*** I. Markgraf-Dannenber. *Bot. J. Linn. Soc.*, 76(4): 323 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Yugoslavia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Yugoslavia, Uskoplje to Ivanica: Korb (W holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Hercegovina, Yugoslavia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 20–60 cm long. Culm-internodes smooth or scaberulous. Leaf-sheaths open for most of their length, with 0.1–0.25 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades deciduous at the ligule, filiform, conduplicate, circular in section, 0.4–0.9 mm wide, stiff, pruinose. Leaf-blade venation comprising 7 vascular bundles, with 3 inner ridges, with subepidermal

sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, rough adaxially or on both sides. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 4–8.5 cm long. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8.1–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.6–6.9 mm long, 0.75–0.9 length of adjacent fertile lemma, chartaceous, with scarious margins, without keels, 3 -veined. Upper glume margins eciliate or ciliolate. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 6.2–7.5 mm long, chartaceous, light green or glaucous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma margins ciliate. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 4.1–5 mm long overall, 0.66 length of lemma. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southeastern Europe.

**Country /Province /State.** : Greece, Yugoslavia.

**Festuca herrerae** G. Davidse. *Novon*, 2(4): 322 (1992).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Costa Rica. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Costa Rica: Limsn: Cordillera de Talamanca, Atlantic slope, Kamuk massif, paramo NE of the Kamuk peak, 3000–3300 m, 9:16'–17'N, 83:00'–02'W, *Blechnum*-shrub association in *Chusquea-Hypericum* paramo, 17–18 Sep 1984, G. Davidse & G. Herrera Ch. 29291 (HT: MO; IT: BM, CR, MEXU).

**Illustrations (Journals):** *Novon* (2: 323, Fig. 1 (1992)).

**Derivation** (Clifford & Bostock 2007): in honor of Gerardo Herrera Chacs (1948-) Costa Rican botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Basal innovations extravaginal or intravaginal. Culms 30–90 cm long, 2–5 -noded. Culm-internodes scaberulous. Lateral branches lacking. Leaf-sheaths open for most of their length, glabrous on surface or pubescent, with reflexed hairs. Ligule a ciliolate membrane, 0.3–2 mm long. Leaf-blades flat or conduplicate, 10–25 cm long, 1–4 mm wide. Leaf-blade venation with subepidermal sclerenchyma attached to veins above. Leaf-blade surface scaberulous, rough adaxially, glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, elliptic, 6–19 cm long, 3–11 cm wide. Primary panicle branches drooping, 1–2 -nate, 4–5 cm long. Panicle axis scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, scaberulous.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.6–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, 3.1–4.5 mm long, 0.6–0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5–5.8 mm long, 0.8–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5.7–6.8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins obscure. Lemma surface scaberulous, rough above. Lemma apex acuminate, muticous. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Palea surface scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.6–2.1 mm long. Ovary glabrous. Caryopsis with adherent pericarp, sulcate on hilar side, 2.9–3 mm long, dark brown, glabrous. Embryo 0.1–0.2 length of caryopsis. Hilum linear, 0.7 length of caryopsis.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Mesoamerica. Panama.



**Festuca hervieri** Patzke. *Decheniana*, cxvii. 213 (1962).

Regarded by K as a synonym (*F. marginata*).

**Accepted by:** U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *Hervier* 569, Jun 1897, Romans (Drome), bords de l'Isere, collines calcaires (G; ILT: P). LT cited by Kergeulen, *Cahiers Naturlistes* 38: 5 (1982).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Jean Hervier (1847–1900) French cleric and botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 25–40 cm long. Leaf-sheaths open for most of their length, with 0.1–0.33 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect. Ligule a ciliolate membrane. Leaf-blades filiform, conduplicate, 0.7–0.8 mm wide, without exudate or pruinose. Leaf-blade venation comprising 7 vascular bundles, with 3 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 6–9 cm long. Primary panicle branches moderately divided. Panicle branches glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6–6.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.25–3.8 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4–4.6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.7–1 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Dissemínule comprising a caryopsis and palea.

$2n = 14$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe, Southwestern Europe.

**Country /Province /State.** : Belgium. : France, Spain.

**Festuca heteropachys** (St-Yves) Patzke ex Auquier. *Nouv. Fl. Belg., Luxemb., N. France etc.*: 759 (1973).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**Basionym or Replaced Name:** *Festuca ovina* subvar. *heteropachys* St.-Yves, *Bull. Soc. Bot. France* 71: 31 (1924)

T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *Billot* 961, Forêt de Hagenau, Bas-Rhin (P-Herb. Cosson). LT cited by Kergeulen, *Cahiers Naturlistes* 38: 4 (1982).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. heteros, different; pachys, thick. Adjacent leaf-blades often of different diameters.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 30–72 cm long. Culm-internodes antrorsely scabrous. Leaves heterophyllous (variable width in same plant). Leaf-sheaths open for most of their length, with 0 of their length closed, with flat margins, pubescent. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 0.45–1.35 mm wide, stiff, mid-green or glaucous. Leaf-blade venation comprising 7 vascular bundles, with 1–3 inner ridges, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, rough adaxially. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, continuous or interrupted, 6–15 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile.

Spikelets oblong, laterally compressed, 7.5–8.1 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.9–5 mm long, 0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 4.6–6.2 mm long, chartaceous, mid-green or glaucous, without keel, 5 -veined, more than 3-veined. Lemma surface smooth or scabrous, rough above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2.3–3 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 28$  (1 ref TROPICOS).

**Distribution (TDWG).** Continent. Europe.

**Region.** Middle Europe, Southwestern Europe.

**Country /Province /State.** : Belgium, Germany, Switzerland. : France.

### **Festuca heterophylla** Lam. *Fl. Fr.* iii. 600 (1778).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from France. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: France: Lamarck (P holotype).

**Illustrations (Books):** C.E.Hubbard, *Grasses* (1968) (134), G.Hegi, *Flora von Mitteleuropa* 1 (1909), M.E.Barkworth et al, *Flora of North America north of Mexico Vol 24 Poaceae*, part 1 (2007) (423).

**Derivation** (Clifford & Bostock 2007): Gk. heteros, different; phyllon, leaf. Culms with two types of leaf-blade. Usually the basal leaves are fine-bladed and those of the culm are conspicuously broader.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 60–120 cm long, 2–3 -noded. Lateral branches lacking. Leaves heterophyllous being wider on the culm (2–4mm). Leaf-sheaths tubular for much of their length, without keel, glabrous on surface. Ligule an eciliate membrane, 0.2 mm long. Leaf-blades filiform, conduplicate, 10–30 cm long, 0.3–0.5 mm wide. Leaf-blade venation comprising 3 vascular bundles. Leaf-blade surface smooth or scabrous, glabrous. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Peduncle smooth. Panicle open or contracted, lanceolate or oblong, secund, 6–18 cm long. Primary panicle branches appressed. Panicle branches angular, scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 2–4 mm long.

**Fertile Spikelets.** Spikelets comprising 3–9 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 7–14 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 3–5.5 mm long, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume oblong, 4–6.5 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acute.

**Florets.** Fertile lemma ovate, 5–8 mm long, chartaceous, much thinner on margins, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.5–6 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous, adorned above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–4.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Hilum linear, 1 length of caryopsis.

$2n = 28$  (2 refs TROPICOS).

**Distribution (TDWG).** Continent. Europe, Temperate Asia, North America.

**Region.** Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe.

**Country /Province /State.** : Denmark, Great Britain (\*), Sweden. : Austria, Belgium, Czechoslovakia, Germany, Hungary, Netherlands, Poland, Switzerland. : Balears, Corsica, France, Spain. : Albania, Bulgaria, Greece, Italy, Romania, Sicily, Turkey Europe, Yugoslavia, North European Russia, Ukraine. **Caucasus, Western Asia.** Turkey. **Northeast USA.** New York, West Virginia.

TDWG4.

**Festuca hieronymi** Hack. *Oesterr. Bot. Zeitschr.* 1903, 33. (1903).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Argentina. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: ST: *Hieronymus* 41, 13 Nov 1880, Argentina: Sierra Chica, Colanchaga (W; IST: B, CORD, K).

LT: *Hieronymus* 9, 4 Dec 1878, Argentina: Sierra de Achala, Quebrada del Chorro, al Este de los Gigantes (W; ILT: B, CORD, K, US-s.n. (fragm. ex W), US-91408 (fragm.)). LT designated by Alexeev, *Bot. Z.* 69: 351 (1984).

**Illustrations (Books):** S.A.Renvoize, *Gramineas de Bolivia* (1998) (118, Fig 28).

**Derivation** (Clifford & Bostock 2007): in honor of George Hans Emmo Wolfgang Hieronymus (1846–1921) German botanist, sometime resident of Argentina.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 50–110 cm long, 2–3 -noded. Culm-internodes terete. Leaf-sheaths open for most of their length, with 1 of their length closed, smooth or scaberulous, glabrous on surface. Ligule a ciliolate membrane, 0.5 mm long. Leaf-blades filiform, convolute, 25–50 cm long, 0.5–0.8 mm wide. Leaf-blade venation comprising 10–12 vascular bundles, with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface puberulous, hairy adaxially. Leaf-blade apex filiform.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear or oblong, dense, 10–18 cm long. Primary panicle branches 2 -nate. Panicle axis scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 8.5–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 0.8–1.5 mm long, smooth.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3.5–4.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5–5.5 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma midvein without distinctive roughness. Lemma surface scaberulous, rough above. Lemma apex acute, mucicous or mucronate. Palea 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–3.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America, Southern South America. Bolivia, Peru. Argentina Northwest.

**TDWG4.** Catamarca, Jujuy, La Rioja, San Luis, Tucuman. Buenos Aires, Cordoba.

**Festuca hintoniana** E.B. Alekseev. *Bot. Zhurn.*, 67(9): 1292 (1982).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Mexico. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Mexico: Nuevo Leon: Galena, Cerro el Potosi, pine forest, 3800m, 21 Aug 1969, *Hinton 17243* (HT: K).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating connection. In honor of George Bode Hinton (1882–1943) United States botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms 20–45 cm long. Lateral branches lacking. Leaf-sheaths tubular for much of their length, with 0.66 of their length closed. Ligule an eciliate membrane, 0.2–0.6 mm long, truncate. Leaf-blades conduplicate, elliptic in section, 0.6–0.7 mm wide, pruinose. Leaf-blade venation with 9 secondary veins, 7 inner ridges.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 6–9 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 12–13 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 5 mm long, 1 length of upper glume, membranous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5 mm long, 0.7–0.8 length of adjacent fertile lemma, membranous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6.5–7 mm long, membranous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, mucicous or mucronate. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–3.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** Mexico. Northeast Mexico.

**TDWG4.** Coahuila, Neuvo Leon.

### ***Festuca hirtovaginata*** (Acht.) I. Markgraf-Dannenberg. *Veroff. Geobot. Inst. Rubel*, 56: 10 (1976).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**Basionym or Replaced Name:** *Festuca duriuscula* f. *hirtovaginata* Acht., *Bull. Inst. Bot. Sofia* 3:11 (1953).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. hirtus*, hairy; vagina, sheath; -ata, possessing. Leaf-sheath hairy.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 30–57 cm long. Culm-internodes smooth. Leaf-sheaths open for most of their length, with 0 of their length closed, with flat margins, pilose. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 0.5–0.9 mm wide, stiff, glaucous, without exudate. Leaf-blade venation comprising 7 vascular bundles, with 3 inner ridges, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scaberulous, rough adaxially. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 5.5–8 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7.8–9.7 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5.2–6.2 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 5.4–7.1 mm long, chartaceous, glaucous, without keel, 5 -veined, more than 3-veined. Lemma surface smooth or scabrous, rough above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 4–5.5 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 28$  (1 ref TROPICOS), or 42 (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Southeastern Europe.

**Country /Province /State.** : Bulgaria, Greece, Yugoslavia.

### ***Festuca holubii*** Stancmk. *Folia Geobot.* 39(1): 102 (-103) (2004).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Ecuador. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Ecuador: Loja, Cerro de Arcos W of road Manu - Zaruma, 03:34'S, 79:28'W, 3250–3600 m, moist paramo, 14 Sep 1999, *Laegaard & Aguirre 20611* (HT: AAU; IT: LOJA, PRC, QCA, QCNE).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 112, fig 55 (2007)).

**Derivation** (Clifford & Bostock 2007): in honor of Emil Holub (1847–1902) Bohemian naturalist, explorer and physician.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Cataphylls inconspicuous. Basal innovations intravaginal. Culms erect, slender, straight, 50–60 cm long, 1-noded, without nodal roots. Culm-internodes terete, scaberulous. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves mostly basal, 0 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined, glabrous on surface. Leaf-sheath auricles absent. Ligule a ciliolate membrane, 0.6–0.8 mm long, membranous, white, bilobed, obtuse. Leaf-blade base symmetrical. Leaf-blades straight or curved, involute, angular in section, 15–25 cm long, 0.8 mm wide, indurate, firm, dark green. Leaf-blade midrib indistinct. Leaf-blade venation indistinct, comprising 7 vascular bundles, with 5 inner ridges, with sclerenchyma strands below veins, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma attached to veins below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scaberulous, glabrous. Leaf-blade margins smooth, glabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle terete, eglandular, glabrous. Panicle contracted, linear or lanceolate, continuous, dense, straight, 8–14 cm long, 0.7 cm wide, bearing few spikelets, evenly furnished or contracted about primary branches. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 9–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes smooth, glabrous. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume lanceolate or elliptic, 4 mm long, 0.75 length of upper glume, chartaceous, purple, 1-keeled, 1-veined. Lower glume lateral veins absent. Lower glume apex obtuse. Upper glume lanceolate, 5.5 mm long, 0.75 length of adjacent fertile lemma, chartaceous, purple, 1-keeled, 3-veined. Upper glume apex obtuse.

**Florets.** Fertile lemma lanceolate or oblong, symmetrical, 7 mm long, chartaceous, purple, keeled, keeled above, 5-veined, more than 3-veined. Lemma surface asperulous. Lemma apex acute, awned, 1-awned. Principal lemma awn stiff, 1–2 mm long overall. Palea 0.8 length of lemma, 2-veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, oblong, 0.9–1 mm long, with a small lateral lobe. Anthers 3, 1.3 mm long. Ovary glabrous. Caryopsis with adherent pericarp, lanceolate. Hilum linear, 0.6–0.75 length of caryopsis.

**Distribution (TDWG).** Continent. South America.

**Country /Province /State.** Western South America. Ecuador.

**Festuca hondae** E.B.Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 86(1): 70 (1981).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from Taiwan. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: : Based on *F. formosana* Alex. ; Taiwan, Mt. Morrison: Prince 993 (K holo).

**Recent Synonyms:** *Festuca taiwanensis* S.L. Lu, *Acta Phytotax. Sin.*, 30(6): 537 (1992).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of Masaji Honda (1897–1984) Japanese botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, robust, 15–30 cm long. Culm-internodes distally glabrous. Leaf-sheaths tubular for much of their length, with 0.75 of their length closed, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 5–12 cm long, 0.6–0.8 mm wide, glaucous. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with sclerenchyma strands above all veins, with 5 subepidermal sclerenchyma strands, with continuous uniform subepidermal sclerenchyma layer on the underside.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, dense, 2.5–4.5 cm long. Panicle branches smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 7–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume lanceolate, 0.7–0.8 length of upper glume, chartaceous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3-veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 5.5–5.7 mm long, chartaceous, without keel, 5-veined, more than 3-veined. Lemma apex acuminate, awned, 1-awned. Principal lemma awn 2–2.5 mm long overall. Palea 1 length

of lemma, 2 -veined. Palea keels smooth. Palea apex entire. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.8–2 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China, Eastern Asia. Taiwan.

### ***Festuca horridula*** Pilger. *Engl. Jahrb.* vii. 514 (1906).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: A. Weberbauer 2586, Feb 1903, Peru: Junin: La Oroya, 3700–3800 m (B; IT: BAA-1245 (fragm. ex B), US-81569).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. horridus*, prickly; -ula, diminutive. Leaf-blades stiff erect.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Culms 70–100 cm long, 3 -noded. Leaf-sheaths retrorsely scabrous. Ligule an eciliate membrane, 7–12 mm long. Leaf-blades 25–45 cm long, 2–5 mm wide. Leaf-blade surface scabrous, rough abaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 28–35 cm long. Primary panicle branches ascending. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 2 length of fertile spikelet, tip widened.

**Fertile Spikelets.** Spikelets comprising 5–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 11–14 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4.5–5.2 mm long, 0.66 length of upper glume, chartaceous, much thinner above, much thinner on margins, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 6–7 mm long, 0.75 length of adjacent fertile lemma, chartaceous, much thinner above, with hyaline margins, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate or oblong, 7.5–8.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acute, mucous. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Peru.

### ***Festuca horvatiana*** I. Markgraf-Dannenber. *Veroff. Geobot. Inst. Rubel*, 56(: 13 (1976).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Yugoslavia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Yugoslavia, Kajmakalan: Horvat.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. -ana*, indicating connection. In honor of Ivor Horvat (fl. 1937–1974) Yugoslav botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms 20–25 cm long. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect. Ligule a ciliolate membrane. Leaf-blades filiform, conduplicate, 0.5–0.7 mm wide, coriaceous, stiff, glaucous. Leaf-blade venation comprising 7 vascular bundles, with 3 inner ridges, with subepidermal sclerenchyma free from veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, 2.5–3.5 cm long. Primary panicle branches simple, bearing 1–2 fertile spikelets on each lower branch. Panicle branches with scattered hairs or glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.9–7.8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.2–4.2 mm long, 0.66–0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 5–5.8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1–2.9 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–3.2 mm long. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 14$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region. Southeastern Europe.**

**Country /Province /State.** : Albania, Greece, Yugoslavia.

### **Festuca huamachucensis** Infantes. *Rev. Ciencias* 54:107 (1952).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *J. Infantes* 3538, 7 Aug 1951, Peru: La Libertad: Huamachua Prov. (US-2044946).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 114, fig 56 (2007)).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Provincia de Huamachuo, Peru.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 5–10 cm long. Lateral branches lacking. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.5 mm long. Leaf-blades filiform, convolute, 3–6 cm long, 0.5 mm wide. Leaf-blade surface glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, 3–5 cm long. Primary panicle branches ascending, bearing spikelets almost to the base. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.5–7 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes smooth.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3.7–4 mm long, 0.75 length of upper glume, membranous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.7–5 mm long, 0.7–0.8 length of adjacent fertile lemma, membranous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5.5–6.5 mm long, membranous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2.5–4.5 mm long overall. Palea 0.8 length of lemma, 2 -veined. Palea keels eciliate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 0.6–0.7 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Western South America.** Peru.

### **Festuca hubsugulica** Krivot. *Not. Syst. Herb. Inst. Bot. Acad. Sci. URSS*, xvii. 77 (1955).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Mongolia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Mongolia: locus Hubsugul, vallis Arassaj., 13 Jul 1902, V. Komarov s.n. (HT: L).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Lake Khubsugal, Mongolia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Rhizomes short. Butt sheaths sparsely hairy. Basal innovations extravaginal. Culms geniculately ascending, 30–50 cm long. Culm-internodes smooth. Leaf-sheaths open for most of their length, glabrous on surface. Ligule an eciliate membrane, 1 mm

long, truncate. Leaf-blades 3–4 mm wide, stiff. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Dioecious.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, nodding, 4–8 cm long. Primary panicle branches 1–2-nate, bearing 2–5 fertile spikelets on each lower branch. Panicle axis smooth. Panicle branches straight or flexuous, scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3–4 mm long, 0.75 length of upper glume, membranous, pallid, without keels, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4–5 mm long, 0.7–0.8 length of adjacent fertile lemma, membranous, pallid, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acute.

**Florets.** Fertile florets female. Fertile lemma ovate, 5–6 mm long, chartaceous, keeled, lightly keeled, 5 -veined, more than 3-veined. Lemma midvein scabrous. Lemma lateral veins prominent. Lemma surface puberulous. Lemma apex obtuse, mucicous. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–3.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

Male inflorescence similar to female. Male spikelets resembling female.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Siberia, **Mongolia.** Buryatiya, Chita, Irkutsk, Tuva.

**TDWG4.**

### **Festuca (Pseudobromus) humbertiana** (A.Camus) FORSAN.

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Madagascar. **Basionym or Replaced Name:** *Pseudobromus humbertianus* A.Camus, *Not. Syst.*, ed. Humbert, 12: 150 (1946). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Madagascar, Mt. Itrafanaomby: Humbert 13459 (K iso).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating connection. In honor of Jean Henri Humbert (1887–1967) French botanist who collected in Madagascar.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 60–90 cm long, 5–6 -noded. Lateral branches lacking. Leaf-sheaths smooth, glabrous on surface. Ligule an eciliate membrane, truncate. Leaf-blades conduplicate or involute, 10–20 cm long, 1.8 mm wide. Leaf-blade surface glabrous. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, 15–22 cm long, bearing few spikelets. Primary panicle branches 2–3 -nate, 2–7 cm long. Panicle axis scaberulous. Panicle branches straight or flexuous, scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 5–8 mm long.

**Fertile Spikelets.** Spikelets comprising 2–3 fertile florets, with a barren rhachilla extension. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets cuneate, laterally compressed, 12–15 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 2.5–3 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume lanceolate, 7 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, with hyaline margins, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 7–11 mm long, herbaceous, without keel, 3 -veined, 0–3 -veined. Lemma lateral veins obscure. Lemma surface puberulous, hairy above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 6 mm long overall. Palea 2 -veined. Palea keels scabrous.

**Flower and Fruit.** Anthers 3, 2.8 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** **Western Indian ocean.** Madagascar.

### **Festuca humbertii** Litard. & Maire. *Mem. Soc. Sc. Nat. Maroc*, No. 15, 56 (1926).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).



**TYPE** from Morocco. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Morocco: In Atlantis Medii montibus supra urbem Taza: in [ascuis Montis Tazzaka, 1925, *H. Humbert, Maire etc. s.n.* (HT: Herb. Univ. Algeriensis; IT: Herb. Inst. Imper. Sci. Rabat., Herb. R. de Litardiere).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Jean Henri Humbert (1887–1967) French botanist who collected in Madagascar.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Culms 30–50 cm long, 3-noded, with 0.5 of their length below uppermost node. Lateral branches lacking. Leaves heterophyllous being wider on the culm. Leaf-sheaths tubular for much of their length, with 1 of their length closed, smooth, glabrous on surface. Ligule an eciliate membrane, 1 mm long, truncate. Leaf-blades filiform, conduplicate, 0.8–0.9 mm wide. Leaf-blade venation with 7 secondary veins. Leaf-blade surface pubescent, hairy adaxially. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, dense, 7–9 cm long. Primary panicle branches appressed, 1–2-nate. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, 3–4 mm long, 0.5 length of upper glume, chartaceous, without keels, 1-veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acuminate, mucronate. Upper glume lanceolate, 6–7 mm long, 0.75–1 length of adjacent fertile lemma, chartaceous, with scarious margins, without keels, 3-veined. Upper glume primary vein scabrous. Upper glume apex acuminate, mucous.

**Florets.** Fertile lemma lanceolate, 6–7 mm long, chartaceous, without keel, 5-veined, more than 3-veined. Lemma midvein scabrous. Lemma apex acute, awned, 1-awned. Principal lemma awn 4–5.5 mm long overall. Palea 2-veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.75–3 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** Northern Africa, Western Indian ocean. Morocco. Madagascar.

**Festuca humilior** Nees & Meyen. *Nov. Act. Nat. Cur. xix. Suppl. i.* 166. (1843).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *Meyen s.n.*, Peru: circa Pisaïoma 12–15000' (LE-TRIN-2814.01).

IT: *Meyen s.n.*, Apr 1834, Peru: in alti cordillerae Peruviana, 3600–3900 m (HP, B (US s.n. fragm. ex B)).

IT: *F.J.F.Meyen*, Apr 1831, Peru: in altio cordillerae Perunae, 3,658 to 4,572 mt (US-91407 (fragm.)).

**Illustrations (Books):** S.A.Rennoize, *Gramineas de Bolivia* (1998) (110, Fig. 25).

**Illustrations (Journals):** *Ruizia* (13:105, Fig 11c-e (1993)).

**Derivation** (Clifford & Bostock 2007): L. more dwarfed. Species dwarf for the genus.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms 12–25 cm long, 2-noded, with 0.5 of their length below uppermost node. Culm-internodes terete. Leaf-sheaths tubular for much of their length, glabrous on surface. Ligule a ciliolate membrane, 0.5 mm long. Leaf-blades flexuous, filiform, conduplicate, 0.5–0.7 mm wide. Leaf-blade venation with subepidermal sclerenchyma attached to veins above and below, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, 1.5–4 cm long, bearing few spikelets. Primary panicle branches appressed, 2-nate, bearing 1 fertile spikelets on each lower branch. Panicle axis smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 4.5–6.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1 mm long, smooth.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.8–3 mm long, 0.75 length of upper glume, chartaceous, without keels, 1-veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.5–3.8 mm long, 0.8–0.9 length of

adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4–4.5 mm long, membranous, without keel, 5 -veined, more than 3-veined. Lemma midvein scabrous. Lemma apex acute, mucicous or mucronate. Principal lemma awn 0–0.5 mm long overall, deciduous. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.8–3 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America, Southern South America. Bolivia, Peru. Argentina Northwest.

**TDWG4.** Jujuy, Salta, San Juan.

### **Festuca huonii** Auquier. *Candollea*, 28(1): 16 (1973).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from France. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *M. Kerguelen in herb. Auquier*, 26 May 1972, France: Finistere: Kerloch, pres Crozon, falaise maritimes au sud de la plage du Loc'h (LG).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of A. Huon (fl. 1961–1966) French botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 12–25 cm long. Culm-internodes distally pubescent. Leaf-sheaths open for most of their length, with 0.25–0.33 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 0.6–0.8 mm wide. Leaf-blade venation comprising 7 vascular bundles, with 1 inner ridges, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 2–4.5 cm long. Panicle branches scabrous, glabrous or puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.4–7.2 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume oblong, 3.3–3.9 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4.2–4.8 mm long, chartaceous, glaucous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–1.7 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Northern Europe, Southwestern Europe.

**Country /Province /State.** : Great Britain. : France.

### **Festuca hyperborea** Holmen. *Meddel. Grenl. cxxiv. No. 9*, 120 (1957).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Greenland. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Greenland, Jorgen Brondlund Fjord: Holmen 8078 (C holol).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007).

**Derivation** (Clifford & Bostock 2007): Gk. hyper, over. Growing within the Arctic circle.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm. Basal innovations intravaginal. Culms 7–10 cm long. Leaf-sheaths tubular for much of their length, with 0.5–0.75 of their length closed, with flat margins, pubescent. Ligule a ciliolate membrane. Leaf-blades filiform, conduplicate, 0.5–0.7 mm wide, stiff. Leaf-blade venation comprising 5–7 vascular bundles, with 5 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth, puberulous, densely hairy.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, dense, 1.5–2.3 cm long. Primary panicle branches simple, bearing 1–2 fertile spikelets on each lower branch. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5–6.2 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3–3.5 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 3–3.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–1.7 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 0.5–0.6 mm long. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 28$  (1 ref TROPICOS), or 42 (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe, Temperate Asia, North America.

**Region. Northern Europe.**

**Country /Province /State.** : Iceland, Sweden. Russian far east. Kamchatka, Magadan. **Subarctic America, Eastern Canada.** Alaska, Yukon, Nunavut, Greenland. Quebec.

**TDWG4.**

## **Festuca hypsophila** Phil. *Anal. Mus. nac. Chile* 89. (1891).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from Chile. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: Jan 1885, Chile: Cordillera de Talamanca, ad Colorados, Leoncito, Ampexa, Huasco frequens, c. 3800 m (SGO-PHIL-293; IT: B(photo, CONC), HP (fragm.), SGO-37423, SGO-63821, US-556550 (fragm. ex SGO-PHIL-293 & photo), W).

**Illustrations (Books):** S.A.Renvoize, *Gramineas de Bolivia* (1998) (120, Fig 29).

**Derivation** (Clifford & Bostock 2007): Gk. hypsi, aloft; phileo, love. Alpine species.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 70–90 cm long, 2 -noded. Lateral branches lacking. Leaf-sheaths glabrous on surface. Ligule a ciliolate membrane, 0.5–1 mm long. Leaf-blades filiform, conduplicate, 15–60 cm long, 1–1.2 mm wide. Leaf-blade venation comprising 14–16 vascular bundles, with 13–15 inner ridges, with subepidermal sclerenchyma attached to veins below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface pubescent, hairy adaxially. Leaf-blade apex acuminate.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong, 10–20 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–14 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1.2–1.9 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.8–4.5 mm long, 0.6–0.7 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.5–6.5 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 6–8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2–3 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, 0.6 mm long. Anthers 3, 3–3.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America, Southern South America. Bolivia. Argentina Northwest, Chile North.

**TDWG4.** Jujuy. Tarapaca, Antofagasta, Atacama.

### ***Festuca hystrix*** Boiss. *Elench.* 89. (1838).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Spain. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: IT: Jun 1837, [Spain]: in calcareis siccis mont. regn. Granat. (LE, 2 sheets). herb. E.Boissier : herb. Fischer.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Resembling *Hystrix*. Usually a reference to the inflorescence resembling that of *Hystrix*.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms 8–25 cm long, 1 -noded. Lateral branches lacking. Leaf-sheaths tubular for much of their length, with 1 of their length closed, smooth, glabrous on surface. Ligule an eciliate membrane, truncate. Leaf-blades curved, filiform, conduplicate or terete, 1–8 cm long, 0.7–0.7 mm wide. Leaf-blade venation with 3 secondary veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface glabrous. Leaf-blade apex abruptly acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, dense, 1–4 cm long. Primary panicle branches 1–3 -nate, indistinct the panicle almost racemose or simple, bearing 1–3 fertile spikelets on each lower branch. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, scabrous, tip rectangular.

**Fertile Spikelets.** Spikelets comprising 3–6 fertile florets, with a barren rhachilla extension or with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 7 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 0.66 length of upper glume, chartaceous, much thinner on margins, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 0.7–0.8 length of adjacent fertile lemma, chartaceous, with scarious margins, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4 mm long, chartaceous, much thinner on margins, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–2 mm long overall. Palea 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

$N = 7$  (1 ref TROPICOS).  $2n = 14$  (2 refs TROPICOS).

**Distribution (TDWG). Continent.** Europe, Africa.

**Region.** Southwestern Europe.

**Country /Province /State. :** Spain. Northern Africa. Morocco.

### ***Festuca iberica*** (Hackel) K. Richter. *Pl. Europ.*, 1: 99: (1890).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**Basionym or Replaced Name:** *Festuca rubra* var. *iberica* Hack., *Monogr. Festuc. Eur.* 136 (1882)

. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: LT: Sierra Nevada, in valle sup. fluv. Jenil, 29 Jun 1876 (W-5182). LT designated by Fuente Garcia et al., *Candollea* 43: 515 (1988).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Iberia, a province in Transcaucasia, former Soviet Union.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms 20–50 cm long. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 0.4–0.6 mm wide. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma strands unequal in size, with subepidermal sclerenchyma free from veins. Leaf-blade surface scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, equilateral or nodding, 3–7 cm long. Panicle branches glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–7.6 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3–4 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 4.2–5.5 mm long, chartaceous, glaucous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1.3–2.7 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3 mm long. Ovary glabrous. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG).** Continent. Europe, Africa.

**Region.** Southwestern Europe.

**Country /Province /State.** : France, Spain. **Northern Africa.** Morocco.

### **Festuca idahoensis** Elmer. *Bot. Gaz.* 36:53 (1903).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from USA. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *L. R. Abrams 688 [hb. no. 459]*, Jul 1900, USA: Idaho: Smith's Valley, Shoshone Cr. (A? (US-556152 fragm. & photo ex A?)).

**Illustrations (Books):** K.F.Best, et al, *Prairie Grasses* (1971) (129), M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (441).

**Images:** R.Darke, *Ornamental Grasses* (2004);.

**Derivation** (Clifford & Bostock 2007): *L. -ensis*, denoting origin. From Idaho, USA.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms erect, 40–100 cm long. Leaves mostly basal. Leaf-sheaths smooth or scaberulous. Ligule an eciliate membrane, 0.3–0.6 mm long. Leaf-blades filiform, conduplicate or involute, 5–10 cm long, 0.5–1 mm wide. Leaf-blade surface scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, (5–)7–15(–20) cm long. Primary panicle branches appressed or ascending. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10–13 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1–1.5 mm long, eventually visible between lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.5–5 mm long, 0.5–0.66 length of upper glume, membranous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or elliptic, 4–6.5 mm long, 0.9 length of adjacent fertile lemma, membranous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 4.5–7.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface smooth or scaberulous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2–5 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–4 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG).** Continent. North America.

**Country /Province /State.** **Western Canada, Northwest USA, North-central USA, Southwestern USA, South-central USA, Southeastern USA.** Alberta, British Columbia, Saskatchewan. Colorado, Idaho, Montana, Oregon, Washington, Wyoming. South Dakota. Arizona. New Mexico.

### **Festuca igoschiniae** Tsvetlev. *Bot. Zhurn.*, 56(9): 1254 (1971).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvetlev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Russia, Bashkiria, Shirokaya Mt.: Igoschina (LE holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of K. Igoshina (fl. 1958) who collected in Urals.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 20–50 cm long. Culm-internodes smooth or scaberulous. Leaf-sheaths tubular for much of their length, with 0.4–0.66 of their length closed, with flat margins, smooth or scaberulous, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 0.55–0.85 mm wide, glaucous. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 5–7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma strands unequal in size, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 5–8 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7.2–7.3 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.1–4.6 mm long, 0.8 length of adjacent fertile lemma, chartaceous, with scarious margins, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 5–5.5 mm long, chartaceous, mid-green or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma surface smooth or scabrous, rough above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2–2.7 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG), Continent.** Europe.

**Region.** Eastern Europe.

**Country /Province /State.** Central European Russia, South European Russia.

**TDWG4.**

**Festuca ilgazensis** I. Markgraf-Dannenberg. *Veroff. Geobot. Inst. Rubel*, 56: 11 (1976).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Turkey. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Turkey, Ilgaz Dag: Markgraf (Z holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Ilgaz Dag, a mountain in Turkey.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with soft dead sheaths or fibrous dead sheaths. Basal innovations intravaginal. Culms slender, 10–16.5 cm long. Leaf-sheaths tubular for much of their length, with 0.5 of their length closed. Leaf-sheath auricles erect. Ligule a ciliolate membrane, 0.4–0.7 mm long, pubescent on abaxial surface. Leaf-blades filiform, conduplicate, circular in section, 0.4–0.55 mm wide, stiff, glaucous. Leaf-blade venation comprising 5 vascular bundles, with 2–3 inner ridges, with subepidermal sclerenchyma free from veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth, glabrous. Leaf-blade apex obtuse or abruptly acute.

**Inflorescence.** Inflorescence a panicle. Peduncle smooth. Panicle open, lanceolate, 2–4 cm long, bearing few spikelets. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, puberulous, tip widened.

**Fertile Spikelets.** Spikelets comprising 2–3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 6–6.3 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5.1 mm long, 0.75

length of adjacent fertile lemma, chartaceous, with scarious margins, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4.9–5.5 mm long, 1.4–1.5 mm wide, chartaceous, light green, without keel, 5 -veined, more than 3-veined. Lemma surface puberulous. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 3–6 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–2.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear, 0.66 length of caryopsis.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Western Asia. Turkey.

**Festuca illyrica** Markgraf-Dannenberg. *Bot. Jahrb.*, 92(1): 151 (1972).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, indicating location. From Illyria, nowadays Dalmatia and Albania.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 13–30 cm long. Culm-internodes smooth or scaberulous. Leaf-sheaths open for most of their length, with 0 of their length closed, with flat margins, glabrous on surface or puberulous. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 0.3–0.5 mm wide, glaucous. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, 3–5 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.6–7.8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.1–3.9 mm long, 0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 3.8–4.6 mm long, chartaceous, dark green or glaucous or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma margins eciliate or ciliate. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1.8–2 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 21$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Southeastern Europe.

**Country /Province /State.** : Yugoslavia.

**Festuca imbaburensis** Stancmk. *Folia Geobot.* 39(1): 100 (102, 106; fig. 3) (2004).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Ecuador. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Ecuador: Imbabura. Munic. Urcuqum, road to Cerro Yanaurucu, 00:28'29"N, 78:20'04"W, pajonal with swampy patches, 4150 m, 16 Oct 2000, *Stančik 4098* (HT: PRC; IT: AAU, QCA).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 116, fig 58 (2007)).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Imbabura, Ecuador.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Cataphylls inconspicuous. Basal innovations intravaginal. Culms erect, slender, straight, 15–50 cm long, 1 -noded, without nodal roots. Culm-internodes terete. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves mostly basal, 0–2 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined,

glabrous on surface. Leaf-sheath auricles absent. Ligule a ciliolate membrane, 0.5–0.7 mm long, membranous, white, entire, truncate. Leaf-blade base symmetrical. Leaf-blades straight or curved, involute, elliptic in section or circular in section, 9–20 cm long, 0.5–0.6 mm wide, indurate, firm, glaucous. Leaf-blade midrib indistinct. Leaf-blade venation indistinct, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface glabrous. Leaf-blade margins smooth, glabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle terete, eglandular, glabrous. Panicle contracted, lanceolate, continuous, dense, straight, 6–12 cm long, 0.5–1 cm wide, bearing few spikelets, evenly furnished or contracted about primary branches. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 8–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes smooth, glabrous. Floret callus glabrous.

**Glumes.** Glumes persistent, similar or dissimilar, subequal in width, shorter than spikelet. Lower glume oblong, 3–3.5 mm long, 0.75 length of upper glume, chartaceous, light green or purple, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex obtuse or acute. Upper glume ovate, 4–4.2 mm long, 0.75 length of adjacent fertile lemma, chartaceous, pallid or light green or purple, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, symmetrical, 5.5–7 mm long, chartaceous, pallid or mid-green or purple, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex muticous. Palea 2 length of lemma, 2 -veined. Palea keels scabrous. Palea apex scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 1–1.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Colombia, Ecuador.

## **Festuca imperatrix**

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : Spain.

## **Festuca inarticulata** Pilger. *Engl. Jahrb.* vii. 516 (1906).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: A. Weberbauer 3218, 1 Jun 1903, Peru: Ancash: Cordillera Negra, Caraz, 4000 m (B; IT: BAA-1250 (fragm. ex B), US-81570).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. in-, not; articulus, small joint; -ata, possessing.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 30–70 cm long, 0 -noded. Ligule a ciliolate membrane, 1 mm long. Leaf-blades conduplicate or involute, 10–30 cm long, 2–5 mm wide, stiff. Leaf-blade surface scabrous, rough adaxially. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, dense, 8–17 cm long. Primary panicle branches appressed, distant, bearing spikelets almost to the base. Panicle branches with occasional prickles, glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 9–11 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes pubescent.

**Glumes.** Glumes persistent, similar, with lower narrower than upper, shorter than spikelet. Lower glume lanceolate, 3.5–4.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.8–5.4 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.



**Florets.** Fertile lemma lanceolate or elliptic, 6–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–2 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Peru.

### ***Festuca indigesta*** Boiss. *Elench.* 91 (1838).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Spain. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: Jul 1837, [Spain]: Sierra Nevada: elev. 6500'-8000' (LE, 3 sheets). herb. E.Boissier.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. in-, not; digero, dissolve. The rigid and pungent leaf-blades are not edible.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms 30–60 cm long. Culm-internodes antrorsely scabrous. Leaf-sheaths glabrous on surface or pubescent. Ligule an eciliate membrane, 0.2–0.5 mm long, truncate. Leaf-blades filiform, convolute, 3–15 cm long, 0.5–1 mm wide. Leaf-blade venation with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface pubescent, hairy adaxially. Leaf-blade margins scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear or oblong, dense, 2–9 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets obovate, laterally compressed, 9–11 mm long, 2.5–3.3 mm wide, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume ovate, 3–4 mm long, 0.66–0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume margins ciliolate. Lower glume apex acute. Upper glume oblong, 4.5–6 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume margins ciliolate. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5.5–7.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma margins scabrous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.5–3 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.3–3.1 mm long. Ovary glabrous. Caryopsis with adherent pericarp, hairy at apex. Hilum linear.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Northern Europe, Southwestern Europe, Southeastern Europe.

**Country /Province /State.** : Ireland. : Corsica, France, Portugal, Spain. : Italy.

### ***Festuca inguschetica*** Alekseev. *Bull. Mosk. Obshch. Ispyt. Prir., Biol.*, 78(3): 106 (1973).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *V. M. Prima s. n.*, 18 Sep 1971, [Caucasus]: Ingushetia: Pass Shuan: elev. 2900 m (LE). Orig. label: Ingushetiya, verkh. r. Shon-don, tsentr. morena u perv. Shuan, 2900 m..

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Ingushetia, the upper reaches of the Shon-don River, Caucasus, former Soviet Union.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Leaf-sheaths tubular for much of their length, with 0.5 of their length closed, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, 0.6–0.85 mm wide. Leaf-blade venation with 7–9 secondary veins, 3–5 inner ridges, with unevenly thickened subepidermal sclerenchyma layer on the underside or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 4.5–6 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7.5–8.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4.2–4.6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.5–2.2 mm long overall. Palea 2 -veined. Palea keels ciliate, adorned above, with 0.33 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–2.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Caucasus. North Caucasus.

**TDWG4.**

**Festuca inops** Delile, non De Not.((1844). *Fl. Egypt t.63*, fig.1 (1813).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Italy. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: Jun 1843, Italy: Liguria, Genova, Dntrs/Monte Gazzo (GDOR). LT designated by Mariotti, *Atti Conv. Lincei* 115: ? (1995).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. weak. Culms slender.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 25–50 cm long. Culm-internodes smooth or scaberulous. Leaf-sheaths open for most of their length, with 0.25–0.5 of their length closed, with flat margins, glabrous on surface, outer margin hairy. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane, pubescent on abaxial surface. Leaf-blades filiform, conduplicate, circular in section, 0.4–0.8 mm wide, coriaceous, pruinose. Leaf-blade venation comprising 7 vascular bundles, with 5 inner ridges, with subepidermal sclerenchyma free from veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 3.5–6.5 cm long. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6–7.7 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 2.7–4.6 mm long, 0.66–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma ovate, 3.9–5 mm long, chartaceous, glaucous or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma apex acute, muticous or mucronate. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southeastern Europe.

**Country /Province /State.** : Italy.

**Festuca intercedens** Ludi ex Becherer. *Ber. Schweiz. Bot. Ges.* 1. 388 (1940).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Switzerland. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Switzerland, Col d'Albula: Hackel.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. intercedo*, come between. Intermediate between two other species.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 6–20 cm long. Culm-internodes distally glabrous or pubescent. Leaf-sheaths tubular for much of their length, with 0.5–0.75 of their length closed, with flat margins, glabrous on surface or pubescent. Leaf-sheath auricles erect. Ligule a ciliolate membrane. Leaf-blades filiform, conduplicate, 0.3–0.6 mm wide, glaucous. Leaf-blade venation comprising 5–7 vascular bundles, with 1–2 inner ridges, with 3–5 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, 2–5 cm long. Primary panicle branches indistinct the panicle almost racemose. Panicle axis puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.8–4 mm long, 0.8–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4–5 mm long, chartaceous, glaucous or purple, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.6–2.6 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.2–1.75 mm long. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 28$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe, Southeastern Europe.

**Country /Province /State.** : Austria, Switzerland. : Italy.

**Festuca iranica** E.B. Alekseev. *Bull. Mosk. Obshch. Ispyt. Prir., Biol.*, 82(3): 101 (1977).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online.

**TYPE** from Iran. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Iran: Zardeh Kuh, summit Bakhtiari, 15000 ft, E-facing, *Timmis 108* (HT: K).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. -ica*, belonging to. From Iran.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms 15–20 cm long. Leaf-sheaths tubular for much of their length, with 0.5–0.75 of their length closed, glabrous on surface. Ligule an eciliate membrane, 1–1.2 mm long. Leaf-blades filiform, conduplicate, angular in section, 0.4–0.75 mm wide. Leaf-blade venation with 9–13 secondary veins, 1(–3) inner ridges. Leaf-blade surface smooth, puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 7–8 cm long. Panicle axis smooth. Panicle branches smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 8–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 0.75 length of upper glume, membranous, pallid, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 0.7–0.8 length of adjacent fertile lemma, membranous, pallid, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 5.2–5.6 mm long, chartaceous, purple, keeled, 5 -veined, more than 3-veined. Lemma apex acute, muticous. Palea 2 -veined. Palea keels scabrous, adorned all along. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–2.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Western Asia. Iran.

**Festuca irtyshensis** E. B. Alekseev. *Novosti Sist. Vyssh. Rast.*, 13: 28 (1976).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Russia, Kanonerka: Kamenetskaya (LE holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Irtys, western Siberia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms 25–30 cm long. Leaf-sheaths open for most of their length, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 8–20 cm long, 0.45–0.55 mm wide, glaucous, pruinose. Leaf-blade venation comprising 7 vascular bundles, with 7 secondary veins, with 3–5 inner ridges, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, rough abaxially, puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, 5–7 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 4.5–6.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 3.2–3.8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.6–1.2 mm long overall. Palea 2 -veined. Palea keels scabrous, adorned above, with 0.33 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.8–2 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Siberia. West Siberia.

**TDWG4.**

**Festuca jacutica** Drobov. *Trav. Mus. Bot. Acad. Petersb.* xiv. 163 (1915).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: T:

ST: *Abolin s.n.*, 1912,

ST: *Dolenko s.n.*, 1912,

ST: *Drobov s.n.*, 1912,

ST: *Glenin s.n.*, 1902,

ST: *Diwnogorskij s.n.*, 1905, Distr. Jakutski.

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig.334).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Jacutia, now Yakutsk, eastern Siberia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Butt sheaths yellow, glossy. Culms 50–70 cm long. Culm-internodes smooth. Leaf-sheaths tubular for much of their length, with 0.33–0.5 of their length closed, glabrous on surface. Ligule an eciliate membrane. Leaf-blades flexuous, filiform, angular in section, 15–30 cm long, 0.3–0.4 mm wide. Leaf-blade venation with 5–7 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth or scaberulous.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong, 5–10 cm long. Panicle branches flexuous, scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5–7 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 1.5–2.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume

apex acute. Upper glume lanceolate, 2–3.5 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acuminate, mucicous. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.5–3 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Siberia, Russian far east, **China.** Buryatiya, Chita, Irkutsk, Krasnoyarsk, Tuva, Amur, Khabarovsk, Kuril Is. Inner Mongolia, Manchuria.

**TDWG4.**

### **Festuca jaliscana** E.B. Alekseev. *Bot. Zhurn.*, 66(10): 1493 (1981).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Mexico. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Mexico: Jalisco: NE slopes of the Nevado de Colima, below Canoa de Leoncito, steep cut-over mountainside in fir zone at head of Barranca de la Rosa, *McVaugh 13409* (HT: US).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -anum, indicating location. From Jalisco, Mexico.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Cataphylls inconspicuous. Rhizomes elongated. Butt sheaths withering. Basal innovations extravaginal. Culms erect, 100–150 cm long. Culm-internodes smooth. Lateral branches lacking. Leaf-sheaths open for most of their length. Ligule a ciliolate membrane, 0.5 mm long, truncate. Leaf-blades 3–3.5 mm wide. Leaf-blade venation with sclerenchyma strands below veins and above some veins, subepidermal sclerenchyma attached to veins above and below. Leaf-blade surface smooth or scaberulous, rough adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, elliptic, 15–32 cm long. Panicle axis smooth. Panicle branches smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 13.5–14.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 8–8.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins obscure. Lemma surface smooth. Lemma apex mucronate. Palea 2 -veined. Palea keels smooth. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–3.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** Mexico. Southwest Mexico.

**TDWG4.** Colima, Jalisco.

### **Festuca jansenii** Markgraf-Dannenberg ex P. van Royen. *Alp. Fl. New Guinea*, 2: 1053 (1979).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, J.F.Veldkamp, Poaceae ms (*Flora Malesiana*).

**TYPE** from Indonesia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *L.J. Brass, E. Myer-Drees 9824*, Sep 1938, Indonesia: New Guinea: Iran Jaya: Wilhelmina Mt., 3560 m (L; IT: US-1761706).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Pieter Jansen (1882–1955) Dutch agrostologist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, culms solitary. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms erect, 45–95 cm long, 2–4 -noded. Lateral branches lacking. Ligule an eciliate membrane, 1 mm long, truncate. Leaf-blades involute, 10–25 cm long, 1–2 mm wide. Leaf-blade

venation with 8 secondary veins, 3 inner ridges. Leaf-blade surface scaberulous, rough adaxially, pilose, hairy adaxially. Leaf-blade margins cartilaginous, scabrous.

**Inflorescence.** Inflorescence a panicle. Peduncle scaberulous above. Panicle ovate, 6–12 cm long. Primary panicle branches ascending or spreading, 4–8 cm long. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or ovate, laterally compressed, 7–15 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume oblong, 4.1–4.7 mm long, 0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume surface asperulous. Lower glume apex acute. Upper glume ovate, 6.9–7.3 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume surface asperulous, rough generally. Upper glume apex acute.

**Florets.** Fertile lemma elliptic or orbicular, 6–7 mm long, chartaceous, glaucous or purple, without keel, 5 -veined, more than 3-veined. Lemma midvein scabrous. Lemma surface scaberulous, rough generally. Lemma margins scaberulous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 3–4 mm long overall. Palea 7–7.5 mm long, 2 -veined. Palea keels scabrous. Palea surface asperulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous or with a few apical hairs. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Tropical Asia.

**Country /Province /State. Papuasia.** New Guinea West Papua (Irian Jaya). New Guinea.

**Festuca japonica** Makino. *Bot. Mag., Tokyo*, xx. 83 (1906).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), T. Koyama, *Grasses of Japan and its neighboring regions* (1987).

**TYPE** from Japan. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Japan: Tosa: Okunakawa, 20 May 1888, K. Watanabe s.n. (HT: TI).

**Illustrations (Books):** C-C Hsu, *Flora of Taiwan*, Vol 5 (1978) (314), C-C Hsu, *Taiwan Grasses* (1975), S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 319).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to; Japan, a modified spelling Zhapan introduced into Europe by Marco Polo as a transliteration for the Chinese name for the large islands to the east of that country. From Japan.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Rhizomes short. Culms 30–70 cm long, 2–3 -noded. Leaves mostly basal. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.5 mm long, truncate. Leaf-blades flat or conduplicate, 7–15 cm long, 1–3 mm wide. Leaf-blade surface puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, pyramidal, effuse, 2–15 cm long. Primary panicle branches spreading or reflexed, 1–2 -nate, 4.5–9 cm long. Panicle axis scabrous. Panicle branches capillary, smooth or scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 4–5.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume ovate, 1–1.5 mm long, 0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex obtuse or acute. Upper glume ovate, 1.5–2 mm long, 0.4–0.5 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex obtuse or acute.

**Florets.** Fertile lemma elliptic, 3.5–4 mm long, chartaceous, much thinner on margins, without keel, 5 -veined, more than 3-veined. Lemma apex acute. Palea 1 length of lemma, 2 -veined. Palea keels smooth or scaberulous, adorned above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, 2.5–2.7 mm long, hairy at apex. Hilum linear.

$2n = 28$ .

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China, Eastern Asia.** China South Central, China North-Central, China Southeast. Japan, Korea, Taiwan. Japan Honshu.

**TDWG4.** Gansu, Shaanxi. Anhui, Zhejiang. Guizhou, Hubei, Sichuan, Yunnan.

**Festuca javorkae** Majovsky. *Acta Fac. Rerum Nat. Univ. Comen., Bot.*,7:325 (1963).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Sandor Javorka (1883–1961) Hungarian phytogeographer.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 40–60 cm long. Culm-internodes antrorsely scabrous, distally pubescent. Leaf-sheaths open for most of their length, with 0 of their length closed, with flat margins, antrorsely scabrous, glabrous on surface or hirsute. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades deciduous at the ligule, filiform, conduplicate, circular in section, 0.5–1.1 mm wide, glaucous. Leaf-blade venation comprising 5–7 vascular bundles, with 3 inner ridges, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with unevenly thickened subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous. Leaf-blade apex acuminate.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 6–11 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6–8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4–4.8 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface smooth or scabrous, rough above. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 4.2–5 mm long, chartaceous, mid-green or glaucous or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma surface glabrous or pubescent, hairy above. Lemma margins eciliate or ciliate. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–3 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe.

**Country /Province /State.** : Austria, Czechoslovakia, Hungary.

**Festuca jeanpertii** (St.- Yves) Markgraf. *Fedde, Repert. Beih.* . III. 276 (1932).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Greece. **Basionym or Replaced Name:** *Festuca laevis* var. *jeanpertii* St.-Yves, *Bull. Soc. Bot. Fr.* 71:42 (1924). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Greece, Mt Pateras: Heldreich 253 (W lecto).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of "Jeanpeart", friend of A. St-Yves, French agrostologist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms 30–60 cm long. Leaf-sheaths tubular for much of their length, with 0.5 of their length closed, with flat margins, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 0.6–1 mm wide, pruinose. Leaf-blade venation comprising 7 vascular bundles, with 3 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear or oblong, dense, 7–17 cm long. Primary panicle branches moderately divided. Panicle branches glabrous or puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile.

Spikelets oblong, laterally compressed, 5.5–7.8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.5–5 mm long, 0.5–0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 3.9–5.2 mm long, chartaceous, light green, without keel, 5 -veined, more than 3-veined. Lemma apex acute, muticous or mucronate or awned, 1 -awned. Principal lemma awn 0–1.3 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe, Temperate Asia.

**Region. Southeastern Europe.**

**Country /Province /State.** : Greece, Italy, Yugoslavia. **Western Asia.** East Aegean Is, Turkey.

**Festuca jubata** Lowe. *Trans. Camb. Phil. Soc. vi. reimp.* 8. (1838).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Madeira. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Madeira: Lemann (K iso).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. jubum*, mane; -ata, possessing. The inflorescence or awn resembles a fox tail.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths grey, persistent and investing base of culm, with compacted dead sheaths. Culms 30–60 cm long. Leaf-sheaths open for most of their length, glabrous on surface. Ligule an eciliate membrane. Leaf-blades curved, filiform, conduplicate, 0.3–0.6 mm wide. Leaf-blade venation comprising 5 vascular bundles, with 5 inner ridges, with sclerenchyma strands below veins or above all veins. Leaf-blade surface ribbed, with rounded ribs, smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, 3–10 cm long. Panicle branches scabrous, glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes eventually visible between lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 6–7.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface glabrous or puberulous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 3–5 mm long overall. Palea 2 -veined. Palea surface pubescent. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe, Africa.

**Region. Southwestern Europe.**

**Country /Province /State.** : Azores. **Macaronesia.** Azores, Madeira.

**Festuca junatovii** E. B. Alekseev. *Novosti Sist. Vyssh. Rast.*, 13: 20 (1976).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Mongolia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: 4 IT: (LE).

T: *Junatov A.A., Li Shi-in, Juan I-fen* 996, 21 Jul 1957, Mongolia: Singxian: E Tian=Shan, N slope: basin of Manas Rv: upper reaches of the Rv. Danu=Gol (LE). Opig. lab.: "KNR, Sin'tszan-Ujgurskaja avt. obl. V.Tyan'-Shan', ego sev. sklon, bass. r. Manas, levoberezh'ya r. Danu-Gol, v ee verkhov'yakh".

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Alexander Afanasievich Junatov (1909-) Russian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.



**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms 20–40 cm long. Culm-internodes smooth, distally glabrous. Leaf-sheaths tubular for much of their length, with 0.5–1 of their length closed, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, angular in section, 5–15 cm long, 0.4–0.5 mm wide. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 7 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, 5–8 cm long, bearing few spikelets. Panicle axis smooth. Panicle branches smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 0.66–0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex obtuse. Upper glume ovate, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume lateral veins obscure. Upper glume apex obtuse.

**Florets.** Fertile lemma oblong, 4.3–4.7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex muticous or mucronate or awned, 1 -awned. Principal lemma awn 0–0.5 mm long overall. Palea 2 -veined. Palea keels scabrous, with 0.33 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.8–2.2 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. Xinjiang.

### ***Festuca juncifolia* St. Amans. *Fl. Agen.* 40 (1821).**

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from France. T:<Type of Basionym>; *vide* TROPICOS and Kew Synonymy Database: France, Landes: Coll?.

**Illustrations (Books):** C.E.Hubbard, *Grasses* (1968) (140), M.N.Correa, *Flora Patagonica* Parte III, Gramineae (1978) (98, Fig 57).

**Derivation** (Clifford & Bostock 2007): *L. juncea*, rush-like; folium, leaf. With rush-like leaf-blades or culms.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, culms solitary. Rhizomes elongated. Culms erect or geniculately ascending, 20–75 cm long, 2 -noded. Leaf-sheaths tubular for much of their length, without keel, glabrous on surface. Ligule an eciliate membrane, 0.2–4 mm long. Leaf-blades filiform, flat or involute, 10–30 cm long, 1–5 mm wide, firm, glaucous. Leaf-blade venation comprising 5–9 vascular bundles. Leaf-blade surface pubescent, densely hairy, hairy adaxially. Leaf-blade apex acuminate, pungent, hardened.

**Inflorescence.** Inflorescence a panicle. Peduncle angular (ribbed), smooth. Panicle contracted, lanceolate, 8–20 cm long. Primary panicle branches appressed or ascending, 1–2 -nate. Panicle branches angular, scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 2–4 mm long.

**Fertile Spikelets.** Spikelets comprising 4–12 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 10–18 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 6–8 mm long, 0.7–0.8 length of upper glume, chartaceous, without keels, 1–3 -veined. Lower glume apex acuminate. Upper glume lanceolate, 8–10 mm long, 1–1.1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma ovate, 7–10 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface pubescent. Lemma apex acuminate, muticous or awned, 1 -awned. Principal lemma awn 0–3 mm long overall. Palea 0.8 length of lemma, 2 -veined. Palea keels scaberulous, adorned above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 4–5 mm long. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear, 1 length of caryopsis.

$2n = 56$  (2 refs TROPICOS).

**Distribution (TDWG). Continent.** Europe, South America.  
**Region. Northern Europe, Middle Europe, Southwestern Europe.**  
**Country /Province /State.** : Great Britain. : Belgium, Netherlands. : France, Spain. **Southern South America.** Argentina South, Chile South.  
**TDWG4.** Tierra del Fuego. Magellanes.

**Festuca kamtschatica** (St.-Yves) N.N. Tsvelev. *Zlaki SSSR*: 412 (1976).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. **Basionym or Replaced Name:** *Festuca ovina* var. *kamtschatica* St.-Yves, *Candollea* 3:365 (1928). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Russia, Kamchatka, Ganal: Komarov 2700 (LE holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Kamchatka, Eastern Siberia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 15–30 cm long. Culm-internodes smooth. Leaf-sheaths open for most of their length, with 0.25–0.33 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 0.3–0.6 mm wide, stiff. Leaf-blade venation comprising 5–7 vascular bundles, with 1–3 inner ridges, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous, rough abaxially, pubescent, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, 3–4.5 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 3.8–4.7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.3–1.6 mm long overall. Palea 2 -veined. Palea keels scabrous, with 0.33 of their length adorned. Palea apex erose. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Russian far east. Kamchatka.

**TDWG4.**

**Festuca kansuensis** Markgraf-Dannenberg. *Acta Bot. Acad. Sci. Hung.*, 19(1–4): 207 (1973).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China, Kansu: Fenzel 23–25 (W holo).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig.333).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Kansu, China.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms erect, 20–30 cm long, 2 -noded, with 0.15–0.2 of their length below uppermost node. Culm-nodes glabrous. Lateral branches lacking. Leaf-sheaths tubular for much of their length, with 0.5 of their length closed, glabrous on surface or puberulous. Ligule a ciliolate membrane. Leaf-blades filiform, circular in section, 0.2–0.5 mm wide, glaucous. Leaf-blade venation with 5 secondary veins, 5 inner ridges, 7 subepidermal sclerenchyma strands. Leaf-blade surface scabrous, rough abaxially. Leaf-blade apex abruptly acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong or ovate. Primary panicle branches 1–2 -nate, bearing 1–3 fertile spikelets on each lower branch. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 7–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3.3–4 mm long, 0.75 length of upper glume, membranous, without keels. Lower glume margins ciliolate. Lower glume apex acuminate. Upper glume lanceolate, 4.2–4.8 mm long, 0.7–0.8 length of adjacent fertile lemma, membranous, without keels. Upper glume margins ciliolate. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 5.5 mm long, membranous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1.5–2.7 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–2.9 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China North-Central, Qinghai.

**TDWG4.** Gansu.

**Festuca karavaevii** E.B.Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 84(5): 122 (1979).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Russia, Yakutsk, Yukulany: Permjakova 30/3 (MW holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of Mikhail Nikolaevich Karavajev (Karavaev) (1903-?) Soviet botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Rhizomes elongated. Basal innovations extravaginal and intravaginal. Culms erect, 25–35 cm long. Culm-internodes distally glabrous. Lateral branches lacking. Leaf-sheaths tubular for much of their length, with 0.75 of their length closed, smooth, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, angular in section, 8–14 cm long, 0.35–0.4 mm wide. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 4–6 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 8.5–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5.5–5.8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface glabrous. Lemma apex acute, mucicous or mucronate or awned, 1 -awned. Principal lemma awn 0–1.3 mm long overall. Palea 2 -veined. Palea keels smooth. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 2.3–2.6 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Siberia. Yakutiya.

**Festuca karsiana** Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 78(3): 108 (1973).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Turkey. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Turkey, Sarykamysch to Chan-Dara: Litvinov (LE holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating connection. From Karsskie region, Caucasus, former Soviet Union.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 25–40 cm long. Leaf-sheaths open for most of their length, with 0.1–0.13 of their length closed, with flat margins, glabrous on surface. Ligule an eciliate membrane, 0.3–0.5 mm long. Leaf-blades filiform, conduplicate, elliptic in section, 7–15 cm long, 0.6–0.75 mm wide, glaucous, without exudate. Leaf-blade venation comprising 7 vascular bundles, with 3–5 inner ridges, with 3(–5) subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, oblong, 6–8 cm long. Primary panicle branches ascending. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 7–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or oblong, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 4.5–5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1.2–2 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous, with 0.33 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–2.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear, 1 length of caryopsis.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Caucasus, Western Asia. Transcaucasus. Turkey.

**TDWG4.**

**Festuca kashmiriana** Stapf. *Hook. f. Fl. Brit. Ind.* vii. 351. (1896).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N.L.Bor, *Grasses of Burma, Ceylon, India and Pakistan* (1960).

**TYPE** from India. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: N.W.India (LE). herb. Royle.

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig.333).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating location. From Kashmir.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect or geniculately ascending, 25–80 cm long. Leaf-sheaths open for most of their length. Ligule an eciliate membrane, 0.5 mm long. Leaf-blades filiform, conduplicate, angular in section, 10–25 cm long, 1–2 mm wide, glaucous. Leaf-blade venation comprising 5 vascular bundles, with 7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface scabrous, rough abaxially, puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate or ovate, nodding, 6–15 cm long. Primary panicle branches ascending or spreading. Panicle branches capillary, scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets cuneate, laterally compressed, 10–13 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 2 mm long.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 2.7–4.4 mm long, 0.66–0.88 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4–5.3 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma elliptic, 5.5–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1.5–3

mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–4 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG), Continent.** Temperate Asia, Tropical Asia.

**Country /Province /State.** Western Asia, China. Afghanistan. Tibet. Indian Subcontinent. India, Pakistan.

**Festuca kernerovensis** Chus. *Bot. Zhurn.* (Moscow & Leningrad) 88(7): 92 (-94; fig.) (2003).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Russia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Russia, Kemerov, Tomj R.: Barysheva (LE holo).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Distribution (TDWG), Continent.** Temperate Asia.

**Country /Province /State.** Siberia. West Siberia.

**Festuca kerguelensis** (Hook.) F. Muell. *Veg. Chatham Islands*, 60 (1864).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Kerguelen Land. **Basionym or Replaced Name:** *Triodia kerguelensis* Hook. f., *Fl. Antarct.* 379, t. 138 (1847)

. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *J.D. Hooker 761*, May 1840, Kerguelen Land: on the debris of the rocks common [perennial] and alpina, Christmas Harbour (K-H2003/00969–293; IT: CN, US-1127149 (fragm. ex CGE) (fragm. ex CN)).

**Recent Synonyms:** *Poa kerguelensis* (Hook.f.) Steud., *Syn. Pl. Gram.* 257 (1854).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Kerguelen Island in the Antarctic Ocean.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms 5–8 cm long. Lateral branches lacking. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.5 mm long. Leaf-blades aciculate, conduplicate, 1–2 cm long, 0.5 mm wide. Leaf-blade venation comprising 7 vascular bundles, with 9 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface glabrous. Leaf-blade apex abruptly acute.

**Inflorescence.** Inflorescence a panicle. Panicle spiciform, linear, 1–1.5 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–3 fertile florets, with a barren rhachilla extension. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 4–5.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet or reaching apex of florets. Lower glume lanceolate, 2–3 mm long, 0.75 length of upper glume, membranous, 1-keeled, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 4 mm long, 1.3 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma ovate, 3 mm long, membranous, keeled, 5 -veined, more than 3-veined. Lemma midvein ciliolate. Lemma surface puberulous. Lemma apex acute. Palea 1 length of lemma, 2 -veined. Palea keels ciliolate.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp, linear, sulcate on hilar side, glabrous. Hilum linear.

**Distribution (TDWG), Continent.** Antarctica.

**Country /Province /State.** Subantarctic islands. Heard-McDonald Is, Kerguelen.

**Festuca killickii** Kennedy-O'Byrne. *Kew Bull.* xvi. 461 (1963).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from South Africa. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: South Africa, Cathedral Peak: Killick 2282 (K holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Donald Joseph Boomer Killick (1926-) South African botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms 30–60 cm long, 1–2 -noded. Leaf-sheaths smooth, glabrous on surface. Ligule an eciliate membrane, 3–4 mm long. Leaf-blades ascending, 30–60 cm long, 2–5 mm wide. Leaf-blade venation without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface ribbed. Leaf-blade apex acute. Dioecious.

**Inflorescence.** Inflorescence a panicle. Panicle open, pyramidal, 10–15 cm long, 3–5 cm wide. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 8–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.5–3 mm long, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.5–4 mm long, 0.6–0.7 length of adjacent fertile lemma, chartaceous, without keels, 1–3 -veined. Upper glume apex acute.

**Florets.** Fertile florets female. Fertile lemma elliptic, 5–6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, mucronate. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–3.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Hilum linear.

Male inflorescence similar to female, a panicle. Male spikelets resembling female, 4–6 flowered.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** Southern Africa. Kwazulu-Natal.

### **Festuca kolesnikovii** Tsvelev. *Bot. Zhurn.*, 56(9): 1254 (1971).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Russia, Chingouza: Kolesnikov (LE holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Boris Pavlovich Kolesnikov (1909-) Russian forester and plant collector.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms 8–15 cm long. Leaf-sheaths tubular for much of their length, with 0.5–0.75 of their length closed, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 5–15 cm long, 0.5–0.6 mm wide, glaucous. Leaf-blade venation comprising 5 vascular bundles, with 1–3 inner ridges, with unevenly thickened subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth, puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, 1.5–3.5 cm long. Panicle axis smooth. Panicle branches smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 5–6 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 3.8–4 mm long, chartaceous, purple, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2.5–5 mm long overall. Palea 2 -veined. Palea keels scabrous, adorned above, with 0.33 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.7–2.2 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Russian far east, Caucasus. Primorye.

#### TDWG4.

**Festuca kolymensis** Drobov. *Trav. Mus. Bot. Acad. Petersb.* xiv. 155 (1915).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: ST: *Augustinowicz 320*, 1875, Siberia: Prov. Jakutsk (Hb. H. P.).

ST: *Augustinowicz 325*, 1905, Siberia: Schulga (Hb. H. P.).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From the Kolyma Basin, Eastern Siberia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms 30–40 cm long. Leaf-sheaths open for most of their length, glabrous on surface. Ligule a ciliolate membrane. Leaf-blades filiform, elliptic in section, 0.4–0.6 mm wide. Leaf-blade venation comprising 5 vascular bundles. Leaf-blade surface glabrous.

**Inflorescence.** Inflorescence a panicle. Peduncle scaberulous above. Panicle open, dense, 3–5 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 6–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3–3.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4–4.5 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 5–6 mm long, chartaceous, light brown, shiny, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma margins scabrous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2–3 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.  $2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Siberia. Yakutiya.

TDWG4.

**Festuca komarovii** *Not. Syst. Herb. Inst. Bot. Acad. Sci. URSS*, xvii. 80 (1955). Krivot.

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Prov. Irkutsk: Distr. Tunca, montes Sajanenses, trajectus Char-Daban, 2 Jun 1902, V. Komarov *s.n.* (HT: Herb. Inst. Bot. Ac. Sc. URSS (Leningrad)).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Vladimir Leontievitch Komarov (1869–1946) Russian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths pubescent, persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms erect, 30–40 cm long. Leaf-sheaths open for most of their length, glabrous on surface. Ligule a ciliolate membrane, 0.1–0.5 mm long. Leaf-blades 3–4 mm wide, pruinose. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Dioecious.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 5–10 cm long. Primary panicle branches bearing 1–3 fertile spikelets on each lower branch. Panicle branches smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets obovate, laterally compressed, 10–12 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes smooth. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4–5 mm long, 0.75 length of upper glume, membranous, pallid, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5–6 mm long, 0.66 length of adjacent fertile lemma, membranous, pallid, without keels, 1–3 -veined. Upper glume lateral veins absent or obscure. Upper glume apex obtuse.

**Florets.** Fertile florets female. Fertile lemma oblong, 8–9 mm long, chartaceous, much thinner on margins, keeled, 5 -veined, more than 3-veined. Lemma lateral veins with distinct primaries but obscure intermediates. Lemma surface smooth or papillose. Lemma apex obtuse or acute, mucous. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 4–4.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, oblong or ovoid, 3–3.5 mm long, hairy at apex. Hilum linear, 0.5 length of caryopsis.

Male inflorescence similar to female. Male spikelets resembling female.

$2n = 28$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Siberia, **Mongolia.** Irkutsk, Tuva.

**TDWG4.**

**Festuca korabensis** (Jav.ex I. Markgraf-Dannenberg) I.Markgraf-Dannenberg. *Bot. J. Linn. Soc.*, 76(4): 326 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**Basionym or Replaced Name:** *Festuca violacea* var. *korabensis* Jav. ex I. Markgraf-Dannenberg, *Glasn. Zem. Muz. Bosne Herceg. Prir. Nauke*, 11–12: 81 (1972).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Mt. Korab, Serbia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm. Basal innovations intravaginal. Culms 15–30 cm long. Leaf-sheaths tubular for much of their length, with 0.5–0.66 of their length closed, with infolded margins, glabrous on surface. Ligule a ciliolate membrane. Leaf-blades filiform, conduplicate, 0.2–0.3 mm wide, stiff. Leaf-blade venation comprising 5–7 vascular bundles, with 3 inner ridges, with sclerenchyma strands below veins, with subepidermal sclerenchyma free from veins.

**Inflorescence.** Inflorescence a panicle. Peduncle pubescent above. Panicle open, oblong, dense, 3–5 cm long. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.8–7.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 3.4–4.8 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4.6–5.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.5–2 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3 mm long. Ovary glabrous. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southeastern Europe.

**Country /Province /State.** : Albania, Yugoslavia.

**Festuca koritnicensis** Hayek & Vetter. *Denkschr. Akad. Wiss. Wien, Math.-Nat.* xcix. 220 (1924).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Albania. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: ST: *Doerfler* 975, Humusreicher Boden in der Gipfelregion des Koritnik, Zirka 2200 m.

ST: *Doerfler* 976, Albania: Auf felsigem Boden in der Gipfelregion des Koritnik.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Koritnik, Albania.

**Classification.** Subfamily Pooideae. Tribe: Poeae.



**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 30–48 cm long. Leaf-sheaths open for most of their length, with 0.2–0.5 of their length closed, with flat margins, smooth, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, angular in section, 0.6–0.9 mm wide, glaucous, pruinose. Leaf-blade venation comprising 7 vascular bundles, with 3–5 inner ridges, with 5–7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation or with sclerenchyma strands widened to form a discontinuous subepidermal layer. Leaf-blade surface smooth, pubescent, sparsely hairy, hairy abaxially. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 5–8 cm long. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9.5–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.7–6.7 mm long, 0.75–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 6.5–7.8 mm long, chartaceous, glaucous or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma surface smooth or scabrous, rough above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 3–4 mm long overall, 0.5 length of lemma. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region. Southeastern Europe.**

**Country /Province /State.** : Albania, Greece, Yugoslavia.

**Festuca kozanensis** Foggi & Joch.Müll. *Willdenowia*35(2): 242 (2005).

**Basionym or Replaced Name:** *Festuca rechingeri* I. Markgraf-Dannenberg, non Alex.(1975), *Veroff. Geobot. Inst. Rubel*, 56: 16 (1976).

**Distribution (TDWG). Continent.** Europe.

**Region. Southeastern Europe.**

**Country /Province /State.** : Greece, Yugoslavia.

**Festuca krivotulenkoae** E.B.Alekseev. *Ovsyanitsy Kavkaza*: 64 (1980).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Russia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Russia, Caucasus, Besengae glacier: Busch (LE holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of U. F. Krivotulenko (fl.1955) Russian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Basal innovations extravaginal. Culms erect, 50–75 cm long. Culm-internodes distally glabrous. Lateral branches lacking. Leaf-sheaths open for most of their length. Ligule an eciliate membrane, 1–2 mm long. Leaf-blades flat, 3–6 mm wide. Leaf-blade venation with subepidermal sclerenchyma attached to veins above and below.

**Inflorescence.** Inflorescence a panicle. Panicle open, elliptic, 15–30 cm long. Panicle axis smooth or scaberulous. Panicle branches smooth or scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 9–11 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, membranous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, membranous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6.5–7.8 mm long, coriaceous, keeled, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex mucous. Palea 2 -veined. Palea keels scabrous, adorned all along. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3.5–4.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Caucasus. North Caucasus.

**Festuca kryloviana** Reverd. *Animadvers. Syst. Herb. Univ. Tomsk.* 1927, No. 2, p. 3. (1927).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Russia, Altai, between Berezovka & Khapsyn R.: Saposhnikov (LE lecto).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig.337).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating connection. In honor of Porfirij Nikitic Krylov (1850–1931) Russian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms erect or geniculately ascending, 15–40 cm long. Leaf-sheaths open for most of their length, with 0.25–0.33 of their length closed, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 0.5–1 mm wide. Leaf-blade venation comprising 7 vascular bundles, with 1–3 inner ridges. Leaf-blade surface scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 3–5 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 6–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3.6–4 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex obtuse. Upper glume lanceolate, 4–5 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume margins scabrous. Upper glume apex obtuse.

**Florets.** Fertile lemma oblong, 4–5 mm long, chartaceous, light brown, keeled, lightly keeled, keeled above, 5 -veined, more than 3-veined. Lemma midvein scabrous. Lemma lateral veins obscure. Lemma surface scabrous, rough on veins. Lemma apex obtuse, awned, 1 -awned. Principal lemma awn 1.5–2.5 mm long overall. Palea 2 -veined. Palea keels scabrous, adorned above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–2.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

$2n = 28$  (1 ref TROPICOS), or  $42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Siberia, Middle Asia, China, Mongolia. Altay. Kazakhstan, Kirgizistan. China North-Central, Xinjiang. Mongolia.

**TDWG4.** Hebei.

**Festuca kuprijanovii** D.V. Chusovljanov. *Bot. Zhurn.*, 83(11): 113 (1998).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Russia, Altai, Nizhnjaja Koksju R.: Olonova & Sylantjeva (LE holo).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms 13–20 cm long. Leaf-sheaths tubular for much of their length, with 0.5–0.75 of their length closed. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section or circular in section, 5–10 cm long, 0.4–0.6 mm wide. Leaf-blade venation comprising (5–)7 vascular bundles, with 1 inner ridges, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, rough abaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, 2–4 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 3–4 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1.5–2.2 mm long overall. Palea 2 -veined. Palea keels scaberulous, adorned above, with 0.33 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.7–2.2 mm long. Ovary glabrous.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Siberia. Altay.

### **Festuca kurtschumica** E. B. Alekseev. *Novosti Sist. Vyssh. Rast.*, 13: 24 (1976).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Russia, Altai, Markakol Lake: Sedelnikov 4916 (LE holo, K).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Kurtschum.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms 15–35 cm long. Leaf-sheaths tubular for much of their length, with 0.66–0.75 of their length closed, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 5–12 cm long, 0.4–0.5 mm wide. Leaf-blade venation comprising 5 vascular bundles, with 5 secondary veins, with 3 inner ridges, with 3 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous, rough abaxially, puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 2–3.5 cm long. Panicle axis scaberulous. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5.5–6.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 3.5–4.5 mm long, chartaceous, light brown, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.8–1.6 mm long overall. Palea 2 -veined. Palea keels scabrous, adorned above, with 0.33 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.8–2.2 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Siberia, **Middle Asia, China, Mongolia.** Altay. Kazakhstan. Xinjiang. Mongolia.

**TDWG4.**

### **Festuca kurtziana** St.- Yves. *Candollea*, 3: 201 (1927).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Argentina. **Basionym or Replaced Name:** *Festuca cabreriae* L. Parodi, *Rev. Argent. Agron.* 20: 200 (1953). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Argentina, Rio Negro: Gussfelt ; Argentina, Cordillera de Mala-hue: Kurtz 7196 (B syn, CORD).

**Illustrations (Books):** M.N.Correa, *Flora Patagonica* Parte III, Gramineae (1978) (107, Fig 65 as *F. cabreriae*).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating connection. In honor of Wilhelm Sulpiz Kurz (1834–1878) German botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 20–55 cm long, 2-noded. Lateral branches lacking. Leaf-sheaths open for most of their length, pubescent. Ligule a ciliolate membrane. Leaf-blades conduplicate, 3–15 cm long, 0.6–0.8 mm wide. Leaf-blade surface scabrous, rough abaxially, glabrous. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 6–15 cm long. Primary panicle branches appressed. Panicle axis scaberulous. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, scaberulous.

**Fertile Spikelets.** Spikelets comprising 5–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9–11 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1–1.5 mm long, pubescent.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3.5–5.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1-veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume surface scabrous, rough above. Lower glume apex acute. Upper glume lanceolate, 5–7 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume primary vein scabrous. Upper glume surface scabrous, rough above. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6–9.5 mm long, chartaceous, without keel, 5-veined, more than 3-veined. Lemma surface scabrous. Lemma apex acute, awned, 1-awned. Principal lemma awn 1–2.5 mm long overall. Palea 1 length of lemma, 2-veined. Palea keels ciliolate. Palea surface puberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3.5 mm long. Ovary with a few apical hairs. Caryopsis with adherent pericarp. Hilum linear.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Southern South America.** Argentina South, Chile Central.

**TDWG4.** Mendoza. Neuquén, Río Negro. Coquimbo, Santiago, Maule.

**Festuca ladyginii** Tsvelev. *Akad. Nauk SSSR Bot. Inst. Komarova, Rast. Tsentral. Azii, Fasc. 4*, 165 (1968).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online.

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China, Tibet, Iczu R.: Ladygin (K holotype).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of V. Ladygin (fl. 1901) Russian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Rhizomes short. Culms 50–100 cm long. Culm-internodes scaberulous. Lateral branches lacking. Leaf-sheaths antrorsely scabrous, glabrous on surface. Leaf-sheath auricles absent. Ligule a ciliolate membrane, 4–7 mm long. Leaf-blades flat or convolute, 2.5–6 cm long, 1–2 mm wide. Leaf-blade surface scabrous, rough adaxially, glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, effuse, 15–30 cm long. Primary panicle branches 2-nate. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10–15 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 5.5–8 mm long, 0.75–0.9 length of upper glume, membranous, without keels, 1–3-veined. Lower glume lateral veins absent or obscure. Lower glume surface scabrous, rough on veins. Lower glume apex acute. Upper glume lanceolate, 7–9 mm long, 0.9 length of adjacent fertile lemma, membranous, without keels, 3-veined. Upper glume surface scabrous, rough on veins. Upper glume apex acute, mucronate.

**Florets.** Fertile lemma lanceolate, 8–10 mm long, membranous, without keel, 5-veined, more than 3-veined. Lemma surface scabrous. Lemma apex acute, muticous. Palea 1 length of lemma, 2-veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** Tibet.

**Festuca laegaardii** Stanck. *Folia Geobot.* 39(1): 107 (109) (2004).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Ecuador. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Ecuador, Tungurahua/Napo, Munic. Pillaro. Las Llanganatis, 01:09'37.5", 78:14'50.8"W, margins of the swamp dominated by *Carex* sp., and dryer shrub formation, 3500 m, 29–29 Sep 2000, *Stančik 3983* (HT: PRC; IT: AAU, QCA).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 74, fig 34 (2007)).

**Derivation** (Clifford & Bostock 2007): In honor of Simon Laegaard (1933-) Danish botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Cataphylls evident. Rhizomes short, fleshy, not obviously scaly. Basal innovations extravaginal or intravaginal. Culms erect, of moderate stature, straight or curved, 15–70 cm long, 2–5 -noded, without nodal roots. Culm-internodes terete, distally glabrous. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves basal and cauline, 2–3 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined, pilose. Leaf-sheath auricles absent. Ligule a ciliolate membrane, 0.5–2 mm long, membranous, white, entire, truncate. Leaf-blade base symmetrical. Leaf-blades straight or flexuous, involute, linear in section or angular in section, 20–25 cm long, 0.5–1.1 mm wide, firm or flaccid, dark green or purple. Leaf-blade midrib indistinct. Leaf-blade venation indistinct or distinct, comprising 7–11 vascular bundles, with 3–7 inner ridges, with sclerenchyma strands below veins and above some veins, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface pilose, moderately hairy or densely hairy, hairy adaxially. Leaf-blade margins smooth, glabrous. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle straight or flexuous, terete, eglandular, glabrous. Panicle open or contracted, elliptic or ovate, continuous, loose, secund, straight, 5–18 cm long, 1–11 cm wide. Primary panicle branches ascending, moderately divided, bearing spikelets almost to the base. Panicle branches straight, pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–12 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes scaberulous, sparsely hairy. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume lanceolate, 2.8–4 mm long, 0.7–0.9 length of upper glume, chartaceous or coriaceous, dark green or purple, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface pubescent, hairy above. Lower glume apex acute. Upper glume linear or lanceolate, 2.8–4 mm long, 0.66 length of adjacent fertile lemma, chartaceous, dark green or purple, without keels, 3 -veined. Upper glume surface pubescent, hairy above. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, symmetrical, 5.5–6.5 mm long, chartaceous, dark green or purple, without keel, 5 -veined, more than 3-veined. Lemma surface pubescent, hairy above. Lemma apex acute, pungent, 1 -awned. Principal lemma awn stiff, 0.5–1 mm long overall. Palea 1 length of lemma, 2 -veined. Palea apex dentate, 2 -fid, pubescent. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 2.4–3 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Ecuador.

**Festuca laeteviridis** Pilger. *Engl. Jahrb.* 7: 510 (1906).

**Accepted by:** U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Bolivia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *K. Fiebrig 2955*, 1901–1904, Bolivia: Renecilla bei Tupiza, 2700 m (B; IT: BAA-1254 fragm. ex B, US-81571).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. laetum*, bright; *viridis*, green. Foliage bright-green.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Culms 60–80 cm long, 2 -noded. Culm-internodes mid-green. Ligule an eciliate membrane, 0.5 mm long. Leaf-blades involute, 30–50 cm long, 1–1.5 mm wide. Leaf-blade surface scabrous, rough on both sides.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, 20 cm long. Primary panicle branches appressed. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 6–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile.

Spikelets elliptic, laterally compressed, 10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3.5–4 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute to attenuate. Upper glume lanceolate, 4.5–5.5 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute to attenuate.

**Florets.** Fertile lemma lanceolate, 6–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acute, mucicous. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 4 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Bolivia.

### ***Festuca laevigata*** Gaud. *Alpina*, 3: 60 (1808).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: ist gemein auf Alpen----dem Lioson, Lavarcz, Surchamp,.

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 20–70 cm long. Lateral branches lacking. Leaf-sheaths open for most of their length. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 2–35 cm long, 0.7–1.5 mm wide, stiff, mid-green or glaucous, without exudate or pruinose. Leaf-blade venation comprising 7–9(–11) vascular bundles, with 3(–5) inner ridges. Leaf-blade surface smooth. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate or oblong, 3–12 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–9 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 5–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or ovate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4.5–7.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma margins eciliate or ciliolate. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.5–3.8 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe, Southwestern Europe, Southeastern Europe.

**Country /Province /State.** : Austria, Switzerland. : France. : Italy.

### ***Festuca lahonderei*** M. Kerguelen & F. Plonka. *Bull. Soc. Bot. Centre-Ouest*, n.s., 19: 18 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from France. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: France, Vaux sur Mer: Lahondere.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of Christian La Hondere (fl. 1987) French botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 25–45 cm long. Lateral branches lacking. Leaf-sheaths open for most of their length. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 2–10 cm long, 0.6–1.1 mm wide, stiff, mid-green or glaucous, without exudate. Leaf-blade venation comprising 7 vascular bundles, with 3 inner ridges, with 3 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation or with unevenly thickened subepidermal sclerenchyma layer on the underside or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 3–5.5 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 5.6–7.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or ovate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4–4.9 mm long, chartaceous, shiny, without keel, 5 -veined, more than 3-veined. Lemma surface glabrous. Lemma apex acute, muticous or awned, 1 -awned. Principal lemma awn 0–0.8 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : France.

**Festuca lambinonii** M. Kerguelen. *Lejeunia*, 110: 59 (1983).

**TYPE** from France. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Font de Comps: Timbal-Lagrave.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : France.

**Festuca lanatifolia** Tovar. *Mem. Mus. Hist. Nat. Javier Prado*, 16: 22 (1972).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *E. Asplund 11284*, 1 Jun 1940, Peru: Lima: Huarochiri Prov. (US-2207062).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. lana, wool; -ata, possessing; folium, leaf. Upper surface of leaf-blade densely wooly.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Rhizomes short. Culms erect, 70–80 cm long, 4 -noded. Culm-internodes antorsely scabrous. Leaf-sheaths open for most of their length, scaberulous, glabrous on surface. Ligule an eciliate membrane, 1–1.5 mm long, truncate. Leaf-blades flat or conduplicate, 25–50 cm long, 3–4 mm wide, 7 cm long at summit of culm, coriaceous. Leaf-blade surface pubescent, densely hairy, hairy adaxially. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, 20–23 cm long. Primary panicle branches ascending, 5–9 cm long. Panicle branches capillary, scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, pubescent.

**Fertile Spikelets.** Spikelets comprising 5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 11–12 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1.5–2 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, with lower narrower than upper, shorter than spikelet. Lower glume lanceolate, 3.8–4 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface puberulous, hairy above. Lower glume apex acute. Upper glume lanceolate, 5–5.5 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface puberulous, hairy above. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 6.5–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface puberulous, hairy above. Lemma apex dentate, 2 -fid, acute, awned, 1 -awned. Principal lemma awn from a sinus, 2.4–2.8 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Palea surface pubescent, hairy above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–3.5 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Peru.

**Festuca lanifera** E.B. Alekseev. *Bot. Zhurn.*, 70(9): 1246 (1985).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Bolivia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Troll 1085*, 01 Feb. 1928, Bolivia; Cochabamba: 2400 m (B).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. lanos*, wool; fero, bear. Panicle branches densely woolly.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms 18–25 cm long. Culm-internodes mid-green. Leaves mostly basal. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 6–12 cm long, 0.5–0.6 mm wide. Leaf-blade surface scabrous, rough abaxially, pubescent, hairy adaxially. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, 7–9 cm long. Primary panicle branches appressed, 0.5–3 cm long. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 8.5–10.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4.5–5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 6–7 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6–7.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acute, mucronate. Palea 1 length of lemma, 2 -veined. Palea surface pubescent, hairy above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Bolivia.

**Festuca lapidosa** (Degen) Markgraf-Dannenberg. *Bot. Jahrb.*, 96 (1–4): 274 (1975).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Yugoslavia. **Basionym or Replaced Name:** *Festuca ovina* var. *lapidosa* Degen., *Fl. Veleb.* 1:546 (1936). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Yugoslavia, Mt. Krsina: Kocsis.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. lapis*, stone; -osa, abundance, Growing in rocky mountains.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 15–30 cm long. Culm-internodes smooth or scaberulous. Leaf-sheaths open for most of their length, with 0.1–0.25 of their length closed, with flat margins, puberulous or pubescent. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades curved, filiform, conduplicate, circular in section, 0.35–0.6 mm wide, stiff, glaucous, pruinose. Leaf-blade venation comprising 7 vascular bundles, with 1 inner ridges, with subepidermal sclerenchyma free from veins, with unevenly thickened subepidermal sclerenchyma layer on the underside or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 3–5 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.5–7 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume linear, 3.6–4.6 mm long, 0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 4.2–5.5 mm long, chartaceous, light green, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2.5–3 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.



**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region. Southeastern Europe.**

**Country /Province /State. :** Yugoslavia.

**Festuca lasiorrhachis** Pilger. *Engl. Jahrb.* vii. 508 (1906).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: ST: *Weberbauer 904*, 3 May 1902, Peru: supra Cuyocuyo, in herbaceis, fruticibus intermixtis, 3700–3800 m (B; IST: BAA-1255 (fragm. ex B)).

ST: *Weberbauer 907*, May 1902, Peru: Puno: supra Cuyocuyo, in herbaceis, fruticibus intermixtis, 3700–3800 m (US-81570).

ST: *Weberbauer 589*, Peru: Sandia, ubi ad tecta construenda adhibetur.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. lasios, shaggy; rhachis, backbone. The inflorescence branches are ciliate.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Culms 50–70 cm long. Ligule an eciliate membrane, 0.7–1 mm long. Leaf-blades 15–35 cm long, 2–5 mm wide. Leaf-blade surface pubescent, densely hairy, hairy adaxially. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, lanceolate, 15–20 cm long. Primary panicle branches appressed or ascending. Panicle axis villous. Panicle branches villous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, pubescent.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 8–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.7–4 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume lanceolate, 3.7–5.5 mm long, 0.66–0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 6–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface pubescent, hairy above. Lemma margins pubescent. Lemma apex acute, mucicous or mucronate. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Western South America, Southern South America.** Peru. Argentina Northwest, Chile North.

**TDWG4.** Jujuy, Salta. Antofagasta.

**Festuca laxa** Host. *Gram. Austr.* 2:58 (1802).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Austria. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Austria, Mt. loibel: Coll?.

**Illustrations (Books):** G.Hegi, *Flora von Mitteleuropa* 1 (1909).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Cataphylls evident. Rhizomes elongated. Basal innovations extravaginal. Culms 30–60 cm long. Leaf-sheaths open for most of their length, glabrous on surface. Ligule an eciliate membrane. Leaf-blades conduplicate, 2–4 mm wide. Leaf-blade venation comprising 7 vascular bundles, with 7 inner ridges, with subepidermal sclerenchyma attached to veins above and below. Leaf-blade surface ribbed, pubescent, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, nodding, 6–10 cm long. Panicle branches capillary, smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume ovate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume ovate, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 5.8–7.7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins obscure. Lemma apex acuminate, muticous. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, obovoid. Hilum linear. Disseminule comprising a caryopsis.

**Distribution (TDWG). Continent.** Europe, Africa.

**Region.** Middle Europe, Southeastern Europe.

**Country /Province /State.** : Austria. : Yugoslavia. **Macaronesia.** Canary Is.

**Festuca lazistanica** Alexeev. *Byull. Mosk. Obshch. Isp. Prirod., Biol.* 83:98 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Turkey. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Turkey, Lazistan: Balansa (LE holo, L).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Lazica, now Lazistan, Turkey.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, robust, 20–32 cm long. Culm-internodes distally glabrous. Leaf-sheaths tubular for much of their length, with 0.75–0.8 of their length closed, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 4–8 cm long, 0.65–0.75 mm wide, pruinose. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with sclerenchyma strands above some veins, with 4 subepidermal sclerenchyma strands, with continuous uniform subepidermal sclerenchyma layer on the underside.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, dense, 2.5–4.5 cm long. Panicle branches smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 7–8.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume lanceolate, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 4.8–5.2 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface asperulous, rough above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1.2–2 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Palea apex entire. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** **Western Asia.** Turkey.

**Festuca lemanii** Bast. *Ess. Fl. Maine-et-Loire*, 36 (1809).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from France. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: NT: *E. H. Tourlet 12530*, France Chinon, in sabulosis aridis (W). NT designated by Wilkinson & Stace, *Watsonia* 17: 289–299 (1989).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Dominique Sibastien Leman (1781–1829) French botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 25–50 cm long. Culm-internodes distally glabrous or pubescent. Leaf-sheaths open for most of their length, with 0 of their length closed, with flat margins, glabrous on surface or puberulous. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 0.62–0.79 mm wide, stiff, glaucous, pruinose. Leaf-blade venation comprising 7 vascular bundles, with 2–3 inner ridges, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, glabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, loose, 4–7 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.5–7.2 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.5–4 mm long, 0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4.2–4.6 mm long, chartaceous, glaucous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–2 mm long overall, 0.25–0.5 length of lemma. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Northern Europe, Middle Europe, Southwestern Europe.

**Country /Province /State.** : GB Aliens (Ryves et al). : Belgium. : France, Spain.

**Festuca lenensis** Drobov. *Trav. Mus. Bot. Acad. Petersb.* xiv. 158 (1915).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: ST: *Dolenko* 103, 1914, Siberia: Prov. Jakutsk. Fl. Lena, pr. pag. Kjatczinskoje

ST: *Dolenko* 30, 1912, Siberia: Prov. Urb. Jakutsk (Hb. A. P.).

ST: *Olenin* 1171, 1901, Siberia: Batylym (Hb. H. P.).

ST: *Olenin* 1188, 1901, Siberia: Batylym (Hb. H. P.).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (427).

**Derivation** (Clifford & Bostock 2007): L. -ense, denoting origin. From Lena River Basin, Siberia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Culms 20–40 cm long. Culm-internodes smooth. Leaf-sheaths tubular for much of their length, with 0.5–0.75 of their length closed, glabrous on surface. Ligule an eciliate membrane. Leaf-blades straight or curved, filiform, elliptic in section, 5–15 cm long, 0.5–0.8 mm wide. Leaf-blade venation with 3 subepidermal sclerenchyma strands. Leaf-blade surface scabrous, rough abaxially, pubescent, densely hairy, hairy adaxially. Leaf-blade apex abruptly acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 2.5 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5–7 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2–3 mm long, 0.66–0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3–4 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 3–4 mm long, chartaceous, light green, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.8–2 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

$2n = 14$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Temperate Asia, North America.

**Country /Province /State.** Siberia, Russian far east, **Mongolia.** Altay, Buryatiya, Chita, Irkutsk, Tuva. Kamchatka, Magadan. **Subarctic America.** Alaska, Yukon.

**TDWG4.**

**Festuca leptopogon** Stapf. *Hook. f. Fl. Brit. Ind.* vii. 354. (1896).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), J.F.Veldkamp, Poaceae ms (*Flora Malesiana*), N.L.Bor, Grasses of Burma, Ceylon, India and Pakistan (1960).

**TYPE** from India. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *J.D. Hooker & T. Thomson* (18), 26 June 1850, India: Khasia Hills, Kala Pani, 5–6000 ft (K; ILT: L). LT designated by Aleks., Bjul. Moskovsk. etc. 82: 98 (1977).

**Illustrations (Books):** H.J.Noltie, *The Grasses of Bhutan* (2000) (537, Fig.12), S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig.329).

**Derivation** (Clifford & Bostock 2007): Gk. leptos, narrow; pogon, beard. Awn thin and flexuous.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms 60–120 cm long. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 2–3 mm long, truncate. Leaf-blades 4–30 cm long, 1–5 mm wide. Leaf-blade apex acuminate.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, equilateral or nodding, 15–20 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets linear or lanceolate, laterally compressed, 9–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 1–1.5 mm long, 0.4–0.6 length of upper glume, chartaceous, much thinner on margins, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or oblong, 2.5 mm long, 0.33 length of adjacent fertile lemma, chartaceous, with hyaline margins, without keels, 3 -veined. Upper glume primary vein scaberulous. Upper glume apex obtuse.

**Florets.** Fertile lemma elliptic, 7–8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex dentate, 2 -fid, pubescent, awned, 1 -awned. Principal lemma awn from a sinus, 7 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, lanceolate or ellipsoid, 5 mm long, hairy at apex. Hilum linear.

$2n = 14$  (2 refs TROPICOS).

**Distribution (TDWG). Continent.** Temperate Asia, Tropical Asia.

**Country /Province /State.** **China, Eastern Asia.** China South Central, Qinghai, Tibet. Taiwan. **Indian Subcontinent, Indo-China, Malesia.** Assam, Eastern Himalaya, Nepal. Myanmar. Java, Lesser Sunda Is, Malaya, Singapore, Philippines, Sulawesi, Sumatra.

**TDWG4.** Guizhou, Sichuan, Yunnan. Darjeeling, Bhutan, Sikkim. Meghalaya. West Bengal.

**Festuca levingei** Stapf. *Hook. f. Fl. Brit. Ind.* vii. 352. (1896).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), N.L.Bor, Grasses of Burma, Ceylon, India and Pakistan (1960).

**TYPE** from India. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: India, Kashmir: Levinge 27394 (K holotype).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Henry Corbin Levinge (1828–1896) Irish botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Culms geniculately ascending, 20–45 cm long. Leaf-sheaths open for most of their length. Ligule an eciliate membrane, 0.5 mm long. Leaf-blades conduplicate or involute or convolute, 5–10 cm long, 2 mm wide. Leaf-blade venation comprising 5 vascular bundles, with 7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 5–7 cm long, 0.5–1 cm wide. Primary panicle branches ascending, bearing 2–3 fertile spikelets on each lower branch. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 5–7.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 2–2.5 mm long, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 2.6–3.3 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma elliptic or oblong, 3.5–4 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acuminate, mucous. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 0.8–1 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Tropical Asia.

**Country /Province /State. Indian Subcontinent.** Pakistan, West Himalaya.

**Festuca liangshanica** L. Liou. *Fl. Reipubl. Popularis Sin.* 9(2): 387 (2002).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Sichuan: Xichang, grassy mountain slopes, ca. 1200 m, 12 Aug. 1964, *T.P. Zhu 224* (HT: PE).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Rhizomes short. Culms 60–80 cm long, 1–2 -noded. Leaf-sheaths glabrous on surface. Leaf-sheath auricles falcate. Ligule an eciliate membrane, 0.3–0.5 mm long. Leaf-blades 6–13 cm long, 2.5–4 mm wide. Leaf-blade venation comprising 15–17 vascular bundles, with sclerenchyma strands below veins and above all veins. Leaf-blade margins smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, loose, 8–20 cm long. Primary panicle branches 2 -nate, 3–9 cm long. Panicle branches flexuous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong or ovate, laterally compressed, 10–20 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1.8–2.2 mm long, smooth.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4–6 mm long, 0.66–0.85 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface smooth. Lower glume apex obtuse. Upper glume lanceolate, 6–7 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels. Upper glume surface smooth. Upper glume apex obtuse.

**Florets.** Fertile lemma ovate, 7.5–9 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous or punctate. Lemma apex emarginate or obtuse, mucronate, 1 -awned. Principal lemma awn 4.5–13 mm long overall. Palea 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3.6–4 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central.

**TDWG4.** Sichuan.

**Festuca ligulata** Swallen. *Am. Journ. Bot.* xix. 436. (1932).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from USA. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *Moore & Steyermark 3576*, USA: Texas (US).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (409).

**Derivation** (Clifford & Bostock 2007): *L. ligula*, small tongue; -ata, possessing. Ligule conspicuous.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Rhizomes absent or elongated. Culms decumbent, 50–80 cm long. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 3–4 mm long. Leaf-blades flat or involute, 6–20 cm long, 1–2 mm wide. Leaf-blade surface scabrous, glabrous.

**Inflorescence.** Inflorescence a panicle. Peduncle antrorsely scabrous above. Panicle open, linear, 5–10 cm long. Primary panicle branches 1–3 in number, appressed. Panicle branches stiff, scaberulous. Spikelets appressed, solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous. Lower glume apex acute. Upper glume lanceolate, 4 mm long, 0.66–1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface scabrous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4–6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins obscure. Lemma surface scaberulous. Lemma apex acute, muticous. Palea 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** South-central USA, Mexico. Texas. Northeast Mexico. Coahuila.

**Festuca lilloi** Hackel. *Ann. Conserv. & Jard. Bot. Geneve*, xvii. 300 (1914).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Argentina. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Rodriguez 287*, 28 Jan 1912 [25 Jan 1912 on US label], Argentina: Tucuman: Dpto. Tafi: Lara, 3200 m (W; IT: *CORD*, LIL, US-s.n. (fragm. ex W)).

IT: *Stuckert 22459 ex Lillo 11142*, 25 Jan 1912, Argentina: Tucuman: Lara (US-91412).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Miguel Lillo (1862–1931) Argentine botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect or geniculately ascending, 10–60 cm long, 2–3 -noded. Culm-internodes antrorsely scabrous. Leaf-sheaths open for most of their length, 15–20 cm long, scaberulous or antrorsely scabrous, glabrous on surface. Ligule an eciliate membrane, 1.5–3 mm long, acute. Leaf-blades filiform, convolute, 20–30 cm long, 0.4–0.6 mm wide. Leaf-blade venation with subepidermal sclerenchyma attached to veins below, without layer of subepidermal sclerenchyma masking vein striation.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear or oblong, 12–15 cm long. Primary panicle branches 2 -nate. Panicle axis scabrous. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10–12 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4–4.5 mm long, 0.8–0.9 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5 mm long, 0.66 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 7–8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, muticous or awned, 1 -awned. Principal lemma awn 1–1.5 mm long overall, deciduous. Palea 2 -veined. Palea keels ciliolate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

$2n = 56$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America and Southern South America. Peru. Argentina Northwest.

**TDWG4.** Catamarca, Jujuy, La Rioja, Salta, San Luis, Tucuman. Cordoba. Rest of Chile- Biobio, La Auracania, Maule, O'Higgins, Santado, Valpariso, Chiloe, Aisen, Magellanes.

**Festuca litvinovii** (Tsvelev) E. B. Alekseev. *Novosti Sist. Vyssh. Rast.*, 13: 31 (1976).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from China. **Basionym or Replaced Name:** *Festuca pseudosulcata* var. *litvinovii* Tzvelev, *Rast. Centr. Azii, Mater. Bot. Inst. Komarov* 4: 170 (1968)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China, Manchuria: Litvinov (LE holo).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig.337).

**Derivation** (Clifford & Bostock 2007): in honor of Dimitri Ivanovich Litvinov (1854–1929) Russian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms 20–60 cm long. Leaf-sheaths open for most of their length, with 0.25–0.33 of their length closed, glabrous on surface. Ligule an eciliate membrane. Leaf-blades straight, filiform, conduplicate, elliptic in section, 20–30 cm long, 0.4–0.8 mm wide. Leaf-blade venation comprising 5–7 vascular bundles, with 1(–3) inner ridges, with 3 subepidermal sclerenchyma strands. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, 3–8 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 5–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4–6 mm long, chartaceous, mid-green, dull, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.5–2.5 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** Siberia, Russian far east, **China, Mongolia, Russia.** Buryatiya, Chita. Amur. Inner Mongolia, Manchuria, China North-Central, Qinghai, Xinjiang. Mongolia.

**TDWG4.** Hebei, Shanxi.

**Festuca livida** (Kunth) Willd. ex Spreng. *Syst. i.* 353. (1825).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Mexico. **Basionym or Replaced Name:** *Bromus lividus* Kunth, *Nov. Gen. Sp. (quarto ed.)* 1: 150 (1815) [1816]

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Humboldt & Bonpland s.n.*, Sep, Mexico: Mexico: in alta planitie Toluca, alt. 1380 hexap (P-Bonpl. (microfiche, MO); IT: BM, US-865492 (fragm. ex P-Bonpl.)).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. leaden. Spikelets grey or purple.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms 5–20 cm long. Leaf-sheaths open for most of their length, without keel, glabrous on surface. Ligule an eciliate membrane, 0.5 mm long. Leaf-blades filiform, convolute, 2–15 cm long, 1–1.5 mm wide, stiff. Leaf-blade surface ribbed, pubescent, hairy adaxially. Leaf-blade apex abruptly acute.

**Inflorescence.** Inflorescence a panicle, comprising 2–25 fertile spikelets. Panicle open or contracted, obovate, 2–5 cm long, bearing few spikelets. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile.

Spikelets cuneate, laterally compressed, 10–15 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes definite, scaberulous.

**Glumes.** Glumes persistent, similar, exceeding apex of florets, thinner than fertile lemma. Lower glume lanceolate, 10–15 mm long, 1 length of upper glume, membranous, purple, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume lanceolate, 10–15 mm long, 1.4–1.8 length of adjacent fertile lemma, membranous, purple, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma elliptic, 7–9 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 0.5–3 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Palea surface scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1 mm long. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** Mexico. Central Mexico, Gulf (Mexico), Southeast Mexico.

**TDWG4.** Mexico State, Puebla. Veracruz. Chiapas.

**Festuca liviensis** (Verguin) I. Markgraf-Dannenber. *Bot. J. Linn. Soc.*, 76(4): 327 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Spain. **Basionym or Replaced Name:** *Festuca ovina* var. *liviensis* Verg., *Bull. Soc. Hist. Nat. Toulouse* 57: 180, f. 1. (1928)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Spain, Livia: Sennen.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Livia, Spain.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 35–45 cm long. Culm-internodes smooth or scaberulous, distally glabrous. Leaf-sheaths open for most of their length, with 0.25–0.33 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 0.6–0.95 mm wide, glaucous, pruinose. Leaf-blade venation comprising 7–9 vascular bundles, with 1 inner ridges, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 4.5–8 cm long. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume oblong, 3.6–4.6 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume lateral veins prominent. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate or oblong, 4.5–6.5 mm long, chartaceous, glaucous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma margins ciliate. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1.2–2 mm long overall, 0.25–0.33 length of lemma. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : France, Spain.

**Festuca longifolia** Viv., non Thuill.(1799). *Ann. Bot.* i. II. 145 (1804).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).



T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: T: *Thuillier*, 23 Sep 1815, Sutetiis (LE).

LT: *J. L. Thuillier s.n.*, Se trouve dans les endroits sablonneux: pres St. Maur, ... (G). LT designated by Auquier & Kerguelen, *Lejeunia*, n.s., 89: 1–82 (1977).

**Illustrations (Books):** C.E.Hubbard, *Grasses* (1968) (132).

**Images:** R.Darke, *The Encyclopaedia of Grasses for Liveable Landscapes* (2007);

**Derivation** (Clifford & Bostock 2007): *L. longus*, long; folium, leaf. With long leaf-blades.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 15–70 cm long, 1–2 -noded. Lateral branches lacking. Leaf-sheaths open for most of their length, without keel, glabrous on surface. Ligule an eciliate membrane, 0.2 mm long. Leaf-blades filiform, conduplicate, 5–30 cm long, 0.5–1 mm wide, firm. Leaf-blade venation comprising 7 vascular bundles. Leaf-blade surface smooth or scabrous, glabrous. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Peduncle smooth or scaberulous above. Panicle open or contracted, linear or lanceolate or oblong, secund, 2–12 cm long. Primary panicle branches appressed or ascending. Panicle branches angular, scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 1–4 mm long.

**Fertile Spikelets.** Spikelets comprising 4–9 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 6–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 2.5–3.5 mm long, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume oblong, 3.5–5 mm long, 0.8–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma ovate, 4–5.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2–4 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous, adorned above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–3 mm long. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear, 1 length of caryopsis.

**Distribution (TDWG). Continent.** Europe.

**Region.** Northern Europe, Southwestern Europe.

**Country /Province /State.** : Great Britain. : France.

***Festuca longigluma*** Tovar. *Mem. Mus. Hist. Nat. Javier Prado*, 16: 27 (1972).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *R. Ferreyra* 6688, 3 Feb 1950, Peru: Huanuco, Huanuco Prov.: Mitotambo, arriba de Mito, 3000 to 3100 mt (US-2014360, US-2618956).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. longus*, long; gluma, husk. Spikelets with long glumes and or lemmas.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Culms slender, 70–100 cm long. Culm-internodes scaberulous. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.5–1 mm long. Leaf-blades 0.3–0.6 mm wide. Leaf-blade surface scaberulous (retorsely), rough abaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 30–40 cm long. Primary panicle branches ascending or spreading, 6–12 cm long. Panicle branches capillary, flexuous, scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, scabrous.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 6.5–7 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4–4.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5.3–6 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume lateral veins prominent. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 5.5–6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface asperulous. Lemma apex acute, mucous. Palea 2 -veined. Palea keels scabrous. Palea surface pubescent, hairy above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–2.5 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Peru.

**Festuca longiglumis** S.L. Lu. *Acta Phytotax. Sin.*, 30(6): 531 (1992).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Binchuan, Jizushan from Zhushengsi to Jindingsi, on sunny slopes, on the margins of evergreen Quercus forests, 2900 m, Aug. 1963, *Jinshajiang Exp.* 63–6935 (HT: PE; IT: NJU).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 323).

**Derivation** (Clifford & Bostock 2007): *L. longus*, long; *gluma*, husk. Spikelets with long glumes and or lemmas.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms 40–65 cm long, 1–1.5 mm diam., 3–4 -noded. Culm-internodes striate, distally glabrous. Leaf-sheaths mostly shorter than adjacent culm internode, glabrous on surface. Ligule a ciliolate membrane, 0.2 mm long. Leaf-blades 16–27 cm long, 3–3.5 mm wide, flaccid. Leaf-blade venation comprising 11–12 vascular bundles, with sclerenchyma strands below veins and above all veins, with subepidermal sclerenchyma attached to veins above and below. Leaf-blade surface glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 10–22 cm long. Primary panicle branches ascending or spreading, 3–10 cm long. Panicle branches glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 12–15 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet, similar to fertile lemma in texture. Lower glume linear, 6–6.5 mm long, 0.7–0.75 length of upper glume, chartaceous, much thinner on margins, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex attenuate. Upper glume lanceolate, 8.5–9 mm long, 0.9–1 length of adjacent fertile lemma, chartaceous, with hyaline margins, without keels, 3 -veined. Upper glume apex attenuate.

**Florets.** Fertile lemma lanceolate, 9–10 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 6–7 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.8–2 mm long. Ovary glabrous. Caryopsis with adherent pericarp, 3 mm long. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

**Festuca longiligula** S.J. Darbyshire. *Journ. Bot Res. Inst. Texas* 827 (2007).

**TYPE** from Mexico. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Coahuila; SO de Saltillo, ceja y ladera S de Sierra La Viga, subalpina, 3700 msnm, 22 Aug 1986, A. McDonald 2102 (HT: TEX; IT: WIS, XAL).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect or geniculately ascending, 70–90 cm long. Culm-internodes smooth, distally glabrous. Lateral branches lacking. Leaf-sheaths open for most of their length, smooth or scaberulous, glabrous on surface. Ligule an eciliate membrane, (2–)5–9.5 mm long, lacerate. Leaf-blades conduplicate, 0.8–1.5 mm wide. Leaf-blade venation comprising 9–11 vascular bundles, with 7–11 inner ridges, with subepidermal sclerenchyma attached to veins below or attached to veins above and below, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, rough abaxially, hirsute, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong, 10–22 cm long. Primary panicle branches 1(–2) -nate. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or ovate, laterally compressed, (6–)7.5–13 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1–1.5 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate or ovate, 3.4–5.5(–5.7) mm long, 0.75 length of upper glume, scarious, much thinner on margins, without keels, 1(–3) -veined. Lower glume lateral veins absent or obscure. Lower glume surface smooth or asperulous, rough above. Lower glume apex acuminate. Upper glume lanceolate or ovate, 4.5–6.5 mm long, 0.75–0.9 length of adjacent fertile lemma, scarious, with membranous margins, without keels, (1–)3(–5) -veined. Upper glume surface smooth or asperulous, rough above. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate or ovate, (5–)6–7 mm long, chartaceous, much thinner above, without keel, 5(–7) -veined, more than 3-veined. Lemma lateral veins obscure. Lemma surface smooth or scabrous, rough above. Lemma apex emarginate or obtuse or acute, mucicous or mucronate. Palea 5–7 mm long, 1 length of lemma, 2 -veined. Palea keels ciliate, adorned above, with 0.5–0.66 of their length adorned. Palea surface scaberulous. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3.3 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, 3.5–4.5 mm long. Hilum linear.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** Mexico. Northeast Mexico. Coahuila.

**Festuca longipanicula** I. Markgraf-Dannenberg. *Willdenowia*, 11(2): 204 (1981).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Turkey. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Turkey, Cubuk Baraj: Markgraf (Z holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. longus*, long; *panicula*, panicle. Panicle spreading.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Stolons present. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations extravaginal. Culms 40–60 cm long. Culm-internodes smooth. Leaf-sheaths open for most of their length, with flat margins, without keel, pubescent. Ligule an eciliate membrane, 0.2 mm long, scaberulous on abaxial surface. Leaf-blades filiform, flat or conduplicate, angular in section, 0.5–1 mm wide, light green. Leaf-blade venation comprising 5–7 vascular bundles, with 5 inner ridges, with 7–9 subepidermal sclerenchyma strands, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth, pilose, hairy adaxially. Leaf-blade apex obtuse or abruptly acute.

**Inflorescence.** Inflorescence a panicle. Peduncle smooth. Panicle open, linear, interrupted, loose, nodding, 7–15 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 7.6–9.4 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume lanceolate, 2.4–2.9 mm long, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous, rough above. Lower glume apex acute. Upper glume linear or lanceolate, 3.4–5.3 mm long, chartaceous, without keels, 3 -veined. Upper glume surface scabrous, rough above. Upper glume apex acute.

**Florets.** Fertile lemma elliptic or ovate, 5–6.9 mm long, 1.8–2.1 mm wide, chartaceous, mid-green, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acuminate, mucronate or awned, 1 -awned. Principal lemma awn 0.1–0.7 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Western Asia. Turkey.

**Festuca longipes** Stapf. *Dyer, Fl. Cap.* vii. 721. (1900).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from South Africa. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: ST: *MacOwan 1323*, South Africa: Coast Region: on stony slopes near Grahamstown

ST: *Flanagan 898*, South Africa: Komgha Div.: near Komgha

ST: *Buchanan 35*, South Africa: King Williamstown Div.: Amatola mountains

ST: *Ecklon s.n.*, South Africa: Stockenstrom Div.: on the Winter Berg

ST: *Baur 363*, South Africa: Eastern Region: Tembuland, Bazeia.

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Rhizomes elongated. Culms erect, 30–75 cm long. Leaf-sheaths open for most of their length, with flat margins. Ligule an eciliate membrane, 2–3 mm long. Leaf-blades 10–30 cm long, 2–6 mm wide.

**Inflorescence.** Inflorescence a panicle. Panicle open, corymbose, 15–35 cm long, with spikelets clustered towards branch tips. Primary panicle branches ascending, 2-nate, 5–25 cm long, bearing 1–6 fertile spikelets on each lower branch. Panicle branches stiff, flat. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 8–12 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4–5 mm long, 0.7–0.8 length of upper glume, chartaceous, without keels, 3-veined. Lower glume apex acute. Upper glume lanceolate, 5–6 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 7 mm long, chartaceous, without keel, 5-veined, more than 3-veined. Lemma apex acuminate, mucous. Palea 1 length of lemma, 2-veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG).** Continent. Africa.

**Country /Province /State.** Southern Africa. Mpumalanga, Free State, Lesotho, Eastern Cape.

**Festuca longivaginata** Tovar. *Mem. Mus. Hist. Nat. Javier Prado*, 16: 34 (1972).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: IT: *E. Cerrate 2474*, 15 Apr 1956, Peru: Ancash: Huasta Prov. (US-2207358).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. longus*, long; vagina, sheath; -ata, possessing. Leaf-sheaths long.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Culms erect, 60–65 cm long, 3–4-noded. Leaf-sheaths open for most of their length, puberulous. Ligule a ciliolate membrane, 1 mm long, truncate. Leaf-blades 20–40 cm long, 3–5 mm wide, 8–10 cm long at summit of culm. Leaf-blade surface puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 20–25 cm long. Primary panicle branches ascending, 6–12 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, scabrous.

**Fertile Spikelets.** Spikelets comprising 4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10–11 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, with lower narrower than upper, shorter than spikelet. Lower glume lanceolate, 4–4.2 mm long, 0.75 length of upper glume, chartaceous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume surface smooth or asperulous, rough above. Lower glume apex acuminate or setaceously acuminate. Upper glume lanceolate, 5–5.5 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume lateral veins prominent. Upper glume surface smooth or asperulous, rough above. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 6.5–7 mm long, chartaceous, without keel, 5-veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acuminate, mucous or mucronate. Palea 1 length of

lemma, 2 -veined. Palea keels ciliolate. Palea surface puberulous, hairy above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3.5 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Peru.

**Festuca loricata** (Griseb.) Pilger. *Bot. Jahrb.* 37:515 (1906).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Argentina. **Basionym or Replaced Name:** *Festuca dissitiflora* var. *loricata* Griseb., *Abh. Konigl. Ges. Wiss. Gottingen* 24: 287 (1879)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: ST: *Lorentz & Hieronymus* 68, 19–23 Mar 1873, Argentina: Salta: alrededores del Nevado del Castillo, 10000–15000' (CORD, GOET, LE, US-2875398b (fragm. ex GOET)).

ST: *P.G. Lorentz & G. H.E.Hieronymus* 736, 10–17 Jan 1874, Argentina: Tucuman: Ciïnega, Sierra de Tucuman (GOET; IST: US-2875398 (fragm. ex GOET)).

**Illustrations (Journals):** *Ruizia* (13:97, Fig10e-f (1993)).

**Derivation** (Clifford & Bostock 2007): *L. lorica*, corselet; -ata, resembling. The rugose lower glume resembles the corselet of a Mediaeval soldier.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 50–80 cm long, 1 -noded. Culm-internodes smooth. Leaf-sheaths tubular for much of their length, smooth or antrorsely scabrous, glabrous on surface. Ligule a ciliolate membrane, 0.5 mm long. Leaf-blades conduplicate or involute, 10–35 cm long, 2–3 mm wide, coriaceous, stiff. Leaf-blade surface puberulous, hairy adaxially. Leaf-blade apex obtuse or abruptly acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 17–25 cm long. Primary panicle branches ascending or spreading, 5–11 cm long. Panicle branches smooth or scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, smooth or scaberulous.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 10–12 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes smooth or scaberulous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume lanceolate, 4.5–5.3 mm long, 0.75–0.9 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein smooth or scaberulous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5–7 mm long, 0.8–1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein smooth or scaberulous. Upper glume lateral veins obscure. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 6–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface pubescent, hairy above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.5–1 mm long overall. Palea 2 -veined. Palea keels scabrous. Palea surface puberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America, Southern South America. Peru.

**TDWG4.** Salta, Tucuman.

**Festuca luciarum** Connor. *N. Z. J. Bot.* 36:343 (1998).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), E.Edgar, & H.Connor, *Flora of New Zealand Gramineae* 5 (2000).

**TYPE** from New Zealand. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: New Zealand: Maungapohatu, Urewera, 20–23 Jan 1932, *L.M. Cranwell* (HT: AK-200090).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of Lucy May Cranwell Smith (1907–1992) and Lucy Beatrice Moore (1906–1987) New Zealand botanists.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Stolons present. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations extravaginal. Culms erect or geniculately ascending, 4–15 cm long. Culm-internodes distally glabrous. Leaf-sheaths 2–5 cm long, wider than blade at the

collar, ribbed, glabrous on surface. Leaf-sheath oral hairs ciliate. Leaf-sheath auricles erect, 0.3–0.4 mm long. Ligule an eciliate membrane, 0.3–0.4 mm long. Leaf-blades filiform, involute, angular in section, 3–12 cm long, 0.6–1 mm wide, glaucous. Leaf-blade venation comprising 5–7 vascular bundles, with 7–9 subepidermal sclerenchyma strands. Leaf-blade surface puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle, comprising 5–20 fertile spikelets. Panicle open, 3–7 cm long. Primary panicle branches appressed or ascending or spreading, 1-nate, 2–5 cm long, bearing 1–4 fertile spikelets on each lower branch, bearing spikelets almost to the base. Panicle axis 4–7 noded, smooth. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, scaberulous.

**Fertile Spikelets.** Spikelets comprising 4–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 8–12 mm long, 5–7 mm wide, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 0.75–1.5 mm long, scaberulous, glabrous or pubescent. Floret callus 0.2–0.3 mm long, pilose.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.6–4 mm long, 0.66–0.75 length of upper glume, membranous, 1-keeled, 1-veined. Lower glume lateral veins absent. Lower glume surface pilose. Lower glume margins ciliate. Lower glume hairs 0.2–0.5 mm long. Lower glume apex acute or acuminate. Upper glume oblong, 3–6 mm long, 0.6–1 length of adjacent fertile lemma, membranous, 1-keeled, 3-veined. Upper glume primary vein smooth or scaberulous. Upper glume surface pilose, hairy at apex. Upper glume margins ciliate. Upper glume hairs 0.2–0.5 mm long. Upper glume apex acute or acuminate.

**Florets.** Fertile florets with the lowest dissimilar. Lowest fertile lemma hairy (at tip), muticous. Fertile lemma lanceolate, 5–6 mm long, membranous, glaucous or purple, suffused with last colour, without keel, rounded except near apex, 5-veined, more than 3-veined. Lemma surface scaberulous, glabrous or puberulous. Lemma margins involute. Lemma apex acute, muticous or mucronate or awned, 1-awned. Principal lemma awn 0–1 mm long overall. Palea 5.5–6.5 mm long, 2-veined. Palea keels scabrous, adorned above, with 0.33 of their length adorned. Palea surface puberulous, hairy on back or on margins, hairy above. Palea apex dentate, 2-fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, 1–1.4 mm long, membranous, glabrous. Anthers 3, 2–2.5 mm long. Ovary glabrous or pubescent on apex. Caryopsis with adherent pericarp, 3 mm long, glabrous or hairy at apex. Embryo 0.33 length of caryopsis. Hilum linear, 0.66 length of caryopsis.

**Distribution (TDWG). Continent.** Australasia.

**Country /Province /State.** New Zealand. New Zealand North I.

**Festuca lucida** Stapf. *Hook. f. Fl. Brit. Ind.* vii. 355. (1896).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), N.L.Bor, *Grasses of Burma, Ceylon, India and Pakistan* (1960).

**TYPE** from India. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: T: *J.F.Duthie 14481*, 1 May 1894, N.India: N.W.Himalaya: Jaunsar: Karambar Peak: elev.9000' (LE).

HT: *Duthie 14481*, 3 May 1894, North. India: Jaunsar, 9000 ft. (K; IT: LE).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. clear. Very different from another species of the same genus growing in a similar habitat.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms 60–100 cm long, 2-noded. Lateral branches lacking. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 5 mm long, lacerate. Leaf-blades 15–30 cm long, 12–18 mm wide, glaucous. Leaf-blade surface glabrous. Leaf-blade margins scaberulous. Leaf-blade apex acuminate.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 15–18 cm long. Primary panicle branches 5–10 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 8–12 mm long.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–15 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3–5 mm long, 0.75 length of upper glume, hyaline, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4–6 mm long, 0.7–0.8 length of adjacent fertile lemma, hyaline, without keels, 3-veined. Upper glume apex acute, mucronate.

**Florets.** Fertile lemma oblong, 7–8 mm long, membranous, much thinner above, much thinner on margins, without keel, 5–7 -veined, more than 3-veined. Lemma apex obtuse or acute, mucronate. Palea 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Tropical Asia.

**Country /Province /State. Indian Subcontinent.** West Himalaya.

**TDWG4.** Uttah Pradesh. Himachal Pradesh.

**Festuca lugens** (Fourn.) Hitchcock ex Herndndez Xolocot. *Bol. Soc. Bot. Mexico*, No. 23, 165 (1958).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Mexico. **Basionym or Replaced Name:** *Uniola lugens* E. Fourn., *Mexic. Pl.* 2: 123 (1886)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *Liebmann 502*, Mexico: Oaxaca: Cumbre de Estepa (C; ILT: C). LT designated by ?; cited by M. Gonzalez L., *Biotam n.s.* 12: 57 (2001).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. lugeo*, mourn. The spikelets are dull in color.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms 100–200 cm long. Lateral branches lacking. Ligule an eciliate membrane. Leaf-blades 20–60 cm long, 3–5 mm wide. Leaf-blade surface scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 20 cm long. Panicle branches flexuous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 12–13 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes eventually visible between lemmas, smooth.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, 2–3 mm long, 0.5 length of upper glume, membranous, without keels. Lower glume apex acute. Upper glume lanceolate, 4–6 mm long, 0.5–0.66 length of adjacent fertile lemma, membranous, without keels. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 8–9 mm long, membranous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn subapical, 0.5–1 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** North America, South America.

**Country /Province /State. Mexico.** Central Mexico, Northeast Mexico, Gulf (Mexico), Southwest Mexico, Southeast Mexico. **Mesoamerica.** Honduras.

**TDWG4.** Distrito Federal, Mexico State, Morelos, Puebla, Tlaxcala. Chihuahua, Guanajuato, Hidalgo, Queretaro, Tamaulipas. Veracruz. Jalisco, Michoacan, Nayarit, Oaxaca. Chiapas.

**Festuca macedonica** Vetter. *Engl. Jahrb.* lxi. 547 (1939).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Greece. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Greece, Pangaongebirge: Rechingen.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. -ica*, belonging to. From Macedonia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 15–30 cm long. Culm-internodes smooth or scaberulous. Leaf-sheaths open for most of their length, with 0.2–0.5 of their length closed, with flat margins, smooth or scaberulous, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 0.5–0.7 mm wide, stiff, glaucous, pruinose. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, rough adaxially. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 4–9.5 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–8.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.2–5.6 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4.9–6.5 mm long, chartaceous, glaucous or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 4–6 mm long overall, 1 length of lemma. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Dissemínule comprising a caryopsis and palea.

**Distribution (TDWG).** Continent. Europe.

**Region.** Southeastern Europe.

**Country /Province /State.** : Greece.

**Festuca macra** (Stapf) E.B.Alekseev. *Bot. Zhurn.*, 71(8): 1116: (1986).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from South Africa. **Basionym or Replaced Name:** *Festuca caprina* var. *macra* Stapf, *Fl. Cap.* 7: 720 (1900)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Kalahari Region: Orange Free State: on the Witte Bergen, near Harrismith, *Buchanan* 262.

**Illustrations (Books):** G.V.Pope et al., *Flora Zambesiaca* 10 (1(1971):58, t. 16).

**Derivation** (Clifford & Bostock 2007): L. thin. Leaf-blades narrow.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with soft dead sheaths. Culms 30–90 cm long, 2 -noded. Culm-internodes smooth. Leaf-sheaths tubular for much of their length, with 0.75 of their length closed. Ligule an eciliate membrane. Leaf-blades filiform, involute, angular in section, 4–25 cm long, 0.5–1.5 mm wide. Leaf-blade midrib keeled beneath. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 5 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scaberulous, rough abaxially. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 5–20 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6(–9) fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10–15 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 4.5–5 mm long, chartaceous, yellow or purple, without keel, 5 -veined, more than 3-veined. Lemma apex awned, 1 -awned. Principal lemma awn 1.5–3.5 mm long overall. Palea 1 length of lemma, 2 -veined. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.6–2.2 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG).** Continent. Africa.

**Country /Province /State.** Southern Africa. Free State.

**Festuca macrophylla** Hochst. ex A. Rich. *Tent. Fl. Abyss.* ii. 434. (1850).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Ethiopia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *Schimper* 688, 16 Feb 1840, Ethiopia: Simensis Silke Mt., ad latera declivia (LE (3 sheets)).



**Illustrations (Books):** S.Phillips, *Poaceae* (Gramineae) in I.Hedberg & S.Edwards, *Flora of Ethiopia and Eritrea* (1995) (25 & 26, Fig 11 & 12).

**Derivation** (Clifford & Bostock 2007): Gk. makros, large; phyllon, leaf. Leaf-blades large.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms erect, 50–100 cm long, wiry. Leaf-sheaths smooth, glabrous on surface. Ligule an eciliate membrane. Leaf-blades aciculate or filiform, conduplicate, 0.5–1 mm wide, stiff. Leaf-blade venation comprising 9 vascular bundles, with 7–11 inner ridges, with sclerenchyma strands below veins or above all veins, with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, 7–25 cm long. Primary panicle branches appressed or ascending. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets cuneate, laterally compressed, 12.5–14 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3–6 mm long, 0.5–0.66 length of upper glume, chartaceous, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume lanceolate or oblong, 4.5–7 mm long, 0.75–1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate or oblong, 6–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex attenuate, awned, 1 -awned. Principal lemma awn 1.5–5 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.8–4 mm long. Ovary with a few apical hairs. Caryopsis with adherent pericarp, hairy at apex. Hilum linear.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** Northeast tropical Africa. Ethiopia (inc. Eritrea).

**Festuca madida** Connor. *N. Z. J. Bot.* 36:345 (1998).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), E.Edgar, & H.Connor, *Flora of New Zealand Gramineae* 5 (2000).

**TYPE** from New Zealand. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: margins of bog in tussock, Mokai Patea, Puahine Mts., ca. 5000 ft; Feb 1951, *A.P.Druce* (HT:CHR-74284).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. wet site. Growing in swamps.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, culms solitary or caespitose. Butt sheaths red, persistent and investing base of culm, with fibrous dead sheaths. Basal innovations extravaginal. Culms slender, 6–45 cm long. Culm-internodes smooth. Leaf-sheaths 3–10 cm long, wider than blade at the collar, ribbed, glabrous on surface. Leaf-sheath oral hairs ciliate. Leaf-sheath auricles erect, 0.7–1.7 mm long. Ligule an eciliate membrane, 0.7–1.7 mm long. Leaf-blades filiform, involute, angular in section, 4–10(–20) cm long, 0.3–0.4 mm wide. Leaf-blade venation comprising 3–5 vascular bundles, with 5–7 subepidermal sclerenchyma strands. Leaf-blade surface ribbed, puberulous or pilose, hairy adaxially (puberulous) or abaxially (pilose).

**Inflorescence.** Inflorescence a panicle, comprising 3–6 fertile spikelets. Panicle open, 2–3.5 cm long. Primary panicle branches ascending or spreading, 1–2 -nate, 1.5–2.5 cm long, bearing 1–2 fertile spikelets on each lower branch, bearing spikelets almost to the base. Panicle axis 3–6 noded, scaberulous. Panicle branches scaberulous, with prominent pulvini. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, scaberulous.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 6–9 mm long, 2–3 mm wide, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 0.8–1.1 mm long, pubescent. Floret callus 0.1–0.2 mm long, glabrous, disarticulating transversely.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.5–3.5 mm long, 0.75 length of upper glume, membranous, much thinner on margins, 1-keeled, 1 -veined. Lower glume primary vein smooth or scaberulous. Lower glume lateral veins absent. Lower glume margins ciliate. Lower glume apex acute. Upper glume oblong, 3–5 mm long, 0.75–1 length of adjacent fertile lemma, membranous, with hyaline margins, 1-keeled, 3 -veined. Upper glume primary vein smooth or scaberulous. Upper glume margins ciliate. Upper glume apex emarginate or acute.

**Florets.** Fertile lemma lanceolate, 4–5 mm long, membranous, much thinner on margins, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous. Lemma apex dentate, 2 -fid, acute, awned, 1 -awned. Principal lemma awn from a sinus, 0.5–2 mm long overall. Palea 4–5.5 mm long, 2 -veined. Palea keels scabrous, adorned all along. Palea surface puberulous, hairy on back or on margins, hairy all along or above. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, 0.6–1 mm long, membranous, glabrous or ciliate, 2-toothed. Anthers 3, 0.5–0.9 mm long or 1.2–1.6 mm long, retained within floret or eventually exerted, purple. Ovary glabrous or pubescent on apex. Caryopsis with adherent pericarp, 2.5–3 mm long, glabrous or hairy at apex. Embryo 0.2 length of caryopsis. Hilum linear, 1 length of caryopsis.

**Distribution (TDWG). Continent.** Australasia.

**Country /Province /State.** New Zealand. New Zealand North I, New Zealand South I, Campbell Is.

**Festuca magellanica** Lam. *Encyc.* ii. 461; *Tabl.* i. 189. (1788).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Chile. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Commerson s.n.*, Dec. 1767 - Jan. 1768 [Oct. 1767 P photo], Straits of Magellan (P (US-sn. fragm. & photo ex P); IT: Montp. (US fragm. ex Montp.), CONC(photo)).

IT: *P. Commerson*, Chile (US-91403 (fragm.)).

**Illustrations (Books):** M.N.Correa, *Flora Patagonica* Parte III, Gramineae (1978) (103, Fig. 61).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From the Straits of Magellan.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 4–30 cm long. Culm-internodes distally glabrous or pubescent. Lateral branches lacking. Leaf-sheaths tubular for much of their length, with 0.5–0.66 of their length closed, glabrous on surface or pubescent. Ligule an eciliate membrane, 0.3–0.5 mm long. Leaf-blades filiform, 1.5–12 cm long, 0.5–0.8 mm wide, firm. Leaf-blade surface glabrous or pubescent. Leaf-blade apex obtuse or abruptly acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 3.5–6 cm long. Primary panicle branches appressed. Panicle branches smooth or scaberulous, glabrous or puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3–4 mm long, 0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface smooth or asperulous. Lower glume apex acute. Upper glume lanceolate, 4–5 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface smooth or asperulous. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 4–6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface smooth or scabrous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2–4 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Palea surface scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 0.6–1.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear, 0.66 length of caryopsis.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** South America, Antarctica.

**Country /Province /State.** Southern South America. Argentina South, Chile Central, Chile South. Subantarctic islands. Falkland Is (Malvinas).

**TDWG4.** Catamarca, La Rioja, Mendoza. Cordoba. Chubut, Neuquén, Río Negro, Santa Cruz, Tierra del Fuego. Chiloe, Aisen, Magallanes. Coquimbo, Santiago, Maule, Biobio, La Araucania. Aisen, Magallanes.

**Festuca magensiana** Potztl. *Willdenowia*, ii. 166 (1958).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Chile. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: PT: *Sillard s.n.*, 16 Mar 1956, Chile: Chabunco, ca. 35 km von Punta Arenas, Fundo Los Robles, Weg nach Norden (B; IT: CONC, HIP).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating connection. In honor of Otto Magens (fl.1958–59) Punta Arenas.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 50–90 cm long, 2–3 -noded, with 0.1 of their length below uppermost node. Culm-internodes 4–12 cm long, smooth. Lateral branches lacking. Leaf-sheaths striately veined, smooth or scaberulous, glabrous on surface. Ligule an eciliate membrane, 0.2–0.5 mm long, erose, truncate. Leaf-blades filiform, conduplicate, 8–15 cm long, 0.8–1 mm wide. Leaf-blade venation comprising 5 vascular bundles, with 5 inner ridges, with 7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface glabrous. Leaf-blade apex acuminate.

**Inflorescence.** Inflorescence a panicle, comprising 10–15 fertile spikelets. Panicle contracted, linear, 3–11 cm long, bearing few spikelets. Primary panicle branches bearing 1–3 fertile spikelets on each lower branch. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–10 mm long, 2–2.3 mm wide, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1–2 mm long, pubescent.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.5–3.4 mm long, 0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.3–5.5 mm long, 0.8–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface scabrous, rough above. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 4.8–6.8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface pilose, hairy above. Lemma margins ciliolate. Lemma apex acuminate. Palea 0.9 length of lemma, 2 -veined. Palea apex ciliate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, 0.3 mm long. Anthers 3, 1.5–1.7 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG), Continent.** South America.

**Country /Province /State.** Southern South America. Chile South. Magellanes.

**Festuca magniflora** E.B. Alekseev. *Bot. Zhurn.*, 69(3): 351 (1984).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Argentina. **Basionym or Replaced Name:** *Festuca pallescens* var. *grandiflora* Parodi, *Rev. Arg. Agron.* 20:211 (1953). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: : Based on *F. pallescens* var. *grandiflora* ; Argentina, Corcovado: Illin in Parodi 1879.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. magnus, large; flos, flower. Spikelets large.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 25–80 cm long. Lateral branches lacking. Leaf-sheaths open for most of their length, smooth or scaberulous. Ligule a ciliolate membrane, 0.5 mm long, glabrous on abaxial surface or pubescent on abaxial surface. Leaf-blades filiform, conduplicate, 5–35 cm long, 1–1.5 mm wide, herbaceous, glaucous. Leaf-blade venation comprising 11 vascular bundles, with 8 inner ridges, with 17 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer. Leaf-blade surface glabrous. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, 5–15 cm long. Panicle axis scaberulous. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, scaberulous.

**Fertile Spikelets.** Spikelets comprising 5–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 19–22.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1.5–2.5 mm long.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 10–12 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein smooth or scabrous. Lower glume lateral veins absent. Lower glume surface smooth or asperulous, rough at apex. Lower glume apex acuminate. Upper glume lanceolate, 12–15 mm long, 0.66–0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein smooth or scabrous. Upper glume surface smooth or asperulous, rough at apex. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 9–15 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough below. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–3 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels ciliolate. Palea surface scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 4.5–5 mm long. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear, 0.75 length of caryopsis.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Southern South America. Argentina South.

**TDWG4.** Chubut, Neuquén.

### **Festuca mairei** St.- Yves. *Candollea*, i. 45 (1922).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Morocco. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *R. Maire s.n.*, 12 Jul 1921, Maroc: Grand Atlas, Ourika, iboulis porphyriques et granitiques entre Abessen et le Tizi-Tachdirt, 2500–2600 m (G (specimen mounted on the right-hand side); ILT: G (specimen mounted on the left-hand side). LT designated by Cebolla Lozano et al., *Fontqueria* 48: 81–82 (1997).

**Illustrations (Books):** No illustration found (BKS).

**Images:** R.Darke, *Ornamental Grasses* (2004);, R.Darke, *The Encyclopaedia of Grasses for Liveable Landscapes* (2007);

**Derivation** (Clifford & Bostock 2007): in honor of Reni Charles Joseph Ernest Maire (1878–1949) French botanist in Algeria.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 50–100 cm long. Lateral branches lacking. Leaf-sheaths smooth, glabrous on surface. Ligule a ciliolate membrane, 2 mm long, lacerate, truncate. Leaf-blades flat or involute, 30–50 cm long, 3–5 mm wide. Leaf-blade midrib conspicuous. Leaf-blade venation with 7–9 secondary veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous, rough adaxially, glabrous. Leaf-blade margins scabrous. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, 15–20 cm long. Primary panicle branches 1–2 -nate, bearing spikelets almost to the base. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 0.8 mm long, smooth.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4–4.5 mm long, 1 length of upper glume, scarios, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface asperulous, rough above. Lower glume apex acute. Upper glume lanceolate, 4–4.5 mm long, 0.7–0.8 length of adjacent fertile lemma, scarios, without keels, 3 -veined. Upper glume surface asperulous, rough at apex. Upper glume apex obtuse.

**Florets.** Fertile lemma lanceolate, 5.5–6 mm long, chartaceous, keeled, lightly keeled, 5 -veined, more than 3-veined. Lemma surface asperulous. Lemma apex acute, muticous or mucronate. Palea 2 -veined. Palea keels scabrous. Palea surface scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3 mm long. Ovary glabrous. Caryopsis with adherent pericarp, oblong, sulcate on hilar side. Hilum linear, 0.5 length of caryopsis.

$2n = 28$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** Northern Africa. Algeria, Morocco.

### **Festuca makutrensis** Zapal. *Kosmos*, v. 782–786 (1910).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: *Exempla numerosa in colli Makutra dist. Brody ad fines septemtrionales Podoliae sitc.*, 11 Jun 1910, *M. Raciborski s.n.*

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Mt. Makutra, Galicia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 20–50 cm long. Culm-internodes scaberulous, distally glabrous. Leaf-sheaths open for most of their length, with 0 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades deciduous at the ligule, filiform, conduplicate, elliptic in section, 0.3–0.5 mm wide, glaucous. Leaf-blade venation comprising 5–7 vascular bundles, with 3–5 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 4.5–7 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5–6.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.7–4 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4–4.5 mm long, chartaceous, mid-green or purple, without keel, 5 -veined, more than 3-veined. Lemma margins ciliate. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2–2.2 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe, Eastern Europe.

**Country /Province /State.** : Germany, Poland. Central European Russia, Northwest European Russia, Ukraine.

**TDWG4.**

**Festuca maleshevica** Velchev & P.Vassil. *Phytologia Balcan.* 8(2): 187 . (2002).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Bulgaria. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Bulgaria, Mt. Maleshevska: Velchev & Vassilev (SOM holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. -ica*, belonging to. From Maleshevska Planina, a mountain range on the Bulgarian-Serbian border.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 50–90 cm long. Leaf-sheaths open for most of their length, with 0.33 of their length closed, hispid. Leaf-sheath auricles erect. Ligule a ciliolate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 0.6–1 mm wide. Leaf-blade venation comprising 7–9 vascular bundles, with 3–7 inner ridges, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with unevenly thickened subepidermal sclerenchyma layer on the underside.

**Inflorescence.** Inflorescence a panicle. Peduncle scaberulous above. Panicle contracted, linear or oblong, interrupted, 9–12 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–9 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.5–11 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4–4.7 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 4.7–6.2 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface glabrous or puberulous. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2.5–3 mm long overall, 0.5 length of lemma. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Vegetative proliferation absent, or occurs.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southeastern Europe, Eastern Europe.  
**Country /Province /State.** Ukraine.

**Festuca marcopetrii** J.F. Veldkamp. *Blumea*, 41(1): 219 (1996).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, J.F.Veldkamp, Poaceae ms (*Flora Malesiana*).

**TYPE** from Papua New Guinea. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *M.J.E. Coode & P. Stevens NGF 46318*, 7 May 1971, Papua New Guinea: New Guinea, Central: Scratchley, -8.4 S Lat, 147.3 E Long, 3353 m (L; IT: A, BRI, CANB, K).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of Mark James Elder Coode (1937-) English botanist and Peter Francis Stevens (1944-) first collectors of the species.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Culms erect, 30–45 cm long. Lateral branches lacking. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 14–15 cm long, 0.6–0.85 mm wide. Leaf-blade venation comprising 5–7 vascular bundles, with 5–7 inner ridges. Leaf-blade surface glabrous.

**Inflorescence.** Inflorescence a panicle. Peduncle glabrous. Panicle open, elliptic, equilateral, 8 cm long. Primary panicle branches 2.5–4 cm long, bearing 4–6 fertile spikelets on each lower branch. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 1(–2) fertile florets, with a barren rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets, or of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 8–8.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate or elliptic, 6.5–7 mm long, 0.9 length of upper glume, chartaceous, without keels, 3 -veined. Lower glume apex acute. Upper glume lanceolate or elliptic, 7.2–7.8 mm long, 0.95–1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 7.25–8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 6.5–7.5 mm long overall, 0.87–0.93 length of lemma. Palea 1 length of lemma, 2 -veined.

**Flower and Fruit.** Anthers 3, 2–2.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Tropical Asia.

**Country /Province /State.** Papuaasia. New Guinea.

**Festuca marginata** (Hack.) Richt. *Pl. Eur.* 1:96 (1890).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**Basionym or Replaced Name:** *Festuca ovina* var. *marginata* Hack., *Monogr. Festuc. Eur.* 108 (1882)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *F.Heriband*, Gallia: Clermont-Ferrand (LE).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. margo*, border; *-ata*, possessing. Leaf-blades or lemma with hairs in their margins or the margins otherwise conspicuous.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 25–40 cm long. Leaf-sheaths open for most of their length, with 0.1–0.33 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect. Ligule a ciliolate membrane. Leaf-blades filiform, conduplicate, 0.7–0.8 mm wide, without exudate or pruinose. Leaf-blade venation comprising 7 vascular bundles, with 3 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 6–9 cm long. Primary panicle branches moderately divided. Panicle branches glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6–6.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.25–3.8 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4–4.6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.7–1 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe and Southwestern Europe.

**Country /Province /State.** : Belgium. : France, Spain.

### **Festuca markgrafiae** J.F. Veldkamp. *Blumea*, 41(1): 220 (1996).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, J.F.Veldkamp, Poaceae ms (*Flora Malesiana*).

**TYPE** from Papua New Guinea. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Papua New Guinea: Central Prov.: Albert Edward, 3680 m, May-Jul 1933, *Brass 4204* (HT: US).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Friedrich Markgraf (1897–1987) German botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Culms erect, 30–70 cm long. Culm-internodes distally glabrous. Lateral branches lacking. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 6–19 cm long, 0.25–0.65 mm wide. Leaf-blade venation comprising 3–5 vascular bundles, with 3–5 inner ridges. Leaf-blade surface glabrous.

**Inflorescence.** Inflorescence a panicle. Peduncle glabrous. Panicle open, elliptic, nodding, 5–14 cm long. Primary panicle branches 1.5–7 cm long, bearing 1–6 fertile spikelets on each lower branch. Panicle axis smooth. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 8–11.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate or elliptic, 3.5–6.5 mm long, 0.5–0.66 length of upper glume, chartaceous, without keels, 3 -veined. Lower glume apex acute. Upper glume lanceolate or elliptic, 6.3–9.5 mm long, 0.75–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 8–10.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface asperulous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.6–4.5 mm long overall, 0.12–0.57 length of lemma. Palea 0.8–1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1–1.6 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Tropical Asia.

**Country /Province /State.** **Papuasiasia.** New Guinea West Papua (Irian Jaya). New Guinea.

### **Festuca mathewsii** (Hack.) Cheeseman. *Man. N. Zealand Fl. ed. 2*, 205 (1925).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), E.Edgar, & H.Connor, *Flora of New Zealand Gramineae 5* (2000).

**TYPE** from New Zealand. **Basionym or Replaced Name:** *Festuca ovina* subsp. *mathewsii* Hack., *Trans. N. Z. Inst.* 35:385 (1903). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: New Zealand, Otago, Mt. Bonpland: Mathews (W lecto).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Andrew Mathews (- 1841) who collected in Peru.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Culms 30–60 cm long, 2 -noded, with 0.5 of their length below uppermost node. Lateral branches lacking. Leaf-sheaths open for most of their length, smooth. Ligule an eciliate membrane. Leaf-blades conduplicate, angular in section, 20–30 cm long, 1–1.5 mm wide. Leaf-blade venation with 5 secondary veins. Leaf-blade surface ribbed, puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong or ovate, 7–15 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 12–18 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 0.5 length of upper glume, membranous, without keels. Lower glume apex acute. Upper glume lanceolate, 0.7–0.8 length of adjacent fertile lemma, membranous, without keels. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5–6 mm long, membranous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1–2 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG).** Continent. Australasia.

**Country /Province /State.** New Zealand. New Zealand South I.

**Festuca mazzettiana** E.B.Alekseev. *Bull. Mosk. Obshch. Ispyt. Prir., Biol.*, 82(3): 99 (1977).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. **Basionym or Replaced Name:** *Festuca mairei* Hack. ex Hand.-Mazz., *Symb. Sin.* 7(5): 1288–1289 (1936)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: ST: *Maire E. 741*, 1904–1910, China: Prov.Yunnan (LE). = PT *Festuca mazzettiana* E.Alexeev ii 1985.

LT: *Ducloux 867*, 3 Jun 1908, China: Yunnan: talus des Uzuru (W). LT designated by Alexeev, *Bull Moskovsk. Obsch. Isp. Prir., Otd. Biol.* 82: 95–102 (1977).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig.331).

**Derivation** (Clifford & Bostock 2007): L. *-ana*, indicating connection. In honor of Heinrich Handel-Mazzetti (1882–1940) Austrian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations extravaginal. Culms geniculately ascending, 25–65 cm long, 1–2 mm diam. Culm-internodes smooth, distally glabrous. Leaf-sheaths loose, longer than adjacent culm internode. Leaf-sheath auricles falcate, 1 mm long. Ligule an eciliate membrane, 0.5–1 mm long, lacerate. Leaf-blades 10–17 cm long, 3–4 mm wide. Leaf-blade venation comprising 13–15 vascular bundles. Leaf-blade margins scaberulous. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear. Primary panicle branches appressed, 2 -nate, bearing 2–3 fertile spikelets on each lower branch. Panicle axis scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 0.5–5 mm long, scabrous.

**Fertile Spikelets.** Spikelets comprising (3–)5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 15 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 2 mm long, eventually visible between lemmas, smooth.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet, similar to fertile lemma in texture. Lower glume linear, 6 mm long, 0.75–1 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface asperulous, rough at apex. Lower glume apex acuminate. Upper glume lanceolate, 5 mm long, 0.66–1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface asperulous, rough at apex. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6–9 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins with distinct primaries but obscure intermediates. Lemma surface asperulous, rough on veins. Lemma apex acute, awned, 1 -awned. Principal lemma awn 10–16 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, 1 mm long, membranous. Anthers 3, 3 mm long. Ovary glabrous. Caryopsis with adherent pericarp, 3 mm long. Hilum linear.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Sichuan, Yunnan.



**Festuca mekiste** W. D. Clayton. *Kew Bull.* xxiii. 293. (1969).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Kenya. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: PT: *T.D.Maitland 1336*, Feb. 1931, Cameroons: Mokauda in woodland: alt. 8000' (LE).

HT: *Bogdan 5390*, Kenya (K; IT: EA).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. mekistos, tallest. Culms tall.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Rhizomes elongated. Culms 100–200 cm long. Culm-nodes purple. Leaf-sheaths smooth, glabrous on surface. Ligule an eciliate membrane. Leaf-blades flat, 25–40 cm long, 7–17 mm wide.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 20–30 cm long, with spikelets clustered towards branch tips. Primary panicle branches spreading. Panicle branches flexuous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10–12 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4–5.5 mm long, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5–7 mm long, 0.8–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 6–8 mm long, chartaceous, much thinner above, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex dentate, 2 -fid, acute, awned, 1 -awned. Principal lemma awn subapical, 9–15 mm long overall. Palea 1.1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–4 mm long. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** West-central tropical Africa, Northeast tropical Africa, East tropical Africa. Cameroon, Annobon, Principe & Sao Tome, Bioko. Ethiopia (inc. Eritrea). Kenya.

**Festuca meyenii** (St.-Yves) E.B. Alekseev. *Bot. Zhurn.*, 69(3): 348: (1984).

Regarded by K as a synonym (*F. orthophylla*).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. **Basionym or Replaced Name:** *Festuca orthophylla* var. *meyenii* St.-Yves, *Candollea* 3: 198 (1927)

. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: LT: *Meyen s.n.*, Apr 1831, Peru: ad pedem M. igni. Arequipa, 13000 ft (B). LT designated by Alexeev, *Bot Zhurn.* 69: 348 (1984).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Franz Julius Ferdinand Meyen (1804–1840) German physician, traveller and plant collector.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Peru.

**Festuca michaelis** Cebolla, Rivas Ponce. *Flora Medit.* 11: 363 (2001).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Spain. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Spain, Torrelaguna: Cebolla & Rivas Ponce (MA holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. of Michael. From the island of St. Michael, Azores, Portuguese islands in the Atlantic.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 20–60 cm long, 2 -noded, with 0.5 of their length below uppermost node. Leaf-sheaths tubular for

much of their length, with 0.5 of their length closed, smooth. Leaf-sheath oral hairs ciliate. Leaf-sheath auricles erect, 0.3 mm long. Ligule a ciliolate membrane, 0.2 mm long. Leaf-blades filiform, conduplicate, elliptic in section, 2–15 cm long, 0.5–1.5 mm wide. Leaf-blade venation comprising 7 vascular bundles, with 3 inner ridges, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, rough on both sides, pubescent, hairy adaxially. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle, comprising 7–44 fertile spikelets. Panicle open, lanceolate or oblong, 7–15 cm long. Primary panicle branches 1-nate. Panicle axis 7–15 noded, scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 6–8.5 mm long.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 6–8.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2–3 mm long, 0.66 length of upper glume, chartaceous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.4–4.8 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate or oblong, 4.2–6 mm long, chartaceous, without keel, 5-veined, more than 3-veined. Lemma surface asperulous, rough above. Lemma apex acute, muticous or mucronate. Palea 4–5 mm long. Palea keels ciliolate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3 mm long. Ovary glabrous.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : France.

### **Festuca minutiflora** Rydb. *Bull. Torr. Bot. Club*, 1905, 608. (1905).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from USA. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *C. F. Baker*, 13 Jul 1896, USA: Colorado: Cameron Pass, 10,000ft (NY; US-79639 (fragm. ex NY)).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (435).

**Derivation** (Clifford & Bostock 2007): *L. minutus*, very small; flos, flower. Spikelets or florets very small.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Basal innovations intravaginal. Culms slender, 10–15 cm long. Leaves mostly basal. Leaf-sheaths 2–4 cm long, smooth. Ligule an eciliate membrane, 0.75 mm long, obtuse. Leaf-blades involute, 1–10 cm long, 0.5 mm wide, flaccid.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, 2–4 cm long. Primary panicle branches appressed. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2–2.5 mm long, 0.5 length of upper glume, chartaceous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or ovate, 2.5–3 mm long, 1.1–1.5 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate or oblong, 2 mm long, chartaceous, purple (above), without keel, 5-veined, more than 3-veined. Lemma apex acute, awned, 1-awned. Principal lemma awn 1–1.5 mm long overall. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.**  $2n = 28$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** Subarctic America, Western Canada, Northwest USA, Southwestern USA, South-central USA. Alaska, Yukon. Alberta, British Columbia. Colorado, Montana, Oregon, Wyoming. California. New Mexico.

### **Festuca monantha** Stapf. *Bull. Misc. Inform. Kew* 1899: 117 (1899).

**TYPE** from New Guinea. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: T: *A. Giulianetti s.n.*, 1896, Papua New Guinea: Central New Guinea: Scratchley, 3719 m (L).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 25–50 cm long. Lateral branches lacking. Leaf-sheath auricles absent. Ligule an eciliate membrane. Leaf-blades filiform, involute, 4–11 cm long, 0.5–0.85 mm wide. Leaf-blade venation comprising 5–7 vascular bundles, with 5–7 inner ridges. Leaf-blade surface ribbed.

**Inflorescence.** Inflorescence a panicle. Peduncle pubescent above. Panicle open, elliptic, 5–10 cm long. Primary panicle branches 2–3 cm long, bearing 4–5 fertile spikelets on each lower branch. Panicle axis pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 1–3 fertile florets, with diminished florets at the apex. Spikelets of 1 fertile floret with or without additional sterile florets, or of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 5.5–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes pubescent.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate or elliptic, 3.9–5 mm long, 0.75–0.85 length of upper glume, chartaceous, without keels, 3 -veined. Lower glume apex acute. Upper glume lanceolate or elliptic, 4.5–6.5 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 5–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn straight, 1.75–7.5 mm long overall, 0.45–1.1 length of lemma. Palea 5–7 mm long, 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1–1.8 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Tropical Asia.

**Country /Province /State. Papuaia.** New Guinea.

### **Festuca modesta** Steud. *Syn. Pl. Gram.* 316. (1854).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N.L.Bor, *Grasses of Burma, Ceylon, India and Pakistan* (1960).

**TYPE** from Nepal. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Nepal, *Royle 161* (HT: ?).

**Recent Synonyms:** *Festuca handelii* (St.-Yves) E.B.Alekseev, *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 82(3): 95 (1977).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 316).

**Derivation** (Clifford & Bostock 2007): L. moderate. Culms of average height.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, robust, 75–150 cm long. Leaf-sheaths open for most of their length. Ligule an eciliate membrane, 3–6 mm long. Leaf-blades flat, 30–60 cm long, 6–23 mm wide. Leaf-blade surface ungrooved.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate or ovate, 15–30 cm long. Primary panicle branches ascending or spreading. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 10–16 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 3.5–4.5 mm long, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.5–5.5 mm long, 0.5 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile florets divergent. Fertile lemma oblong, 8–10 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough generally. Lemma apex acuminate, mucous. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–3.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

*N* = 7 (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Temperate Asia, Tropical Asia.

**Country /Province /State. China.** China South Central, China North-Central, Qinghai, Tibet. **Indian Subcontinent.** India, Nepal, Pakistan, West Himalaya.

**TDWG4.** Gansu, Shaanxi, Sichuan, Yunnan.

**Festuca minguensis** Stancmk. *Darwiniana* 41(1–4): 139 (figs. 8a–e, 17b) (2003).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Colombia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Colombia: Boyaca: Munic. Mongui, paramo de la Laguna La Colorada, 3550m, 21 Jan 1999, *Stancmk & Galvis* 2026 (HT: PRC; IT: COL, FMB).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 118, fig 59 (2007)).

**Derivation** (Clifford & Bostock 2007): L. *-ensis*, denoting origin. From Mongui, Colombia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Cataphylls inconspicuous. Basal innovations intravaginal. Culms erect, of moderate stature, straight, 50 cm long, 2-noded, without nodal roots. Culm-internodes terete. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves mostly basal, 0–1 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined, glabrous on surface. Leaf-sheath auricles absent. Ligule a ciliolate membrane, 0.7–1.5 mm long, membranous, white, entire, truncate. Leaf-blade base symmetrical. Leaf-blades straight or curved, involute, angular in section or elliptic in section, 20–25 cm long, 0.6–0.8 mm wide, indurate, stiff or firm, yellowish green or mid-green. Leaf-blade midrib indistinct. Leaf-blade venation indistinct, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma attached to veins below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous, glabrous. Leaf-blade margins smooth, glabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle terete, eglandular, glabrous. Panicle contracted, lanceolate, continuous, dense, equilateral, straight, 5–15 cm long, 0.5–0.8 cm wide. Primary panicle branches appressed or ascending, moderately divided, bearing spikelets almost to the base. Panicle branches straight, scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 9–11 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes smooth, glabrous or sparsely hairy. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume lanceolate, 4 mm long, 0.75 length of upper glume, chartaceous, dark green or purple, without keels, 1-veined. Lower glume lateral veins absent. Lower glume surface asperulous, rough above. Lower glume apex acute. Upper glume lanceolate, 5 mm long, 0.75 length of adjacent fertile lemma, chartaceous, dark green or purple, without keels, 3-veined. Upper glume surface asperulous, rough at apex. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, symmetrical, 6–7 mm long, chartaceous, mid-green or purple, without keel, 5-veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex awned, 1-awned. Principal lemma awn stiff, 0.5–2.5 mm long overall. Palea 2 length of lemma, 2-veined. Palea surface papillose, pilose, hairy on margins. Palea apex ciliate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, oblong, 1.3 mm long, 2-toothed. Anthers 3, 1.2–1.3 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Colombia.

**Festuca monticola** Phil. *Anal. Univ. Chil.* 576. (1873).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Chile. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: Chile: en la Cordillera Pelada de la Prov. Valdivia (SGO-PHIL-299; IT: SGO-37419, SGO-37418, SGO-63838, US-556549 (fragm. ex SGO-PHIL-299 & photo), US- (photo SGO-37418), US- (photo SGO-37419)).

**Illustrations (Books):** M.N.Correa, *Flora Patagonica* Parte III, Gramineae (1978) (117, Fig. 71).

**Derivation** (Clifford & Bostock 2007): L. *mons*, mountain; *-cola*, dweller. Growing on mountains.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 20–80 cm long. Lateral branches lacking. Leaf-sheaths open for most of their length, smooth or scaberulous, glabrous on surface. Ligule an eciliate membrane, 0.5–1 mm long. Leaf-blades curved, filiform, conduplicate, 4–20 cm

long, 1–2.5 mm wide, stiff. Leaf-blade surface papillose or scabrous (above/below), glabrous. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 6–15 cm long. Panicle axis scaberulous. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, scaberulous.

**Fertile Spikelets.** Spikelets comprising 4–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 11–15 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1–2.5 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4.5–6.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous, rough above. Lower glume apex acute. Upper glume obovate, 5.5–8 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface scabrous, rough above. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6–10 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough generally or above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–2.5 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–4 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Southern South America.** Chile Central, Chile South.

**TDWG4.** Chubut, Neuquén, Tierra del Fuego. Rest of Chile- Biobio, La Araucania, Maule, O'Higgins, Santado, Valpariso, Chiloe, Aisen, Magellanes. Maule, Biobio, La Araucania. Los Lagos, Magellanes.

**Festuca morenensis** O. Matthei. *Gayana, Bot.*, 37: 54 (1982).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Chile. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Chile: II Region: Antofagasta, cumbres al lado sur del morro Moreno, 23.29S 70.34W, 1000 m, *Ricardi, Marticorena & Matthei 1407* (HT: CONC).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. -ensis*, denoting origin. From Moreno Bluff, near Antofagasta, northern Chile.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 32–36 cm long. Lateral branches lacking. Leaf-sheaths glabrous on surface. Ligule a ciliolate membrane, 0.2–1 mm long, bilobed. Leaf-blades filiform, conduplicate, circular in section, 1–20 cm long, 0.6–1 mm wide. Leaf-blade venation comprising 11 vascular bundles, with 11 inner ridges, with subepidermal sclerenchyma attached to veins above and below, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear or lanceolate, 14–18 cm long. Primary panicle branches 1–5 cm long. Panicle axis pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1 mm long.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4.5–5 mm long, 0.75–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5.5–6 mm long, 0.75–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 6–6.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 0.8–1 mm long overall. Palea 1 length of lemma, 2 -veined. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, 0.2–0.5 mm long. Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Southern South America.** Chile North.

Antofagasta.

**Festuca morisiana** Parl. *Giorn. Bot. Ital.* ii. 377. (1844).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Sardinia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Sardinia: Moris (K iso).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating connection. In honor of Giuseppe Giacinto Moris (1796–1869) Italian physician and botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms slender, 10–30 cm long. Leaf-sheaths tubular for much of their length, glabrous on surface. Ligule an eciliate membrane. Leaf-blades flat, 2–5 cm long, 0.2–0.5 mm wide. Leaf-blade venation comprising 7 vascular bundles, with 7 inner ridges, with sclerenchyma strands above all veins, with 3 subepidermal sclerenchyma strands.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–7.7 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes eventually visible between lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 5.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, mucicous or mucronate or awned, 1 -awned. Principal lemma awn 0–1.5 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG).** Continent. Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : Sardinia.

**Festuca muelleri** Vickery. *Contrib. N. S. Wales Nat. Herb.* i. 9 (1939).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), D.Sharp, D. & B.K.Simon, *AusGrass* (2002).

**TYPE** from Australia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Australia, Mt. Buller: *Mueller* (K holo).

**Illustrations (Books):** N.Walsh & T.Entwistle, *Flora of Victoria* Vol 2 (1994) (402, Fig 80), S.W.L.Jacobs, R.D.B.Whalley & D.J.B.Wheeler., *Grasses of New South Wales*, 4th edn (2008) (268), A.Wilson (ed.), *Flora of Australia*, Vol 44A. *Poaceae* (2009) (280, Fig 37), D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002).

**Derivation** (Clifford & Bostock 2007): in honor of Ferdinand Jacob Heinrich Mueller (1825–96) German-born Australian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 80–150 cm long, 2–4 -noded. Culm-internodes antrorsely scabrous. Culm-nodes brown, glabrous. Leaf-sheaths striately veined, antrorsely scabrous, glabrous on surface. Leaf-sheath auricles absent or falcate. Ligule an eciliate membrane, 2–4 mm long, obtuse. Leaf-blades flat or convolute, 20–45 cm long, 5–8 mm wide. Leaf-blade surface ribbed, scabrous, rough on both sides. Leaf-blade margins scaberulous. Leaf-blade apex acuminate.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 15–25 cm long. Primary panicle branches spreading or drooping, 2 -nate, sparsely divided, 4–9 cm long. Panicle axis scaberulous. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 4–10 mm long, scabrous.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 12–15 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1.5 mm long, scaberulous. Floret callus glabrous or pubescent.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 7–8 mm long, 1 length of upper glume, chartaceous, much thinner on margins, without keels, 3–5 -veined. Lower glume primary vein scabrous. Lower glume apex acute. Upper glume oblong, 7–8 mm long, 0.8–1 length of adjacent fertile lemma,

chartaceous, with membranous margins, without keels, 3–5 -veined. Upper glume primary vein scabrous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 7–10 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous. Lemma apex acute, muticous. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Palea surface scaberulous. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, linear, 3.5–5 mm long. Ovary glabrous. Caryopsis with adherent pericarp, oblanceolate, sulcate on hilar side, 5 mm long.

**Distribution (TDWG). Continent.** Australasia.

**Country /Province /State.** Australia. New South Wales, A.C.T., Victoria.

**TDWG4.** Tablelands.

### ***Festuca multinodis*** Petrie & Hackel. *Trans. N. Z. Inst.* 1911, 186 (1912).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), E.Edgar, & H.Connor, *Flora of New Zealand Gramineae* 5 (2000).

**TYPE** from New Zealand. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: LT: B.C. Aston s.n., Feb 1906, New Zealand: Days Bay, Wellington (WELT-68611). LT designated by Connor, *New Zealand J. Bot.* 36: 355 (1998).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. multus, many; nodus, knot. Culms many-noded.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations extravaginal. Culms geniculately ascending or decumbent, 15–40 cm long. Lateral branches ample. Leaf-sheaths open for most of their length. Ligule an eciliate membrane. Leaf-blades filiform, involute, 6–12 cm long, 0.5–1 mm wide. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, 3–7 cm long. Panicle branches smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 6–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 0.66–0.75 length of upper glume, membranous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume lanceolate, 0.7–0.8 length of adjacent fertile lemma, membranous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4–6 mm long, membranous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, muticous or mucronate or awned, 1 -awned. Principal lemma awn 0–2 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

$2n = 56$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Australasia.

**Country /Province /State.** New Zealand. New Zealand North I, New Zealand South I.

### ***Festuca nandadevica*** P.K. Hajra. *Indian J. Forest.*, 6(1): 79 (1983).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from India. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: India, Uttar Pradesh, Nandevi Nat. Park: Hajra 73285 (CAL holo).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Culms 30–70 cm long, 2–3 -noded. Culm-internodes smooth. Culm-nodes purple, glabrous. Leaf-sheath auricles erect (minute). Ligule an eciliate membrane, 2 mm long, lacerate. Leaf-blades flat or involute, 3–18 cm long, 1.5–3 mm wide. Leaf-blade surface pubescent. Leaf-blade margins scaberulous. Leaf-blade apex acuminate.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, effuse, nodding, 25–30 cm long. Primary panicle branches 2 -nate, 4–9 cm long. Panicle axis scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 1–3 fertile florets, with diminished florets at the apex. Spikelets of 1 fertile floret with or without additional sterile florets, or of 2 or more fertile florets. Spikelets one-many-

flowered - if two-flowered then both fertile or the upper sterile. Spikelets linear or lanceolate, laterally compressed, 8–12 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 3–4 mm long, 1 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface asperulous. Lower glume apex acuminate. Upper glume lanceolate, 3–4 mm long, 0.5 length of adjacent fertile lemma, chartaceous, without keels, 1 -veined. Upper glume primary vein scaberulous. Upper glume lateral veins absent. Upper glume apex attenuate.

**Florets.** Fertile lemma lanceolate or ovate, 7–8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins obscure. Lemma surface scaberulous. Lemma apex awned, 1 -awned. Principal lemma awn 10–15 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.5–2 mm long. Ovary pubescent on apex.

**Distribution (TDWG). Continent.** Tropical Asia.

**Country /Province /State. Indian Subcontinent.** India.

### **Festuca nardifolia** Griseb. *Goett. Abh.* xxiv. 286. (1879).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Argentina. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Lorentz & Hieronymous 84*, 19–23 Mar 1872, Argentina: Salta: alrededores del Nevado del Castillo, in humidis et Nivem aeternam, alt. 15000' (GOET; IT: CORD, US s.n. (fragm. ex GOET)).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. folium, leaf. Leaf-blades morphologically resemble those of *Nardus*..

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 2.5–8 cm long, 1 -noded. Leaves distichous. Leaf-sheaths open for most of their length, with 0.5 of their length closed, longer than adjacent culm internode, glabrous on surface. Leaf-sheath auricles erect. Ligule an eciliate membrane. Leaf-blades curved, filiform, conduplicate, 2–8 cm long, 0.5–0.6 mm wide, stiff. Leaf-blade venation with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface puberulous, hairy adaxially. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 2–4 cm long. Panicle axis smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, glabrous.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–9 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1 mm long, glabrous or sparsely hairy.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3.5 mm long, 0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume margins ciliolate. Lower glume apex acute. Upper glume lanceolate, 4–4.5 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume margins ciliolate. Upper glume apex obtuse.

**Florets.** Fertile lemma lanceolate, 4.5–5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma midvein scabrous. Lemma apex acute, muticous. Palea 1 length of lemma, 2 -veined. Palea keels ciliolate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Southern South America.** Argentina Northwest, Chile North, Chile Central.

**TDWG4.** Catamarca, Jujuy, La Rioja, Salta, San Juan, Tucuman. Tarapaca, Antofagasta. Coquimbo.

### **Festuca nemoralis** Turpe. *Darwiniana*, xv. 213 (1969).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Argentina. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Argentina: Tucuman: Dpto. Tafi: La Cienaga, 2800m, 5 Feb 1933, *Parodi 11049* (HT: BAA).

**Illustrations (Books):** No illustration found (BKS).



**Derivation** (Clifford & Bostock 2007): *L. nemus*, wood, -alis, pertaining to. Woodland species.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Basal innovations intravaginal. Culms erect, 100–150 cm long, 4 mm diam., 2–3 -noded. Culm-internodes antrorsely scabrous. Culm-nodes black, glabrous. Leaf-sheaths open for most of their length, smooth, glabrous on surface. Ligule an eciliate membrane, 2–3 mm long, lacerate. Leaf-blades flat or convolute, 4–4.5 mm wide, stiff. Leaf-blade venation with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous, rough abaxially, pubescent, hairy adaxially. Leaf-blade apex acuminate.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 25–30 cm long. Primary panicle branches 3–5 -nate, whorled at most nodes. Panicle axis scabrous. Panicle branches flexuous, scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 6–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 10–12 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4–5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5.5–6 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume apex obtuse.

**Florets.** Fertile lemma lanceolate, 6–7 mm long, chartaceous, purple, without keel, 5 -veined, more than 3-veined. Lemma midvein scabrous. Lemma lateral veins obscure. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1 mm long overall, deciduous. Palea 1 length of lemma, 2 -veined. Palea keels ciliolate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

$2n = 56$  (1 ref TROPICOS).

**Distribution (TDWG), Continent.** South America.

**Country /Province /State.** Western South America, Southern South America. Bolivia. Argentina Northeast, Argentina Northwest.

**TDWG4.** Jujuy, Salta, Tucuman.

**Festuca nepalica** E.B.Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 82(3): 99 (1977).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Nepal. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Nepal: Tingjegaon, 16600 ft., growing among boulders on river terrace, 19 Jun 1952, *Polunin et al. 1162* (HT: K).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. -ica*, belonging to. From Nepal.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Basal innovations extravaginal and intravaginal. Culms erect, 30–50 cm long. Leaf-sheaths open for most of their length, scaberulous, glabrous on surface. Ligule an eciliate membrane, 3–4 mm long. Leaf-blades flat or convolute, 1.5–2.5 mm wide, glaucous. Leaf-blade venation with subepidermal sclerenchyma attached to veins above and below. Leaf-blade surface scaberulous, rough abaxially. Monoecious.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong, loose, 10–14 cm long. Panicle axis smooth or with occasional prickles. Panicle branches smooth or with occasional prickles. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 11–16 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet, thinner than fertile lemma. Lower glume lanceolate, hyaline, pallid, 1-keeled, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, hyaline, 1-keeled, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 9–10 mm long, membranous, much thinner above, keeled, 5 -veined, more than 3-veined. Lemma surface scaberulous. Lemma apex acute, muticous. Palea 2 -veined. Palea keels scabrous, adorned all along. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, membranous. Anthers 3, 5–5.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp.

Male inflorescence similar to female, a panicle. Male spikelets resembling female.

**Distribution (TDWG). Continent.** Tropical Asia.

**Country /Province /State. Indian Subcontinent.** Nepal.

**Festuca nereidaensis** Stanck. *Darwiniana* 41(1–4): 139 (-140; figs. 8f-k, 17b) (2003).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Colombia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Colombia: Caldas: Munic. Manizales, NP Los Nevados, way from Casa del Chisne to Rmo Nereidas, km 5, 3800–4000m, 18 Dec 1999, *Stanck 3401B* (HT: PRC; IT: COL).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 120, fig 60 (2007)).

**Derivation** (Clifford & Bostock 2007): *L. -ensis*, denoting origin. From Rio Nereidas, Colombia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Cataphylls inconspicuous. Basal innovations intravaginal. Culms of moderate stature, straight, 80–100 cm long, 2–3 -noded, without nodal roots. Culm-internodes terete. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves mostly basal, 0–2 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined, glabrous on surface. Leaf-sheath auricles absent. Ligule a ciliolate membrane, 0.7–1 mm long, membranous, white, entire, truncate. Leaf-blade base symmetrical. Leaf-blades straight, involute, elliptic in section, 25–35 cm long, 1.2–1.5 mm wide, indurate, stiff, dark green. Leaf-blade midrib indistinct. Leaf-blade venation indistinct or distinct, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma attached to veins below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface puberulous, moderately hairy, hairy adaxially. Leaf-blade margins smooth, glabrous. Leaf-blade apex acuminate.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle terete, eglandular, scaberulous above, glabrous. Panicle contracted, lanceolate or elliptic, continuous, dense, straight, 15–20 cm long, 1–1.5 cm wide. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 11–12 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes scaberulous, pubescent. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume lanceolate, 6–6.5 mm long, 0.8–0.9 length of upper glume, chartaceous, dark green or dark brown, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 7–8 mm long, 1 length of adjacent fertile lemma, chartaceous, dark green, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, symmetrical, 7–7.5 mm long, chartaceous, dark green, without keel, 5 -veined, more than 3-veined. Lemma surface papillose. Lemma apex setaceously acuminate, muticous or awned, 1 -awned. Principal lemma awn stiff, 0.5–0.7 mm long overall. Palea 2 length of lemma, 2 -veined. Palea surface scaberulous. Palea apex ciliate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, lanceolate, 1.3 mm long. Anthers 3, 1.3–1.6 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Western South America.** Colombia.

**Festuca nevadensis** (Hackel) I. Markgraf-Dannenberg. *Bot. J. Linn. Soc.*, 76(4): 327 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**Basionym or Replaced Name:** *Festuca rubra* subsp. *nevadensis* Hack., *Monogr. Festuc. Eur.* 146 (1882). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: LT: LT designated by Fuente Garcia & Sanchez-Mata, *Candollea* 41:163–171 (1986).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): from Sierra Nevada, Spain.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Rhizomes elongated. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations extravaginal. Culms 40–

80 cm long, 1.2–2 mm diam. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, pubescent. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 0.5–1.4 mm wide, stiff. Leaf-blade venation comprising 7–9 vascular bundles, with sclerenchyma strands below veins or above all veins, with 7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma strands unequal in size, with subepidermal sclerenchyma free from veins. Leaf-blade surface ribbed, pubescent, densely hairy. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, loose, 6–17 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10–10.3 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume linear, 4.1–6.6 mm long, 0.8–1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5–6.5 mm long, chartaceous, light green or glaucous, without keel, 5 -veined, more than 3-veined. Lemma surface smooth or asperulous, rough above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1–2.1 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary with a few apical hairs. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$N = 35$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : Corsica, France, Spain.

**Festuca nigrescens** Lam. *Encyc.* ii. 460 (1788).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), D.Sharp, D. & B.K.Simon, *AusGrass* (2002), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from France. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: France, Mont Dore: *Lamarck* (P holotype).

**Illustrations (Books):** S.W.L.Jacobs, R.D.B.Whalley & D.J.B.Wheeler, *Grasses of New South Wales*, 4th edn (2008) (268).

**Images:** D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002);

**Derivation** (Clifford & Bostock 2007): *L. nigresco*, become black. Spikelets black at maturity.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations extravaginal. Culms 30–90 cm long. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 0.4–0.7 mm wide, dark green or glaucous. Leaf-blade venation comprising 5–7 vascular bundles, with sclerenchyma strands below veins or below veins or above some veins, with subepidermal sclerenchyma free from veins. Leaf-blade surface smooth or scabrous, rough adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, secund, 4–10 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–9.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.3–5.2 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4.6–6.2 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2.5–3 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 42$  (1 ref TROPICOS), or 49 (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe, Australasia (\*).

**Region.** Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe.

**Country /Province /State.** : Denmark, GB Aliens (Ryves et al), Norway, Sweden. : Austria, Belgium, Czechoslovakia, Germany, Hungary, Switzerland. : France, Spain. : Bulgaria, Greece, Italy, Romania, Yugoslavia. Northwest European Russia, Ukraine. **Australia.** New South Wales (\*), Victoria (\*), Tasmania (\*).

**TDWG4.** Coast, Tablelands.

**Festuca nigriflora** (Hitcch.) M.A. Negritto & A.M. Anton. *Novon*, 9(4): 542 : (1999).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. **Basionym or Replaced Name:** *Poa nigriflora* Hitcch., *Contr. U.S. Natl. Herb.* 24(8) 330 (1927)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *J.F. MacBride & W. Featherstone s.n.*, 12 Jun 1922, Peru: on rocky lake shore, forming tough clumps, at Huaron, alt. 4200 m (US-1161474; IT: BAA (fragm. ex US), F).

**Illustrations (Journals):** *Novon* (9: 543 Fig.1 (1999)).

**Derivation** (Clifford & Bostock 2007): *L. niger*, black; flos, flower. Spikelets dark-colored.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 15–45 cm long, 2–3 -noded. Lateral branches lacking. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.5–1 mm long, truncate. Leaf-blades involute or convolute, 4–12 cm long, 2–3 mm wide, indurate. Leaf-blade surface pubescent, densely hairy, hairy adaxially. Leaf-blade margins smooth or scaberulous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 6–12 cm long, 0.7–1.2 cm wide. Panicle branches smooth or scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, smooth.

**Fertile Spikelets.** Spikelets comprising 2–3 fertile florets, with a barren rhachilla extension. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6–7 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes smooth. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.5–2.7 mm long, 0.75 length of upper glume, coriaceous, 1-keeled, 1–3 -veined. Lower glume lateral veins absent or obscure. Lower glume surface glabrous or pubescent, hairy at apex. Lower glume apex truncate or obtuse. Upper glume ovate, 3.3–3.5 mm long, 0.75 length of adjacent fertile lemma, coriaceous, 1-keeled, 3 -veined. Upper glume surface glabrous or pubescent, hairy at apex. Upper glume apex truncate or obtuse.

**Florets.** Fertile lemma ovate, 5 mm long, coriaceous, purple or black, keeled, 5 -veined, more than 3-veined. Lemma surface pubescent, hairy above. Lemma apex acute. Palea keels ciliate. Palea surface puberulous, hairy on back.

**Flower and Fruit.** Lodicules 2, membranous. Anthers 3, 2.3–2.5 mm long. Caryopsis with adherent pericarp. Hilum punctiform.

$2n = 14$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Peru.

**Festuca niphobia** (St. Yves) M. Kerguelen. *Bull. Soc. Bot. France*, 123(5–6): 320 (1976).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from France. **Basionym or Replaced Name:** *Festuca ovina* subvar. *niphobia* St.-Yves, *Bull. Soc. Bot. Fr.* 71:29 (1924). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: France, Vallee de Llo: Neyraut.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. *nipha*, snow; bios, mode of life. Growing near the snow-line.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 10–15 cm long. Culm-internodes antrorsely scabrous. Leaf-sheaths open for most of their length, with 0 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 0.6 mm wide, stiff. Leaf-blade venation comprising 7 vascular

bundles, with 1 inner ridges, with subepidermal sclerenchyma free from veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, 2–3 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.5 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : France.

### **Festuca nitida** Kit. *Schult. Oestr. Fl.* ed. II. i. 239 (1814).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: ST: (BP).

ST: *O. Kitaibel s.n.*, In alpinis Croatiae (M-0004053).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. niteo*, shine; Spikelets or lemmas shiny.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms 20–40 cm long. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 0.3–0.6 mm wide. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins.

**Inflorescence.** Inflorescence a panicle. Peduncle glabrous or pubescent above. Panicle open, oblong, second, 4–5 cm long. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.9–8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume oblong, 3.2–5.5 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 4.3–6 mm long, chartaceous, yellow or purple, shiny, without keel, 5 -veined, more than 3-veined. Lemma surface glabrous or pubescent. Lemma apex acute, mucronate or awned, 1 -awned. Principal lemma awn 0.5–3 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe, Southeastern Europe.

**Country /Province /State.** : Austria. : Italy, Romania, Yugoslavia.

### **Festuca nitidula** Stapf. *Hook. f. Fl. Brit. Ind.* vii. 350. (1896).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N.L.Bor, Grasses of Burma, Ceylon, India and Pakistan (1960).

**TYPE** from India. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: ST?: *Strachey & Winterbottom*, India: n. of Kumaon, 15,000 ft.

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig.334).

**Derivation** (Clifford & Bostock 2007): *L. niteo*, shine; -ula, exhibiting tendency. Spikelets glossy.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Rhizomes short. Culms erect or geniculately ascending, 28–50 cm long. Leaf-sheaths open for most of their length. Ligule an eciliate membrane, 0.5 mm long. Leaf-blades filiform or linear, conduplicate, 10–20 cm long, 1–2 mm wide. Leaf-blade venation comprising 4–6 vascular bundles, with 4–6 inner ridges, with 7–9 subepidermal sclerenchyma strands, with subepidermal sclerenchyma attached to veins above. Leaf-blade surface ribbed.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate or ovate, 4–10 cm long. Panicle branches flexuous, smooth or scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 8–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 2.5–4 mm long, 0.66–0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4–5 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 5.5–6 mm long, chartaceous, purple, without keel, 5 -veined, more than 3-veined. Lemma surface smooth or scaberulous, rough above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2–3 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 0.5–0.8 mm long. Ovary with a few apical hairs. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia, Tropical Asia.

**Country /Province /State. China.** China South Central, China North-Central, Qinghai, Tibet. **Indian Subcontinent.** India, Nepal, Pakistan, West Himalaya.

**TDWG4.** Gansu, Sichuan, Yunnan, Uttah Pradesh.

**Festuca norica** (Hack.) Richt. *Pl. Eur.* i. 99 (1890).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**Basionym or Replaced Name:** *Festuca rubra* var. *norica* Hack., *Monogr. Festuc. Eur.* 135 (1882)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *E. Hackel s.n.*, 6 Aug 1880, Alpes Salisburgenses, Speiereck (W-5192). LT designated by Pils, *Pl. Syst. Evol.* 136: 73–124 (1980).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): from *Noricum* now largely included in Bavaria.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths or fibrous dead sheaths. Basal innovations intravaginal. Culms 22–68 cm long. Leaf-sheaths tubular for much of their length, with 0.5 of their length closed, with infolded margins, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 0.6–0.7 mm wide. Leaf-blade venation comprising 5–9 vascular bundles, with 5–7 inner ridges, with sclerenchyma strands below veins or above all veins, with subepidermal sclerenchyma attached to veins above and below. Leaf-blade surface ribbed.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, nodding, 5–10 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.7–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume oblong, 5.8–6 mm long, 0.9–1.3 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 4.3–6.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, mucous. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–4 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 14$  (1 ref TROPICOS), or 28 (1 ref TROPICOS), or 42 (2 refs TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe, Southeastern Europe.

**Country /Province /State.** : Austria, Germany.

**Festuca novae-zelandiae** (Hack.) Cockayne. *Trans. & Proc. New Zealand Inst.* 48: 178 (1916).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), E.Edgar, & H.Connor, *Flora of New Zealand Gramineae* 5 (2000).

**TYPE** from New Zealand. **Basionym or Replaced Name:** *Festuca ovina* subsp. *novae-zelandiae* Hack., *Trans. & Proc. New Zealand Inst.* 35: 384 (1903)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *T.F. Cheeseman s.n.* [1497], Jan 1880, New Zealand: slopes of Mount Torlesse, Canterbury, 3000 ft (W-8150).

**Illustrations (Books):** E.Edgar. & H.E.Connor, *Flora of New Zealand* 5, *Gramineae* (2000) (97, Fig. 6).

**Images:** E.Edgar & H.E.Connor, *Flora of New Zealand* 5, *Gramineae* (2000);.

**Derivation** (Clifford & Bostock 2007): from New Zealand.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms erect, 30–60 cm long, 3-noded. Culm-internodes antrorsely scabrous. Lateral branches lacking. Leaf-sheaths open for most of their length, smooth, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 20–30 cm long, 0.5–1 mm wide, stiff. Leaf-blade surface scaberulous.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, 5–12 cm long. Primary panicle branches 2-nate, bearing 3–6 fertile spikelets on each lower branch. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 1 length of upper glume, membranous, without keels. Lower glume primary vein scaberulous. Lower glume apex acuminate. Upper glume lanceolate, 0.7–0.8 length of adjacent fertile lemma, membranous, without keels. Upper glume primary vein scaberulous. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 4.5–5 mm long, membranous, without keel, 5-veined, more than 3-veined. Lemma apex acuminate, mucronate or awned, 1-awned. Principal lemma awn 0–1.5 mm long overall. Palea 1 length of lemma, 2-veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Australasia.

**Country /Province /State.** New Zealand. New Zealand North I, New Zealand South I, Stewart Is.

**Festuca nubigena** Jungh. *Nat. en Geneesk. Arch. Neerl. Indie*, ii. 51. (1845).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), J.F.Veldkamp, Poaceae ms (*Flora Malesiana*).

**TYPE** from Indonesia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *H. Zollinger 3967*, Jul 1858, Indonesia: Java: Jawa Timur: Tengger, Gunung, [2134–2439 m] (L).

T: *F.W. Junghuhn s.n.*, Indonesia: Java: Merbaboe, Gunung, [2134–2378 m] (L).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. nubes, cloud; gigno, bear. Growing on high mountains.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms 30–80 cm long, 2–4-noded. Lateral branches lacking. Leaf-sheaths smooth, glabrous on surface. Ligule a ciliate membrane, 0.5 mm long. Leaf-blades involute, 18–40 cm long, 1–2 mm wide. Leaf-blade venation with 3 secondary veins. Leaf-blade surface pilose, hairy adaxially. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Peduncle scaberulous above, glabrous to hirsute above. Panicle open, lanceolate, 8–10 cm long. Primary panicle branches appressed, 1–3-nate, 2–5 cm long. Panicle branches flexuous, scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or ovate, laterally compressed, 6–11 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume oblong, 3.5–5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface asperulous, rough at apex. Lower glume apex acute or acuminate. Upper glume ovate, 5–6 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface asperulous, rough at apex. Upper glume apex acute or acuminate.

**Florets.** Fertile lemma lanceolate or ovate, 6–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma midvein scabrous. Lemma surface granulose, rough below. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1 mm long overall. Palea 6.5–7 mm long, 2 -veined. Palea keels scabrous. Palea surface granular. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous or with a few apical hairs. Caryopsis with adherent pericarp, ellipsoid, 1–1.3 mm long, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** Tropical Asia.

**Country /Province /State.** Malesia. Java, Lesser Sunda Is.

**Festuca obturbans** St.- Yves. *Clav. Anal. Festuc. (Rev. Bret. Bot. No. 2)* 83 (1927).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Tanzania. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Tanzania, Kilimanjaro: Volkens 637 (EA isosyn).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. ob- contrary; turbo, spin. Spikelets elliptical-lanceolate in outline resembling an inverted spinning top.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms 30–60 cm long. Leaf-sheaths smooth, glabrous on surface. Ligule an eciliate membrane. Leaf-blades erect, filiform, 8–30 cm long, 0.75 mm wide, stiff. Leaf-blade venation without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 8–30 cm long. Primary panicle branches appressed. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–10 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–16 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume subulate, 2.5–4.5 mm long, 0.7–0.8 length of upper glume, chartaceous, 1 -veined. Lower glume lateral veins absent. Upper glume lanceolate, 3.5–6 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 5–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface smooth or scaberulous. Lemma apex emarginate or acute, awned, 1 -awned. Principal lemma awn 1–3 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** East tropical Africa. Kenya, Tanzania.

**Festuca occidentalis** Hook. *Fl. Bor. Am. ii.* 249 (1840).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from USA. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *Douglas 224*, 1825, USA: Oregon: plains of the Columbia, near the sea (K; GH (ex hb. Thurber), GH, US (photo ex GH), US (fragm. ex K [Ft. Vancouver]), US (photo ex GH [ex hb. Thurber])). LT designated by Alexeev, *Nov. Syst. Pl. Vasc.* 22: 16 (1985).

ST: *Douglas 228*, 1825, On elevated dry grounds near the ocean (K; IT: US- (fragm. ex K)).



**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (439).

**Derivation** (Clifford & Bostock 2007): L. occident, west; -ale, pertaining to. From the western states of the United States.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms 60–110 cm long. Lateral branches lacking. Leaves mostly basal. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.5 mm long. Collar glabrous. Leaf-blades filiform, involute, 0.5–1 mm wide. Leaf-blade surface scaberulous, rough adaxially, glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, elliptic, loose, 10–20 cm long. Primary panicle branches drooping, 1–2 -nate. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1–1.5 mm long, eventually visible between lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2–4 mm long, 0.8–0.9 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface smooth or asperulous. Lower glume apex acute. Upper glume lanceolate, 3–4.5 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface smooth or asperulous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4–6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins obscure. Lemma surface smooth or scaberulous. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn flexuous, 4–12 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–3 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** Subarctic America, Western Canada, Northwest USA, Southwestern USA. Alaska. British Columbia. Colorado, Idaho, Montana, Oregon, Washington. California.

**Festuca occitanica** (Litard.) Auquier & Kerguelen. *Lejeunia*, 75: 162 (1975).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from France. **Basionym or Replaced Name:** *Festuca ovina* var. *occitanica* Lit., *Candollea* 10:122 (1945). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: France, St Guilhem le Desert: Sennen.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Occitana, now south-eastern France.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 15–44 cm long. Culm-internodes smooth. Leaf-sheaths open for most of their length, with 0.33–0.5 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades straight or curved, filiform, conduplicate, circular in section, 0.4–0.75 mm wide, stiff, mid-green or glaucous. Leaf-blade venation comprising 7 vascular bundles, with 1–3 inner ridges, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with unevenly thickened subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, 4–12 cm long. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.3–8.4 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.3–4.6 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4.2–5.5 mm long, chartaceous, mid-green or mid-green or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma apex acute, mucronate or awned,

1 -awned. Principal lemma awn 0.2–1.8 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : France.

**Festuca ochroleuca** Timb. *Bull. Soc. Hist. Nat. Toul.* iii. 129 (1869).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from France. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: France, Massif d'Arbas: Timbal-Lagrange (K iso).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. Gk. ochros, pale yellow; leukos, white. Spikelets pale yellow-white.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 20–60 cm long. Culm-internodes distally glabrous or pubescent. Leaf-sheaths open for most of their length, with 0.33–0.5 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 0.5–0.85 mm wide, dark green, pruinose. Leaf-blade venation comprising 7 vascular bundles, with 3 inner ridges, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense or loose, 4–10 cm long. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–9 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.5–5 mm long, 0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume lateral veins prominent. Upper glume surface glabrous or pubescent. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 5.4 mm long, chartaceous, light green, without keel, 5 -veined, more than 3-veined. Lemma surface glabrous or pubescent. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1.4–2 mm long overall, 0.25–0.33 length of lemma. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : France.

**Festuca oelandica** (Hack.) Richt. *.Pl. Eur.* 1:100 (1890).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Sweden. **Basionym or Replaced Name:** *Festuca rubra* var. *oelandica* Hack., *Monogr.* :144 (1882). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Sweden, Oeland: Coll?.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Oeland, Sweden.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Rhizomes short. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations extravaginal. Culms 30–37 cm long. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, glabrous on surface to pubescent. Ligule an eciliate membrane. Leaf-blades aciculate, conduplicate, 0.5–0.7 mm wide, stiff. Leaf-blade midrib scarcely raised beneath. Leaf-blade venation comprising 7 vascular bundles, with

sclerenchyma strands below veins, with subepidermal sclerenchyma free from veins. Leaf-blade surface ribbed, pubescent. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 4–6 cm long, bearing many spikelets. Panicle branches flexuous, smooth or scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.5–8.7 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 2.8–4.9 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex obtuse.

**Florets.** Fertile lemma ovate, 4–6.3 mm long, chartaceous, glaucous or purple, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above, glabrous or pubescent, hairy above. Lemma margins ciliate. Lemma apex acuminate, mucronate or awned, 1 -awned. Principal lemma awn 0.5–1.3 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Northern Europe.

**Country /Province /State.** : Sweden.

**Festuca olchonensis** E.B.Alekseev. *Bull. Mosk. Obshch. Ispyt. Prir., Biol.*, 84(5): 125 (1979).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Russia, Lake Baical, Olchon Is.: Tichomirov 1092 (LE holo).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 25–50 cm long. Culm-internodes distally glabrous. Lateral branches lacking. Leaf-sheaths open for most of their length, with 0.33 of their length closed, glabrous on surface or puberulous. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 10–15 cm long, 0.4–0.65 mm wide. Leaf-blade venation comprising 5(–7) vascular bundles, with 1(–3) inner ridges, with 5–7 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation or with sclerenchyma strands widened to form a discontinuous subepidermal layer or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 3.5–7.5 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 5–5.6 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4–4.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface glabrous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–3.2 mm long overall. Palea 2 -veined. Palea keels scabrous, with 0.33 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 2–2.3 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Siberia. Irkutsk.

**Festuca olgae** (Regel) Krivot. *Not. Syst. Herb. Inst. Bot. Acad. Sci. URSS*, xx. 56 (1960).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. **Basionym or Replaced Name:** *Molinia olgae* Regel, *Trudy Imp. S.-Peterburgsk. Bot. Sada* 7(2): 625 (1881)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Russia, Alai valley: Fedtschenko (LE holo).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig.322).

**Derivation** (Clifford & Bostock 2007): in honor of Olga Aleksandrovna Fedchenko (1845–1921) Russian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect or geniculately ascending, 25–85 cm long. Leaf-sheaths open for most of their length. Ligule an eciliate membrane, 0.5–1 mm long. Leaf-blades flat or convolute, 20–40 cm long, 2–3 mm wide. Leaf-blade surface ribbed, scaberulous, rough adaxially. Dioecious.

**Inflorescence.** Inflorescence a panicle. Panicle open or contracted, lanceolate or ovate, 6–14 cm long. Panicle branches smooth or scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 9–12 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 4–4.6 mm long, 0.75–0.9 length of upper glume, hyaline, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.2–6 mm long, 0.66–0.75 length of adjacent fertile lemma, hyaline, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile florets female. Fertile lemma lanceolate or oblong, 6.5–8.5 mm long, chartaceous, much thinner above, much thinner on margins, without keel, 5 -veined, more than 3-veined. Lemma surface asperulous. Lemma apex entire or erose, obtuse, muticous. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.75–4 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

Male inflorescence similar to female. Male spikelets resembling female.

**Distribution (TDWG). Continent.** Temperate Asia, Tropical Asia.

**Country /Province /State. Middle Asia, Western Asia, China.** Kirgizistan, Turkmenistan, Tadjikistan. Afghanistan, Iran. China South Central, Tibet, Xinjiang. **Indian Subcontinent.** India, Pakistan, West Himalaya.

**TDWG4.** Yunnan.

**Festuca olympica** Vetter. *Beih. Bot. Centralbl.* xlv. II. 307 (1928).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Greece. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Olymp, an steinigen Hangen zwischen 2100 und 2850 m. häufig, *Handel-Mazzetti s.n.*.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. ica*, belonging to. From Mt Olympus, Greece.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms 12–21 cm long. Culm-internodes distally glabrous or pubescent. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect. Ligule a ciliolate membrane. Leaf-blades filiform, conduplicate, 0.3–0.6 mm wide, glaucous. Leaf-blade venation comprising 3–5 vascular bundles, with 1–3 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma strands unequal in size, with subepidermal sclerenchyma free from veins. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, 2.5–4.5 cm long. Primary panicle branches simple. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.5–7.8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.2–4.6 mm long, 0.75–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 4.6–5.2 mm long, chartaceous, glaucous or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2–5 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–2.5 mm long. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region. Southeastern Europe.**

**Country /Province /State. :** Greece.

**Festuca ophioliticola** Kerguilen. *Lejeunia*, n.s., 75: 13 (1975).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from France. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *M. Kerguelen*, *Soc. Ech. Pl. Vasc. Eur. Occ. Bass. Medit.* 7229 (7212 in error), 24 May 1972, France: Finistere: Peumerit, entre Peumerit et Lespurit-Queleenn, sur rochers de serpentines (ancienne carriere) et dans la lande a *Erica cinera* (P; IT: L, LG).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. ophios, snake; lithos, stone. L. -cola, dweller. Growing on serpentine and amphibolite rocks.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 30–40 cm long. Culm-internodes smooth. Leaf-sheaths open for most of their length, with 0 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades straight or curved, filiform, conduplicate, circular in section, 0.55–0.7 mm wide, dark green. Leaf-blade venation comprising 7 vascular bundles, with 1 inner ridges, with subepidermal sclerenchyma free from veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, 3.5–5.7 cm long. Panicle branches scabrous, glabrous or puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–7.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.6–4.3 mm long, 0.8–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4.3–4.9 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.5–1.5 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region. Southwestern Europe.**

**Country /Province /State. :** France.

**Festuca oreophila** I. Markgraf-Dannenberg. *Willdenowia*, 11(2): 208 (1981).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Russia. **Basionym or Replaced Name:** *Festuca ovina* var. *hypsophila* St.-Yves, *Candollea* 5:111 (1932). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: : Based on *F. ovina* var. *hypsophila*; Russia, Ach-Dagh Major: Zedelmejer & Heidemann (LE lecto).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. oros, mountain; phileo, love. Mountain species.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths light brown, glossy, persistent and investing base of culm, with soft dead sheaths. Basal innovations intravaginal. Culms 25–30 cm long. Culm-internodes scaberulous. Leaf-sheaths open for most of their length or tubular for much of their length, with 0.33–0.66 of their length closed. Leaf-sheath auricles erect. Ligule an eciliate membrane, 0.2 mm long. Leaf-blades filiform, conduplicate, elliptic in section, 0.4–0.65 mm wide, glaucous, without exudate. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 3 subepidermal sclerenchyma strands,

with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous, glabrous. Leaf-blade apex obtuse or abruptly acute.

**Inflorescence.** Inflorescence a panicle. Peduncle smooth. Panicle open, lanceolate, dense, 3.5–5.5 cm long. Panicle branches scaberulous or scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 7–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume linear or lanceolate, 3.5–4.7 mm long, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5–5.8 mm long, 1.75–2.1 mm wide, chartaceous, purple, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2–2.5 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Siberia, **Middle Asia, Caucasus, Western Asia, Mongolia.** Altay, Buryatiya, Chita, Irkutsk, Tuva. Kazakhstan, Turkmenistan.

**Festuca orizabensis** E.B. Alekseev. *Bot. Zhurn.*, 66(10): 1497 (1981).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Mexico. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Mexico: Orizaba, *Linden 98* (HT: BR).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. -ensis*, denoting origin. From Pic d'Orizaba (Mount Orizaba), Mexico.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Rhizomes absent or short. Basal innovations extravaginal or intravaginal. Culms 100–150 cm long. Leaf-sheaths open for most of their length, glabrous on surface. Ligule a ciliolate membrane, 0.3–0.5 mm long, truncate. Leaf-blades flat or convolute, 2–4 mm wide. Leaf-blade venation with 11–21 secondary veins, 7–19 inner ridges.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 15–30 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10–13 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes eventually visible between lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface granulose, rough above. Lemma apex acute, mucicous. Palea 2 -veined. Palea keels scaberulous, adorned below, with 0.33–0.5 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–3.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** **Mexico.** Central Mexico, Gulf (Mexico).

**TDWG4.** Distrito Federal, Puebla. Veracruz.

**Festuca oroana** Stancmk. *Folia Geobot.* 39(1): 104 (-105) (2004).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Ecuador. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Ecuador: El Oro, along mule-track Tambillo - Manu, Mountain forest, +/- grazed and/or burned, dense tussock, 03:30'S, 79:32'W, 3200–3320m, 21 Feb 1988, *Laegaard 70309* (HT: AAU; IT: PRC).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 121, fig 61 (2007)).

**Derivation** (Clifford & Bostock 2007): L. *-ana*, indicating connection. From El Oro, Bolivia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Caespitose, clumped densely. Cataphylls inconspicuous. Basal innovations intravaginal. Culms of moderate stature, straight, without nodal roots. Culm-internodes terete. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves mostly basal, 0–2 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined. Ligule an eciliate membrane, membranous, white, entire, truncate. Leaf-blade base symmetrical. Leaf-blades straight, angular in section, stiff or firm, dark green. Leaf-blade midrib indistinct or evident. Leaf-blade venation indistinct or distinct, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma attached to veins below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface glabrous. Leaf-blade margins smooth, glabrous. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle terete, eglandular, glabrous. Panicle open or contracted, oblong or ovate, continuous, loose, straight, 20 cm long, 25 cm wide. Primary panicle branches ascending or spreading, moderately divided, naked below or bearing spikelets almost to the base. Panicle branches straight or arcuate.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 9–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus pilose. Rhachilla internodes scaberulous. Floret callus pilose.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume lanceolate, 2.4–2.6 mm long, 0.5–0.7 length of upper glume, chartaceous or herbaceous, dark green, without keels, 1 -veined. Lower glume apex acute. Upper glume lanceolate, 3.6–3.9 mm long, 0.66 length of adjacent fertile lemma, chartaceous or scarious, dark green, without keels, 3 -veined. Upper glume apex obtuse or acute.

**Florets.** Fertile lemma lanceolate, symmetrical, 5.5–6(–6.5) mm long, chartaceous or herbaceous, mid-green. Lemma apex awned, 1 -awned. Principal lemma awn stiff, 0.5–1 mm long overall.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Ecuador.

**Festuca orthophylla** Pilger. *Engl. Jahrb.* xxv. 717. (1898).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: A. Stbel 87, 1 Feb 1877, Peru: Vincocaya, alrededores de Arequipa, dieses wachst in Bingen (B (photo, CONC); IT: HP, US-81579).

**Illustrations (Books):** S.A.Renvoize, *Gramineas de Bolivia* (1998) (106, Fig 23).

**Derivation** (Clifford & Bostock 2007): Gk. orthos, straight; phyllon, leaf. Leaf-blades erect, stiff.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 15–25 cm long, 2–3 -noded. Leaf-sheath oral hairs woolly. Ligule a ciliate membrane, 0.5–1 mm long. Leaf-blades aciculate, involute, 5–13 cm long, 1–2 mm wide, stiff. Leaf-blade margins ciliate. Leaf-blade apex pungent.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 4.5–6 cm long, 0.6–0.8 cm wide. Primary panicle branches appressed. Panicle branches glabrous or pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 8.5–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes pubescent.

**Glumes.** Glumes persistent, dissimilar, with lower narrower than upper, shorter than spikelet. Lower glume lanceolate, 4–5 mm long, 0.7–0.8 length of upper glume, herbaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume margins ciliolate. Lower glume apex acute. Upper glume elliptic, 5–6 mm long, 0.8–0.9 length of adjacent fertile lemma, herbaceous, without keels, 3 -veined. Upper glume margins ciliolate. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 6–7 mm long, herbaceous, without keel, 5 -veined, more than 3-veined. Lemma margins pubescent. Lemma apex acute. Palea 1 length of lemma, 2 -veined. Palea keels pubescent. Palea surface papillose. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, 0.6 mm long, membranous, 2-toothed. Anthers 3, 2.5–3.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp, fusiform, plano-convex, 3.5 mm long, glabrous. Embryo 0.15 length of caryopsis. Hilum linear, 1 length of caryopsis.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America, Southern South America. Bolivia, Peru. Argentina Northwest, Chile North, Chile Central.

**TDWG4.** Jujuy, Salta, Tucuman. Tarapaca, Antofagasta. Coquimbo, Biobio.

**Festuca ovina** Linn. *Sp. Pl.* 73. (1753).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), E.Edgar, & H.Connor, *Flora of New Zealand Gramineae* 5 (2000), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N.L.Bor, *Grasses of Burma, Ceylon, India and Pakistan* (1960), T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983) (& as *F. purpusiana*), T.Koyama, *Grasses of Japan and its neighboring regions* (1987).

**TYPE** from Europe. **Basionym or Replaced Name:** *Festuca pratensis* Honck, non Huds (1762), *Vollst. Syst. Gew. Deutschl.* 268 (1782). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *Linnaeus s.n.*, e Lapponia (LINN-92.1). LT designated by Jarvis, Stace & Wilkinson, *Watsonia* 16: 300 (1987).

**Illustrations (Books):** C.E.Hubbard, *Grasses* (1968) (130), G.Hegi, *Flora von Mitteleuropa* 1 (1909) (as *F. pumila* & as *F. ovina* subspecies *vulgaris*, *capillata*, *duriuscula*), N.N.Tsvelev, *Grasses of the Soviet Union* (1983) (563 (377), Pl.7), C-C Hsu, *Flora of Taiwan*, Vol 5 (1978) (316), C-C Hsu, *Taiwan Grasses* (1975) (442, Pl. 1392as var. *ovina*), K.M.Matthew, *Flora Palni Hills* (1996) (832, Pl 832), K.F.Best, et al, *Prairie Grasses* (1971) (133), M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (425), W.Burger, *Flora Costaricensis* 15, Gramineae: *Fieldiana Botany New Series* 4 (1980) (240, Fig 83), S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig.336), E.Hafliger & E.Schultz, *Grass Weeds*, CIBA-GEIGY (2:81(1980)).

**Derivation** (Clifford & Bostock 2007): *L. ovis*, sheep; -ina, belonging to. A valuable species of sheep pastures.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect or geniculately ascending, 5–60 cm long, 1–2 -noded. Lateral branches lacking. Leaf-sheaths open for most of their length, without keel, glabrous on surface. Ligule an eciliate membrane, 0.2 mm long. Leaf-blades filiform, conduplicate, 3–25 cm long, 0.3–0.6 mm wide. Leaf-blade venation comprising 5–7 vascular bundles. Leaf-blade surface smooth or scabrous, glabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Peduncle smooth or scaberulous above. Panicle open, lanceolate or oblong, dense or loose, 3–12 cm long. Primary panicle branches appressed or ascending or spreading. Panicle branches angular, scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 1–3 mm long.

**Fertile Spikelets.** Spikelets comprising 3–9 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 5–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 2–3 mm long, 0.6–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume oblong, 3–4 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma ovate, 3.5–5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.5–1.5 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous, adorned above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–2.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear, 1 length of caryopsis.

$2n = 14$  (6 refs TROPICOS), or 21, or 28 (2 ref TROPICOS), or 35, or 42, or 56, or 70.

**Distribution (TDWG). Continent.** Europe, Africa, Temperate Asia, Tropical Asia, Australasia, North America, South America.

**Region.** Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe.

**Country /Province /State.** : Denmark, Finland, Foroyar, Great Britain, Iceland, Ireland, Norway, Sweden. : Austria, Belgium, Czechoslovakia, Germany, Hungary, Netherlands, Poland, Switzerland. : France. : Italy, Romania, Yugoslavia. Belarus, Estonia, Latvia, Lithuania, Baltic States, Central European Russia, East European Russia, North European Russia, South European Russia, Northwest European Russia, Ukraine. **Northern Africa, Macaronesia.** Algeria, Morocco, Tunisia. Madeira. Siberia, Russian far east, **Middle Asia, Caucasus, Western Asia, China, Mongolia, Eastern Asia, Russia.** Altay, Buryatiya, Chita, Irkutsk,



Krasnoyarsk, Tuva. Amur, Khabarovsk, Kuril Is, Magadan, Primorye. Kazakhstan. Afghanistan, Iran, Iraq. China South Central, Inner Mongolia, Manchuria, China North-Central, Qinghai, China Southeast, Tibet, Xinjiang. Mongolia. Japan, Korea, Taiwan. Japan Hokkaido, or Honshu, or Shikoku, or Kyushu. **Indian Subcontinent**. Nepal. **New Zealand**. New Zealand North I, New Zealand South I. Hawaii (\*). **Subarctic America**, **Western Canada**, **Eastern Canada**, **Northwest USA**, **North-central USA**, **Northeast USA**, **Southwestern USA**, **South-central USA**. Alaska, Greenland. Alberta, British Columbia, Manitoba, Saskatchewan. Ontario. Colorado, Idaho, Montana, Oregon, Washington, Wyoming. Kansas. Connecticut, Massachusetts, Michigan, Ohio, New Hampshire, New Jersey, New York, Rhode Island, Vermont, West Virginia. Arizona, California, Nevada, Utah. New Mexico. **Mesoamerica**, **Western South America**. Costa Rica. Peru.

**TDWG4**. Gansu, Shaanxi. Anhui, Jiangxi, Zhejiang. Guizhou, Sichuan, Yunnan. Sikkim. Uttah Pradesh, West Bengal. Jammu Kashmir.

**Festuca oviniformis** Vetter. *Engl. Jahrb.* lxi. 547 (1939).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Greece. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: ST: *K.H. Rechinger 9515*, 14 Jun 1936, Greece: Thrace (US-1936789).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. forma*, appearance. The spikelets closely resemble those of *Festuca ovina*.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 12–32 cm long. Culm-internodes smooth. Leaf-sheaths open for most of their length, with 0 of their length closed, with flat margins, puberulous. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 0.65–0.85 mm wide, stiff, pruinose. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with subepidermal sclerenchyma free from veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, rough adaxially. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 3–8 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–9 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7.8–9 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.9–4.9 mm long, 0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 5–6 mm long, chartaceous, mid-green, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2.5–4 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region. Southeastern Europe.**

**Country /Province /State.** : Greece.

**Festuca pachyphylla** Degen ex E. I. Nyar. apud Csuros, Gergely & Pop. *Contrib. Bot., Cluj*, 1962, 146 (1963).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *Gk. pachys*, thick; *phyllon*, leaf. Leaf-blades thick.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 27–54 cm long. Culm-internodes smooth or scaberulous. Leaf-sheaths open for most of their length, with 0–0.33 of their length

closed, with flat margins, glabrous on surface or pubescent. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 0.9–1 mm wide, glaucous, without exudate. Leaf-blade midrib keeled beneath. Leaf-blade venation comprising 7–9 vascular bundles, with 3–5 inner ridges, with 5 subepidermal sclerenchyma strands, with subepidermal sclerenchyma strands unequal in size, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 5.5–8 cm long. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8.1–9.1 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 4–5.1 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 5.4–6.5 mm long, chartaceous, glaucous or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2–3 mm long overall, 0.33–0.5 length of lemma. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region. Southeastern Europe.**

**Country /Province /State.** : Romania.

### **Festuca pallens** Host. *Gram. Austr.* ii. 63 (1802).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Hungary. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: T: *Host*, Hort. (LE). b= CT.

T: (LE). T label was written by hand of Bieberstein : "Comm. Host. Vind. a.1804.

ST: *Host s.n.*, 1806, Austria (LE). ST (Pleisiotypus).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. pale. Inflorescences pale.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 30–40 cm long. Culm-internodes smooth or scaberulous. Leaf-sheaths open for most of their length, with 0 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 0.6–1.1 mm wide, stiff, glaucous, pruinose. Leaf-blade venation comprising 7–11 vascular bundles, with 1–9 inner ridges, with subepidermal sclerenchyma free from veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth or scaberulous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, interrupted, loose, 4–9.5 cm long. Panicle branches smooth or scaberulous, glabrous or puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.5–8.4 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.3–5.2 mm long, 0.75–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4.3–5.4 mm long, chartaceous, glaucous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2–4 mm long overall, 0.5–0.75 length of lemma. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$N = 7$  (2 refs TROPICOS), or 14 (2 refs TROPICOS).  $2n = 14$  (2 refs TROPICOS), or 28 (2 refs TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe.

**Country /Province /State.** : Austria, Belgium, Czechoslovakia, Germany, Netherlands, Poland, Switzerland. : France. : Romania, Yugoslavia. Estonia, Latvia, Lithuania, Northwest European Russia, Ukraine.

**TDWG4.**

**Festuca pallescens** (St.-Yves) L. Parodi. *Rev. Argent. Agron.* xx. 206 (1953).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Argentina. **Basionym or Replaced Name:** *Festuca gracillima* subvar. *pallescens* St.-Yves, *Candollea* 3: 296 (1927)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Dauber 173*, 3 Dec 1916, Argentina: Santa Cruz: au rio Coyle, estancia Las Vegas (G; IT: BAA).

**Illustrations (Books):** M.N.Correa, *Flora Patagonica* Parte III, Gramineae (1978) (111, Fig. 68).

**Derivation** (Clifford & Bostock 2007): *L. pallesco*, become pale. Losing color at maturity, especially spikelets.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 25–80 cm long. Lateral branches lacking. Leaf-sheaths open for most of their length, smooth or scaberulous. Ligule a ciliolate membrane, 0.5 mm long, glabrous on abaxial surface or pubescent on abaxial surface. Leaf-blades filiform, conduplicate, 5–35 cm long, 1–1.5 mm wide, herbaceous, glaucous. Leaf-blade surface glabrous. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, 5–15 cm long. Panicle axis scaberulous. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, scaberulous.

**Fertile Spikelets.** Spikelets comprising 5–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9–15 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1.5–2.5 mm long.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4.5–5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein smooth or scabrous. Lower glume lateral veins absent. Lower glume surface smooth or asperulous, rough at apex. Lower glume apex acuminate. Upper glume lanceolate, 5.5–7.5 mm long, 0.66–0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein smooth or scabrous. Upper glume surface smooth or asperulous, rough at apex. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 6.5–11 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough below. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–3 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels ciliolate. Palea surface scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3.5–4.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear, 0.75 length of caryopsis.

$2n = 42$  (2 refs TROPICOS).

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Southern South America. Argentina South, Chile South.

**TDWG4.** Mendoza, Chubut, Neuquén, Río Negro, Santa Cruz.

**Festuca pallidula** E.B.Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 93(2): 97 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Russia, Georgia, Borzhomi: Skvortsov 1339 (MHA holo).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 30–60 cm long, 2 -noded, with 0.2–0.33 of their length below uppermost node. Lateral branches lacking. Leaf-sheaths open for most of their length, scaberulous. Ligule a ciliolate membrane, 1–1.5 mm long,

0.2–0.3 mm long on basal shoots. Leaf-blades filiform, conduplicate, 30–35 cm long, 0.55–0.7 mm wide, glaucous. Leaf-blade venation comprising 5–7 vascular bundles, with 3–5 inner ridges, with subepidermal sclerenchyma free from veins, with continuous uniform subepidermal sclerenchyma layer on the underside.

**Inflorescence.** Inflorescence a panicle. Peduncle antrorsely scabrous above. Panicle contracted, linear, 5.5–8 cm long. Primary panicle branches appressed, 2–3.5 cm long, bearing 2–4 fertile spikelets on each lower branch. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 6–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 13–15 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 3.5–4 mm long, 0.9 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface smooth. Lower glume apex acute. Upper glume lanceolate, 4–4.2 mm long, 0.66 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface smooth. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6–6.2 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface smooth. Lemma apex acute, muticous. Palea 2 -veined. Palea keels scabrous, adorned above, with 0.33 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 2.5–2.7 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, sulcate on hilar side. Hilum linear, 1 length of caryopsis.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Caucasus. Transcaucasus.

**Festuca pamirica** Tzvelev. *Not. Syst. Herb. List. Bot. Acad. Sci. URSS*, xx. 422 (1960).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Tajikistan: Pamir boreali-occidentalis...prope torajectum Tachta-Korum, ca. 3200 m, 30 July 1958, *N. Tzveler s.n.*

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From the Pamir Mountains, Tadzhikistan, former Soviet Union.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 15–25 cm long. Ligule an eciliate membrane, 0.3–0.5 mm long. Leaf-blades filiform, conduplicate, 5–10 cm long, 1 mm wide, glaucous. Leaf-blade venation comprising 7 vascular bundles, with 3 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, oblong, 3–5 cm long. Primary panicle branches appressed. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 5.5–8.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 2.4–3.2 mm long, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3–4.3 mm long, 0.8–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 3.5–5 mm long, chartaceous, dark brown, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1–2 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous, adorned above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 0.75–1.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia, Tropical Asia.

**Country /Province /State.** Middle Asia, China. Turkmenistan, Tadzhikistan. China South Central, Xinjiang. Indian Subcontinent. Pakistan, West Himalaya.

**TDWG4.** Yunnan.

**Festuca pampeana** Speng. *Contr. Fl. Vent.* 73. (1896).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Argentina. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Argentina: Prov. Buenos Aires: hallada una vez sola en abundancia en la falda occidental del Cerro de la Ventana.

**Illustrations (Books):** A.L.Cabrera, *Flora de la Provincia de Buenos Aires, IV Pt 2 Gramineas* (1970) (126, Fig. 33).

**Derivation** (Clifford & Bostock 2007): Spanish American, pampas. From the Pampas, that is grasslands of South America.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 60–90 cm long, 2–3 -noded, with 0.5–0.66 of their length below uppermost node. Culm-internodes terete, smooth or scaberulous. Culm-nodes glabrous. Leaf-sheaths open for most of their length, mostly shorter than adjacent culm internode, glabrous on surface. Ligule a ciliolate membrane, 1 mm long. Leaf-blades filiform, conduplicate, 0.5–0.6 mm wide, stiff. Leaf-blade venation with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong, 10 cm long. Primary panicle branches ascending. Panicle axis scabrous. Panicle branches flexuous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7.5–8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 5–5.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 6.5–7 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 7.5–8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins obscure. Lemma apex acuminate, mucicous or awned, 1 -awned. Principal lemma awn 0–2 mm long overall. Palea 7–7.5 mm long, 2 -veined. Palea keels ciliolate. Palea surface scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3.5–4 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Hilum linear, 0.75 length of caryopsis.

$2n = 56$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Southern South America.** Argentina Northeast.

**TDWG4.** San Luis. Buenos Aires.

**Festuca panciana** (Hack.) Richt. *Pl Eur.* 1:96 (1890).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Hungary. **Basionym or Replaced Name:** *Festuca ovina* var. *paniciana* Hack., *Monogr.* :106 (1882). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Hungary, Mehadia: Winkler.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating connection. In honor of Josef Pancic (1814–1888) Serbian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 15–35 cm long. Culm-internodes smooth or scaberulous, distally glabrous or pubescent. Leaf-sheaths open for most of their length, with 0.25–0.33 of their length closed, with flat margins, glabrous on surface or pubescent. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, angular in section, 0.3–0.6 mm wide. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 5 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation or with sclerenchyma strands widened to form a discontinuous subepidermal layer or with unevenly thickened subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, glabrous or pubescent. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 3–6 cm long. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7.8–9.1 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.4–5 mm long, 0.66–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 5.2–6.2 mm long, chartaceous, glaucous or purple, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2.6–3.5 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 28$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Southeastern Europe.

**Country /Province /State.** : Albania, Bulgaria, Yugoslavia.

**Festuca panda** Swallen. *Journ. Wash. Acad. Sc.* xxvi. 209. (1936).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Chile. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *G. Looser 2151*, Jan 1932, Chile: Dept. Illapel: Cajon de los Pelambres (US-1614378; IT: LOOSER).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. bent. Pedicels flexuose.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 9–30 cm long, 1 -noded. Lateral branches lacking. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 1–3 mm long, erose. Leaf-blades aciculate, convolute, 1–3 cm long, 1 mm wide. Leaf-blade venation comprising 7 vascular bundles, with 7 inner ridges, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface glabrous.

**Inflorescence.** Inflorescence a panicle, comprising 8–15 fertile spikelets. Panicle contracted, linear, 2–5 cm long, bearing few spikelets. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2 mm long, 0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 1 -veined. Upper glume lateral veins absent. Upper glume apex obtuse.

**Florets.** Fertile lemma elliptic, 4–4.4 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate. Palea 1 length of lemma, 2 -veined. Palea keels ciliolate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, 0.8 mm long. Anthers 3, 2.2 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Southern South America. Chile North, Chile Central.

Tarapaca. Coquimbo.

**Festuca paniculata** (L.) Schinz & Thellung. *Viert. Nat. Ges. Zurich* 58:40 (1913).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from France. **Basionym or Replaced Name:** *Anthoxanthum paniculatum* L., *Sp. Pl.* 28 (1753). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: France, Mont Aigual: Burser.

**Illustrations (Books):** G.Hegi, *Flora von Mitteleuropa* 1 (1909) (as *F. spadicea*).

**Derivation** (Clifford & Bostock 2007): *L. panus*, thread; -ula, diminutive; -ata, possessing. Inflorescence open with thread-like pedicels.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths thickened and forming a bulb, persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms 60–120 cm long. Culm-internodes smooth. Leaves heterophyllous being wider on the culm. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.5–2.5 mm long, bilobed. Leaf-blades filiform, convolute, 14–82 cm long, 0.5–1 mm wide. Leaf-blade venation with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, rough adaxially or on both sides, glabrous. Leaf-blade margins smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear or oblong, dense, 8–20 cm long. Panicle axis smooth. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets obovate, laterally compressed, 7–11 mm long, 4–5 mm wide, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4.5–6 mm long, 0.8–0.9 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein smooth or scaberulous. Lower glume lateral veins absent. Lower glume apex acute or acuminate. Upper glume oblong, 5–7.5 mm long, 0.7–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein smooth or scaberulous. Upper glume apex acute or acuminate.

**Florets.** Fertile lemma lanceolate, 7–8.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma midvein scaberulous. Lemma apex acute or acuminate. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, glabrous. Hilum linear.

$2n = 14$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe, Africa.

**Region.** Middle Europe, Southwestern Europe, Southeastern Europe.

**Country /Province /State.** : Austria, Switzerland. : France, Portugal, Spain. : Albania, Bulgaria, Italy, Romania, Yugoslavia. **Northern Africa.** Algeria, Morocco, Tunisia.

***Festuca pannonica*** Wulf. ex Host. *Gram. Austr.* iv. 36. t. 62 (1809).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Hungary. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Hungary: Coll?.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. -icus*, belonging to. From Pannonia, Hungary.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 30–60 cm long. Culm-internodes smooth or scaberulous. Leaf-sheaths open for most of their length, with 0 of their length closed, with flat margins, pubescent. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 0.9–1.3 mm wide, stiff, glaucous. Leaf-blade venation comprising 7–11 vascular bundles, with 5 inner ridges, with subepidermal sclerenchyma free from veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth or scaberulous, rough adaxially. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, interrupted, loose, 7.5–13 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–9 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8.3–8.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.6–5.7 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 5.2–5.8 mm long, chartaceous, glaucous, without keel, 5 -veined, more than 3-veined. Lemma surface smooth or scabrous, rough above. Lemma margins ciliate. Lemma apex acuminate,

awned, 1 -awned. Principal lemma awn 1.2–2 mm long overall, 0.25–0.33 length of lemma. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 14$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe.

**Country /Province /State.** : Austria, Hungary.

### ***Festuca paphlagonica*** (St.-Yves) I. Markgraf-Dannenberg. *Willdenowia*, 11(2): 208: (1981).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Turkey. **Basionym or Replaced Name:** *Festuca ovina* var. *paphlagonica* St.-Yves, *Bull. Soc. Bot. France* 71: 32 (1924)

. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Turkey, Giurdagh: Sintenis 4187 (LAU holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Paphlagonia, north-west Turkey.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths withering. Basal innovations intravaginal. Culms erect, 30–45 cm long. Culm-internodes antrorsely scabrous. Leaf-sheaths open for most of their length, with 0 of their length closed, glabrous on surface or pilose. Leaf-sheath auricles erect. Ligule an eciliate membrane, 0.2 mm long. Leaf-blades filiform, conduplicate, elliptic in section, 0.5–0.85 mm wide, stiff. Leaf-blade venation comprising 5–8 vascular bundles, with 3–5 inner ridges, with subepidermal sclerenchyma free from veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth, glabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Peduncle smooth. Panicle open, lanceolate, dense, 3–8 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 8–9.7 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.9–5.2 mm long, chartaceous, with scarious margins, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 5.7–6.3 mm long, 2–2.5 mm wide, chartaceous, mid-green, without exudate, without keel, 5 -veined, more than 3-veined. Lemma margins eciliate or ciliolate. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2–3 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Western Asia. Turkey.

### ***Festuca papuana*** Stapf. *Kew Bull.* 1899, 117. (1899).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, J.F.Veldkamp, Poaceae ms (*Flora Malesiana*) (& as *F.monantha*).

**TYPE** from Papua new Guinea. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: T: A. *Giulianetti s.n.*, 1896, Papua New Guinea: New Guinea, Central: Scratchley [3719 m] (L).

**Recent Synonyms:** *Festuca monantha* Stapf, *Kew Bull.* 1899, 117. (1899).

**Illustrations (Books):** E.E.Henty, *A Manual of the Grasses of New Guinea* (1969) (95, Pl. 37).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating location. From Papua, now Papua New Guinea.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths grey, glabrous, persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms erect, 30–60 cm long. Lateral branches lacking. Leaf-sheaths smooth, glabrous on surface. Ligule an eciliate membrane, 0.5 mm long. Leaf-blades erect, involute, 5–25 cm long, 1–2 mm wide. Leaf-blade midrib keeled beneath. Leaf-blade surface ribbed, papillose, rough adaxially, glabrous.



**Inflorescence.** Inflorescence a panicle. Panicle open, elliptic, 6–12 cm long. Primary panicle branches 1-nate, simple, 2–5 cm long. Panicle axis smooth or with occasional prickles. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 8–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate or elliptic, 3.8–4.2 mm long, 0.75 length of upper glume, chartaceous, without keels, 3-veined. Lower glume apex acute. Upper glume lanceolate or elliptic, 4.8–5.5 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume primary vein scaberulous. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 5–6 mm long, chartaceous, without keel, 5-veined, more than 3-veined. Lemma surface scaberulous, rough on veins. Lemma apex acute, awned, 1-awned. Principal lemma awn 3.2–3.5 mm long overall. Palea 4–4.3 mm long, 2-veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary pubescent on apex. Caryopsis with adherent pericarp, oblong, hairy at apex. Hilum linear, 0.5 length of caryopsis.

**Distribution (TDWG). Continent.** Tropical Asia.

**Country /Province /State.** Malesia, Papuaia. Lesser Sunda Is. New Guinea West Papua (Irian Jaya). New Guinea.

### ***Festuca paradoxa*** Desv. *Opusc.* 105. (1831).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from France. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Unknown, Cult. at Paris: Anon (P holo, K).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (401).

**Derivation** (Clifford & Bostock 2007): Gk. para, irregular; doxa, opinion. Different from the expected in regard to related species.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms geniculately ascending, 50–110 cm long. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane. Leaf-blades flat or involute, 4–8 mm wide.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 12–20 cm long, with spikelets clustered towards branch tips. Primary panicle branches drooping. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5–6 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3 mm long, 0.75 length of upper glume, chartaceous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4 mm long, chartaceous, without keel, 5-veined, more than 3-veined. Lemma apex obtuse, muticous. Palea 2-veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** Northwest USA, North-central USA, Northeast USA, Southwestern USA, South-central USA, Southeastern USA. Colorado, Oregon, Washington. Iowa, Kansas, Oklahoma. Massachusetts, New York. Nevada, Utah. Texas. Alabama, Arkansas, Delaware, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, District of Columbia.

### ***Festuca parciflora*** Swallen. *Contrib. U. S. Nat. Herb.* xxix. 255 (1948).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Ecuador. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Steyermark 53092*, 15 Jun 1943, Ecuador: Azuay (US-1911635).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 123, fig 62 (2007) as subsp. *parciflora*).

**Derivation** (Clifford & Bostock 2007): florets few per spikelet.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Cataphylls inconspicuous. Basal innovations intravaginal. Culms geniculately ascending, slender, straight, 25–40 cm long, without nodal roots. Culm-internodes terete. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves mostly basal, 0–1 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined, smooth. Ligule an eciliate membrane, 1 mm long, membranous, white, entire, truncate. Leaf-blade base symmetrical. Leaf-blades straight or curved, involute, angular in section, 10–12 cm long, 1 mm wide, indurate, firm, glaucous. Leaf-blade midrib indistinct. Leaf-blade venation indistinct, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma attached to veins below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous, glabrous. Leaf-blade margins scaberulous, glabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle terete, eglandular, glabrous. Panicle open, lanceolate, continuous, dense, straight, 4–11 cm long, bearing many spikelets or few spikelets, contracted about primary branches. Primary panicle branches appressed. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8.5–9 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes scaberulous. Floret callus glabrous.

**Glumes.** Glumes persistent, similar or dissimilar, subequal in width or with lower wider than upper, shorter than spikelet. Lower glume lanceolate, 3–3.5 mm long, 0.75 length of upper glume, chartaceous, pallid or light green or purple, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex obtuse or acute. Upper glume lanceolate or elliptic, 4 mm long, 0.66 length of adjacent fertile lemma, chartaceous, pallid or light green or purple, without keels, 3 -veined. Upper glume apex obtuse.

**Florets.** Fertile lemma lanceolate, symmetrical, 6–6.5 mm long, chartaceous, pallid or mid-green or purple, without keel, 5 -veined, more than 3-veined. Lemma surface smooth or scaberulous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn stiff, 0.5–1.5 mm long overall. Apical sterile florets resembling fertile though underdeveloped.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Ecuador.

**Festuca parodiana** (St.-Yves ex Parodi) E.G. Nicora. *Hickenia*, 2(57): 267 : (1998).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Argentina. **Basionym or Replaced Name:** *Festuca subulata* var. *parodiana* St.-Yves, *Physis* (Buenos Aires) 11: 499–500 (1935)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *L.R. Parodi 10669*, 25 Jan 1933, Argentina: Tucuman: Dpto. Tafi: La Banda: comzn a orilla de riachos en los bosques de Aliso, 2400 m (G; ILT: BAA, US-1539754). LT designated (as isstipo, isotypus) by Trpe, *Darwiniana* 15(1–2): 206, 208 (1969).

ST: *Parodi 10689*, 26 Jan 1933, Argentina: Tucuman: San Josi: comzn en el bosque de Aliso, 2100 m (G; IST: BAA).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating connection. In honor of Lorenzo Raimondo Parodi (1895–1966) Argentinian agrostologist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms erect, 100–150 cm long. Leaf-sheath auricles absent. Ligule an eciliate membrane, 1.5–2 mm long, truncate. Leaf-blades flat, 5–10 mm wide. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, nodding, 30 cm long. Primary panicle branches appressed. Panicle branches flexuous, smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10–11 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1–1.5 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, 2 mm long, 0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface asperulous. Lower glume apex acute. Upper glume linear, 3 mm long, 0.5 length of adjacent fertile lemma, chartaceous, without keels, 1 -veined. Upper glume lateral veins absent. Upper glume surface asperulous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins obscure. Lemma surface asperulous. Lemma apex attenuate, muticous. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 2 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Southern South America.** Argentina Northwest.

**TDWG4.** Catamarca, Jujuy, San Juan, Tucuman.

### **Festuca parodii** St.- Yves. *Candollea*, iii. 308 (1927).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Argentina. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Argentina: Catamarca: Poman, Dec 1909, *Parodi 2342* (Herb. Parodi & St.-Yves).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of Lorenzo Raimondo Parodi (1895–1966) Argentinian agrostologist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 40–60 cm long, 2–3 -noded. Culm-internodes terete, striate, smooth or scaberulous, distally glabrous. Leaf-sheaths glabrous on surface. Leaf-sheath auricles erect. Ligule a ciliate membrane, 1 mm long, truncate. Leaf-blades filiform, conduplicate, 20–30 cm long, 0.8–0.9 mm wide, glaucous. Leaf-blade venation comprising 10 vascular bundles, with 6 inner ridges, with 17 subepidermal sclerenchyma strands, with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scaberulous. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong, dense, 6–15 cm long. Primary panicle branches appressed. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 5.5–7.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 0.6–0.7 mm long, smooth.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4.5–5 mm long, 0.8–0.9 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5–6 mm long, 1.1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4.5–5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma midvein scaberulous. Lemma apex acuminate, muticous. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3 mm long. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Southern South America.** Argentina Northwest, Argentina Northeast.

**TDWG4.** San Luis. Buenos Aires.

### **Festuca parvigluma** Steud. *Syn. Pl. Glum.* 1:305 (1854).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N.L.Bor, *Grasses of Burma, Ceylon, India and Pakistan* (1960), T.Koyama, *Grasses of Japan and its neighboring regions* (1987).

**TYPE** from Japan. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Japan: Coll? (L holo).

**Illustrations (Books):** T.Koyama, *Grasses of Japan and its neighbouring regions* (1987) (80, Fig 24), C-C Hsu, *Flora of Taiwan*, Vol 5 (1978) (318), C-C Hsu, *Taiwan Grasses* (1975), S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig.325, 331).

**Derivation** (Clifford & Bostock 2007): *L. parvus*, small; gluma, husk. Glumes small especially in comparison to lemmas.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Rhizomes absent or elongated. Culms erect, 30–60 cm long, 0.8–1.2 mm diam., 2–3 -noded. Culm-internodes 5–10 cm long. Leaves mostly basal. Leaf-sheaths glabrous on surface or puberulous. Ligule an eciliate membrane, 0.5–1 mm long, translucent, truncate. Leaf-blades 10–30 cm long, 2–5 mm wide. Leaf-blade surface smooth or scaberulous, rough adaxially, glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, elliptic, nodding, 10–20 cm long, 2–5 cm wide. Primary panicle branches 1–2 -nate, rebranched above middle, 8–11 cm long. Panicle axis scabrous. Panicle branches capillary, scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets obovate, laterally compressed, 7–9 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume ovate, 1–1.5 mm long, 0.5 length of upper glume, chartaceous, much thinner on margins, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex obtuse. Upper glume ovate, 2–3 mm long, 0.33–0.5 length of adjacent fertile lemma, chartaceous, with hyaline margins, without keels, 3 -veined. Upper glume apex obtuse.

**Florets.** Fertile lemma oblong, 6–7 mm long, chartaceous, much thinner on margins, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 3–12 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels smooth or scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 0.7–1 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, oblong, 2.5–3.5 mm long, hairy at apex. Hilum linear.

$2n = 28$ .

**Distribution (TDWG), Continent.** Temperate Asia.

**Country /Province /State.** China, Eastern Asia. China South Central, China North-Central, China Southeast, Tibet. Japan, Korea, Taiwan. Japan Hokkaido, or Honshu, or Shikoku, or Kyushu.

**TDWG4.** Shaanxi. Hunan, Jiangxi, Zhejiang. Guizhou, Yunnan. Sikkim.

**Festuca parvipaleata** Jansen. *Acta Bot. Neerl.* ii. 370 (1953).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), J.F.Veldkamp, Poaceae ms (*Flora Malesiana*).

**TYPE** from Indonesia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *L.J. Brass & E. Myer-Drees 10061*, Sep 1938, Indonesia: New Guinea: Irian Jaya, Wilhelmina Mt. [4050 m] (US-1761726; IT: L, US-1761725).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. parvus*, small; -ata, possessing. Florets with a small palea.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms erect, 40–70 cm long, 2–3 -noded. Lateral branches lacking. Leaf-sheaths ribbed, puberulous. Ligule an eciliate membrane, 0.7 mm long, truncate. Leaf-blades involute, 30–42 cm long, 0.7–1 mm wide. Leaf-blade venation with 2–4 secondary veins. Leaf-blade surface scaberulous, rough adaxially or on both sides.

**Inflorescence.** Inflorescence a panicle. Peduncle scaberulous above. Panicle lanceolate, 8–12 cm long. Primary panicle branches appressed, 1–3 -nate. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 8–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume oblong, 3–4.2 mm long, 0.5 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume surface asperulous. Lower glume apex acute. Upper glume ovate, 6–7.5 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume surface asperulous, rough on veins. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 6–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma midvein scabrous. Lemma surface scaberulous, rough on veins. Lemma margins scaberulous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2–3 mm long overall. Palea 5.8–6.1 mm long, 2 -veined. Palea keels scabrous. Palea surface asperulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–2.5 mm long. Ovary glabrous or with a few apical hairs. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Tropical Asia.

**Country /Province /State. Papuaasia.** New Guinea West Papua (Irian Jaya). New Guinea.

### ***Festuca parvipaniculata*** Hitchcock. *Contrib. U. S. Nat. Herb* xxiv. 322 (1927).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: A.S. Hitchcock 22244, 1 Nov 1923, Peru: Junin (US-1164489).

**Illustrations (Books):** S.A.Renouze, *Gramineas de Bolivia* (1998) (104, Fig 22).

**Derivation** (Clifford & Bostock 2007): *L. parvus*, small; *paniculus*, panicle; -ata, possessing. Panicle few-flowered.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 15–30 cm long. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.5–1 mm long. Leaf-blades involute, 5–10(–15) cm long, 2–3 mm wide. Leaf-blade surface glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, 3–5 cm long, bearing few spikelets. Primary panicle branches appressed or ascending, 1–3 cm long. Panicle branches straight. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume lanceolate, 7 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins obscure. Lemma surface scaberulous. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2–3 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Western South America.** Bolivia, Peru.

### ***Festuca patzkei*** I. Markgraf-Dannenberg. *Bot. J. Linn. Soc.*, 76(4): 325 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Germany. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Germany, Sierck to Montnach: Markgraf- Dannenberg (Z holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Erwin Patzke (fl. 1964) German pharmacist and botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 30–56 cm long. Leaf-sheaths open for most of their length, with 0 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect. Ligule a ciliolate membrane. Leaf-blades filiform, conduplicate, 0.45–0.8 mm wide. Leaf-blade venation comprising 7 vascular bundles, with 3 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, 6–9 cm long. Primary panicle branches moderately divided. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.5–7.3 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.3–3.6 mm long, 0.75–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 3.2–4.9 mm long, chartaceous, mid-green, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.7–2.1 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG).** Continent. Europe.

**Region.** Middle Europe, Southwestern Europe.

**Country /Province /State.** : Germany. : France.

**Festuca penzesii** (Acht.) I. Markgraf-Dannenberg. *Bot. J. Linn. Soc.*, 76(4): 326 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**Basionym or Replaced Name:** *Festuca pungens* var. *penzesii* Acht., *Izvest. Bot. Inst. Sofia* 3:43 (1953).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Antal Pinzes (1895–1984) Hungarian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms 30–50 cm long, 0.7–1.3 mm diam. Leaf-sheaths glabrous on surface or hispid. Ligule an eciliate membrane, 0.7–2.2 mm long. Leaf-blades filiform, conduplicate, 0.4–0.75 mm wide, firm, glaucous. Leaf-blade venation comprising 7–11 vascular bundles, with 6–8 inner ridges, with sclerenchyma strands below veins or above all veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth. Leaf-blade apex pungent.

**Inflorescence.** Inflorescence a panicle. Panicle open, interrupted, equilateral, 5–9.5 cm long. Panicle branches flexuous, puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9.1–11.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.6–6.7 mm long, 0.8–0.9 length of adjacent fertile lemma, chartaceous, with scarious margins, without keels, 3 -veined. Upper glume apex obtuse or acute.

**Florets.** Fertile lemma oblong, 5.8–7.5 mm long, chartaceous, yellow, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 0.4–1.6 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, obovoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 14$  (1 ref TROPICOS).

**Distribution (TDWG).** Continent. Europe.

**Region.** Southeastern Europe.

**Country /Province /State.** : Bulgaria, Greece.

**Festuca peristerea** (Vett.) I. Markgraf-Dannenberg. *Veroff. Geobot. Inst. Rubel*, 56: 13 (1976).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Greece. **Basionym or Replaced Name:** *Festuca ovina* var. *peristerea* Vett., *Ann. Nat. Mus. Wien* 57:130 (1950). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Greece, Macedonia, Bitolj; Weber (W holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. -ea, belonging to. From Mt. Peristeri, Macedonia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 30–55 cm long. Leaf-sheaths tubular for much of their length, with 0.5 of their length closed, with infolded margins, ribbed, glabrous on surface. Ligule a ciliate membrane. Leaf-blades filiform, conduplicate, 0.4–0.7 mm wide, stiff. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with sclerenchyma strands below veins, with subepidermal sclerenchyma free from veins. Leaf-blade surface scaberulous, rough adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 7–9 cm long. Panicle branches glabrous or puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 3.6–5 mm long, 0.75–0.85 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma ovate, 4.9–6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 3–4 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3 mm long. Ovary glabrous. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region. Southeastern Europe.**

**Country /Province /State.** : Bulgaria, Greece, Yugoslavia.

**Festuca perrieri** A. Camus. *Bull. Mus. Hist. Nat. Paris*, xxviii. 442. (1922).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online.

**TYPE** from Madagascar. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Madagascar, Andringitra: Perrier 14547 (K iso).

**Illustrations (Journals):** *Novon* (2: 323, Fig. 1 (1992)).

**Derivation** (Clifford & Bostock 2007): in honor of Joseph Marie Henri Alfred Perrier de la Bbthie (1872–1958) French botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms 60 cm long, 3 -noded. Lateral branches lacking. Leaf-sheaths smooth, glabrous on surface. Ligule an eciliate membrane. Leaf-blades erect, filiform, conduplicate, 8–15 cm long, 1 mm wide, stiff. Leaf-blade surface glabrous. Leaf-blade apex abruptly acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 15–18 cm long. Primary panicle branches appressed, 2 -nate. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets rhomboid, laterally compressed, 10–12 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4–4.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface asperulous, rough above. Lower glume apex acute. Upper glume lanceolate, 5.75–6 mm long, 0.66 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface asperulous, rough above. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5.8–6.4 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma midvein scaberulous. Lemma apex acuminate, muticous. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** Western Indian ocean. Madagascar.

**Festuca peruviana** E.B. Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 89(4): 114 (1984).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *J. Infantes* 2449, 6 Aug 1950, Peru: Pasco (US-2044942).

**Illustrations (Books):** S.A.Renvoize, *Gramineas de Bolivia* (1998) (102, Fig 21).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating location. From Peru.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms erect, 5–12 cm long, 2-noded. Leaf-sheaths smooth, glabrous on surface. Ligule a ciliolate membrane, 0.5 mm long. Leaf-blades curved, involute, 5 cm long, 1–2 mm wide. Leaf-blade surface scaberulous, rough adaxially. Leaf-blade margins scaberulous. Leaf-blade apex obtuse or abruptly acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 2–4 cm long. Primary panicle branches appressed, bearing spikelets almost to the base. Panicle branches smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, smooth.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.5–8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes smooth or scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3.5–6 mm long, 0.85 length of upper glume, chartaceous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.8–6.2 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume lateral veins prominent. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 5.5–6 mm long, chartaceous, without keel, 5-veined, more than 3-veined. Lemma surface scaberulous, rough in lines. Lemma apex acuminate, awned, 1-awned. Principal lemma awn 1 mm long overall. Palea 1 mm long, 2-veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 0.6–0.7 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG).** Continent. South America.

**Country /Province /State.** Western South America. Bolivia, Colombia, Ecuador, Peru.

**Festuca petersonii** S.A. Renvoize. *Gramineas de Bolivia*: 122 (1998).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Bolivia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *P. M. Peterson, S. Laegaard & R. Soreng* 12974, Bolivia: Potosi: 4200 m (LPB; IT: US).

**Illustrations (Books):** S.A.Renvoize, *Gramineas de Bolivia* (1998) (116, Fig 27).

**Derivation** (Clifford & Bostock 2007): In honor of Paul M. Peterson (1954-) United States agrostologist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths papery, purple. Culms 10–18 cm long, 1-noded. Culm-internodes yellow. Ligule an eciliate membrane. Leaf-blades flexuous, filiform, involute, 3–5 cm long, 0.5 mm wide. Leaf-blade venation with subepidermal sclerenchyma free from veins. Leaf-blade surface smooth, pubescent, hairy adaxially. Leaf-blade apex acuminate.

**Inflorescence.** Inflorescence a panicle or comprising only a few spikelets, comprising 2–3 fertile spikelets. Panicle open, linear, loose, 5–10 cm long, bearing few spikelets. Primary panicle branches indistinct the panicle almost racemose. Panicle axis glabrous. Spikelets appressed, solitary. Fertile spikelets pedicelled. Pedicels present, glabrous.

**Fertile Spikelets.** Spikelets comprising 3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 8–11 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.5–3.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume surface scabrous, rough above. Lower glume apex acute. Upper glume lanceolate, 3.5–4 mm long, 0.5 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume surface scabrous, rough above. Upper glume margins scabrous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 7 mm long, chartaceous, without keel, 5-veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acuminate, muticous. Palea 1 length of lemma, 2-veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.



**Flower and Fruit.** Anthers 3, 2.4 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Bolivia.

**Festuca petraea** Guthn. ex Seub. *Fl. Azor.* 20. (1844).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Azores. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: CT: *C. Hochstetter* 131, Jun 1838, Azores: Fayal (LE, 2 sheets). herb. Ledebour.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. that grows amongst rocks. Growing in rocky places.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths purple, persistent and investing base of culm, with compacted dead sheaths. Culms 30–60 cm long. Leaf-sheaths open for most of their length, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 0.6–0.8 mm wide, stiff. Leaf-blade venation comprising 5 vascular bundles, with 3–5 inner ridges, with subepidermal sclerenchyma attached to veins below. Leaf-blade surface pubescent, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong, dense, 3–8 cm long. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 4–7 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes eventually visible between lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface pubescent. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 0.5–1.5 mm long overall. Palea 2 -veined. Palea surface pubescent. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3.5 mm long. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

*N* = 7 (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe, Africa.

**Region.** Southwestern Europe.

**Country /Province /State.** : Azores. Macaronesia. Azores.

**Festuca picoeuropeana** H.S. Nava. *Fontqueria*, 7: 23 (1985).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Spain. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Asturias: Picos de Europa, macizo del Cornisn, Torre de los Traviesos, 30TUN48, 2300 m, 8 Sep 1983, *Nava s.n.* (HT: FCO-10880).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. *-ana*, indicating connection. From Picos de Europa.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms 15–23 cm long. Lateral branches lacking. Leaves 8–13 per branch. Ligule a ciliolate membrane, 1.7–3 mm long, 1–2 mm long on basal shoots. Leaf-blades filiform, angular in section, 2–11 cm long, 0.6–0.8 mm wide. Leaf-blade venation with 7–9 secondary veins, 5–7 inner ridges, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth or scaberulous, puberulous, densely hairy, hairy adaxially. Leaf-blade apex attenuate, pungent.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate or ovate, 3–6 cm long. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 7–11 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3.6–4.2 mm long, 0.9 length of upper glume, scarios, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4–4.5 mm long, 0.7–0.8 length of adjacent fertile lemma, scarios, without keels, 3 -veined.

**Florets.** Fertile lemma lanceolate, 5–7 mm long, scarios, much thinner above, mid-green and red, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous. Lemma apex acute. Palea 4.5–7 mm long, 2 -veined. Palea keels ciliolate. Palea surface scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–3 mm long. Ovary pubescent on apex.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : Spain.

### **Festuca picta** Kit. *Schult. Oestr. Fl.* ed. II. i. 236 (1814).

Regarded by K as a synonym (*F. picturata*).

**Accepted by:** T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Hungary. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Hungary: Coll?.

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms 25–40 cm long. Culm-internodes distally pubescent. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, smooth, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 0.4–0.6 mm wide, stiff. Leaf-blade venation comprising 5–7 vascular bundles, with 5–7 inner ridges, with sclerenchyma strands below veins or below veins or above some veins, with 7–9 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins.

**Inflorescence.** Inflorescence a panicle. Peduncle pubescent above. Panicle open, 4–7 cm long. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.5–7.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 3.4–3.9 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex obtuse or acute.

**Florets.** Fertile lemma oblong, 4.2–5.2 mm long, chartaceous, mid-green or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.2–2 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary pubescent on apex. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 14$  (3 refs TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe, Southeastern Europe, Eastern Europe.

**Country /Province /State.** : Austria, Czechoslovakia, Poland. : Bulgaria, Romania. Northwest European Russia.

**TDWG4.**

### **Festuca picturata** G. Pils. *Pl. Syst. Evol.*, 136(1–2): 92 (1980).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Austria. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Steiermark, Schladminger Taur, NW del Solkpasses, 1900 m, 20 Jul 1978, *G. Pils s.n.* (HT: WU; IT: W-15819).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. pictura*, painting; *-ata*, possessing. Spikelets green and variegated with purple.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms 25–40 cm long. Culm-internodes distally pubescent. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, smooth, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 0.4–0.6 mm wide, stiff. Leaf-blade venation comprising 5–7 vascular bundles, with 5–7 inner ridges, with sclerenchyma strands below veins or below veins and above some veins, with 7–9 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins.

**Inflorescence.** Inflorescence a panicle. Peduncle pubescent above. Panicle open, 4–7 cm long. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.5–7.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 3.4–3.9 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex obtuse or acute.

**Florets.** Fertile lemma oblong, 4.2–5.2 mm long, chartaceous, mid-green and purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.2–2 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary pubescent on apex. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 14$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe, Southeastern Europe, and Eastern Europe.

**Country /Province /State.** Ukraine.

**Festuca pilar-franceii** Stancmk. *Darwiniana* 41(1–4): 121 (figs. 14a-e, 18b) (2003).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Colombia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Colombia: Cundinamarca: Munic. Bogota D.C., sector Santa Rosa - Laguna Chisaca, 3500–3650 m, 9 Aug 1998, *Stančmk* 3585 (HT: PCR; IT: COL).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 76, fig 35 (2007)).

**Derivation** (Clifford & Bostock 2007): In honor of Pilar Franco Rosseli (fl.1993) Colombian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Cataphylls evident. Basal innovations intravaginal. Culms erect, of moderate stature, straight, 70–120 cm long, 1–2 -noded, without nodal roots. Culm-internodes terete. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves mostly basal, 0–2 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined, glabrous on surface. Leaf-sheath auricles absent. Ligule an eciliate membrane, 0.1–0.3 mm long, membranous, white, entire, truncate. Leaf-blade base symmetrical. Leaf-blades straight, involute, angular in section or elliptic in section, 30–60 cm long, 0.7–1 mm wide, indurate, stiff or firm, dark green. Leaf-blade midrib indistinct. Leaf-blade venation indistinct, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma attached to veins below, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface pilose, densely hairy, hairy adaxially. Leaf-blade margins smooth, glabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle terete, eglandular, glabrous. Panicle open or contracted, lanceolate or elliptic, continuous, dense, straight, 15–25 cm long, 1–7 cm wide. Panicle branches smooth or scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 8–11 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes scaberulous, pubescent. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume lanceolate, 2–3.5 mm long, 0.6–0.75 length of upper glume, chartaceous, dark green or purple, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3–5 mm long, 0.66–0.75 length of adjacent fertile lemma, chartaceous, purple, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, symmetrical, 4.5–6 mm long, chartaceous, dark green or purple, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, glabrous or puberulous. Lemma apex mucronate, 1 -awned. Principal lemma awn stiff, 0–1 mm long overall. Palea 2 length of lemma, 2 -veined. Palea surface papillose, pilose, hairy above. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 3–3.5 mm long. Ovary with a few apical hairs. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Colombia.

**Festuca pilgeri** St.- Yves. *Notizbl. Bot. Gart. Berlin*. ix. 1130 (1927).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Kenya. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: ST: *R.E. Fries & T.C.E. Fries 1316*, 31 Jan 1922, Kenya: Westseite, alpine region, sehr hdufig 4 more ST cited.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Robert Knuds Friedrich Pilger (1876–1953) German agrostologist, born on Helgoland before its transfer from British to German administration.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms 40–60 cm long. Leaf-sheaths smooth, glabrous on surface. Ligule an eciliate membrane. Leaf-blades erect, straight or curled, filiform, 10–30 cm long, 0.75 mm wide, stiff. Leaf-blade venation with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 8–20 cm long. Primary panicle branches appressed. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume subulate or linear, 3–6 mm long, 0.7–0.9 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4–6.5 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 5.5–7.5 mm long, coriaceous, without keel, 5 -veined, more than 3-veined. Lemma surface asperulous. Lemma apex emarginate or acute, awned, 1 -awned. Principal lemma awn 1–3 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous or pubescent on apex. Caryopsis with adherent pericarp, glabrous or hairy at apex. Hilum linear.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** East tropical Africa. Kenya, Tanzania, Uganda.

**Festuca pilosella** E.B. Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 91(3): 118 (1986).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Yemen. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Yemen, Shibani to Kankaban: Wood 1670 (K holotype).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. pilus*, a hair; -osa, abundance. -ella, diminutive. Leaf-blades finely hirsute.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms 45–60 cm long, 1–1.5 mm diam., 2 -noded, with 0.2–0.33 of their length below uppermost node. Culm-internodes distally pubescent. Leaf-sheaths tubular for much of their length, with 0.66–0.75 of their length closed, ribbed, antrorsely scabrous, glabrous on surface. Ligule a ciliolate membrane, 0.3–0.5 mm long, truncate. Leaf-blades filiform, conduplicate, 20–30 cm long, 0.5–0.75 mm wide, glaucous. Leaf-blade venation with 5 secondary veins, 3 inner ridges, 5 subepidermal sclerenchyma strands, subepidermal sclerenchyma free from veins. Leaf-blade surface scabrous, rough abaxially, pubescent, hairy adaxially. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, interrupted, 7–13 cm long. Primary panicle branches appressed, 1–3 cm long. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2–3 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous, rough below. Lower glume apex acute. Upper glume lanceolate, 3–4 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface asperulous, rough below. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4–5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.8–1.5 mm long overall. Palea 2 -veined. Palea keels scabrous, adorned above, with 0.33 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–2.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Arabian Peninsula. Yemen.

**Festuca pindica** (I. Markgraf-Dannenberg) I. Markgraf-Dannenberg. *Bot. J. Linn. Soc.*, 76(4): 326 (1978).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online, T.G. Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Greece. **Basionym or Replaced Name:** *Festuca cyllenica* subsp. *pindica* Markgr.-Dann., *Veroff. Geobot. Inst. Rubel Zurich* 56(272): 160 (1976)

. T: <Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *K. H. Rechinger 18489*, 30–31-Jul 1956, Greece: Macedonia: Distr. Grevena: Montes Pindus, in declivibus boreali-occidentalibus montis Aphia, in valle Arkudolaka (Valea Kalda) ditionis pagi Perivoli, substr. serpent. ca. 1700–2100 m (W; IT: MO-4377602).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -icus, belonging to. From Pindo, Thessaly, Greece.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms 50–60 cm long. Leaf-sheaths glabrous on surface or pubescent. Ligule an eciliate membrane, 0.7–2.2 mm long, pubescent on abaxial surface. Leaf-blades filiform, conduplicate, 0.5–0.8 mm wide. Leaf-blade venation comprising 7–9 vascular bundles, with 5–7 inner ridges, with sclerenchyma strands below veins or above all veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth. Leaf-blade apex pungent.

**Inflorescence.** Inflorescence a panicle. Panicle open, interrupted, nodding, 5–7.5 cm long. Panicle branches flexuous, scabrous, glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9–11.3 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume oblong, 4.6–6.4 mm long, 0.8–0.9 length of adjacent fertile lemma, chartaceous, with scarious margins, without keels, 3 -veined. Upper glume apex obtuse or acute.

**Florets.** Fertile lemma oblong, 6.5–7.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, muticous or mucronate or awned, 1 -awned. Principal lemma awn 0–1 mm long overall. Palea 2 -veined. Palea surface pubescent, hairy all along. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–4 mm long. Caryopsis with adherent pericarp, obovoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southeastern Europe.

**Country /Province /State.** : Greece.

**Festuca pinetorum** Swallen. *Contrib. U. S. Nat. Herb.* xxix. 397 (1950).

Regarded by K as a synonym (*F. arizonica*).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Mexico. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *F.G. Meyer & D.J. Rogers* 2977, 18 Aug 1948, Mexico: Nuevo Lesn: Mun. Zaragoza: Cerro del Viejo (US-1962995; IT: BR, MO-1599223).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. of the pines. Growing in pine woods.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms erect, 38–55 cm long, 1-noded. Lateral branches lacking. Leaves mostly basal. Leaf-sheaths scaberulous. Ligule an eciliate membrane, 0.4 mm long. Leaf-blades convolute, 5–10 cm long, 1 mm wide. Leaf-blade surface scaberulous.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, 6–12 cm long. Primary panicle branches 2–4.5 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6–7 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.5 mm long, 0.75 length of upper glume, membranous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3 mm long, 0.66 length of adjacent fertile lemma, membranous, without keels, 1 -veined. Upper glume lateral veins absent. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4.5–5 mm long, membranous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acuminate, mucous or awned, 1 -awned. Principal lemma awn 0–1 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG).** Continent. North America.

**Country /Province /State.** Mexico. Northeast Mexico.

**TDWG4.** Coahuila, Neuvo Leon, Tamaulipas.

**Festuca pinifolia** (Hack. ex Boiss.) Bornm. *Verh. Zool.-Bot. Ges. Wien*, xlvi. 649 (1898).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Turkey. **Basionym or Replaced Name:** *Festuca ovina* subsp. *pinifolia* Hack. ex Boiss., *Fl. Or.* 5:617 (1884). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Turkey, Akdagh: Kotschy 272 (G hol).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. folium, leaf. The leaf-blades resemble those of *Pinus*.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms erect, 10–38 cm long. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect, acuminate. Ligule an eciliate membrane. Leaf-blades curved, aciculate, conduplicate, elliptic in section, 1–4 cm long, 0.5–1 mm wide, coriaceous, stiff, light green, pruinose. Leaf-blade venation comprising 5(–7) vascular bundles, with 5 subepidermal sclerenchyma strands, with subepidermal sclerenchyma attached to veins above, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth. Leaf-blade apex pungent.

**Inflorescence.** Inflorescence a panicle. Panicle open, 4–6 cm long, bearing few spikelets. Panicle branches smooth or scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 7.3–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 3.5 mm long, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or oblong, 3.8–6.3 mm long, 0.8–0.9 length of adjacent fertile lemma, chartaceous, with scarious margins, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 4.6–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1–2.7 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Western Asia. Iran.

**Festuca pirinica** I. Horvat ex I. Markgraf-Dannenber. *Bot. J. Linn. Soc.*, 76(4): 324 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Bulgaria. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Bulgaria, Pirin: Horvat (ZA holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Mt. Pirin, Bulgaria.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms 10 cm long. Leaf-sheaths tubular for much of their length, with 0.5 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect. Ligule a ciliolate membrane. Leaf-blades filiform, conduplicate, 0.3–0.67 mm wide. Leaf-blade venation comprising 5–7 vascular bundles, with 2–3 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 2.5 cm long. Primary panicle branches simple, bearing 1–2 fertile spikelets on each lower branch. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.2–4.2 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 3.6–4.9 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–2.3 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.6–1.9 mm long. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 14$  (2 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Southeastern Europe.

**Country /Province /State.** : Bulgaria.

**Festuca plebeia** Vickery. *Contrib. N. S. Wales Nat. Herb.* i. 11 (1939).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), D.Sharp, D. & B.K.Simon, *AusGrass* (2002).

**TYPE** from Australia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Australia, Tasmania: *Brown 6293* (K iso).

**Illustrations (Books):** No illustration found (BKS).

**Images:** D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002);.

**Derivation** (Clifford & Bostock 2007): L. plebius, common. Abundant and often widespread.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 70–90 cm long, 1–2 -noded. Culm-internodes smooth or scaberulous. Culm-nodes glabrous. Leaf-sheaths smooth or scaberulous, glabrous on surface. Ligule an eciliate membrane, truncate. Leaf-blades aciculate, 5–8 cm long, 1–1.5 mm wide. Leaf-blade surface scabrous, rough adaxially, pubescent, densely hairy, hairy adaxially. Leaf-blade margins scaberulous. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle. Peduncle 50–70 cm long. Panicle contracted, linear, 7–15 cm long. Primary panicle branches 1–2 -nate, 1–3 cm long, bearing 1–3 fertile spikelets on each lower branch (1 on

shorter branch). Panicle axis angular, scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 15–18 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 2 mm long, scaberulous.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 3.5–4.5 mm long, 0.7–0.8 length of upper glume, chartaceous, without keels, 1–3 -veined. Lower glume lateral veins absent or distinct. Lower glume apex acute. Upper glume oblong, 4.5–5.5 mm long, 0.5–0.6 length of adjacent fertile lemma, chartaceous, 1-keeled, 3 -veined. Upper glume surface asperulous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 8–9 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1–2 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous, adorned above. Palea surface scaberulous. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, linear, 2–2.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp, sulcate on hilar side.

**Distribution (TDWG). Continent.** Australasia.

**Country /Province /State.** Australia. Tasmania.

### ***Festuca plicata* Hack. *Oestr. Bot. Zeitschr.* xxvii. 48. (1877).**

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Spain. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Spain, Sierra Nevada: Winkler (K iso).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm. Culms 8–16 cm long. Lateral branches lacking. Leaf-sheaths tubular for much of their length, with 1 of their length closed, transversely wrinkled, glabrous on surface. Ligule an eciliate membrane, 1 mm long, truncate. Leaf-blades filiform, conduplicate, 0.5–0.6 mm wide. Leaf-blade venation with 3–5 secondary veins, 3–5 subepidermal sclerenchyma strands. Leaf-blade surface puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong or ovate, dense, 2–4 cm long. Primary panicle branches 1 -nate, bearing 3–6 fertile spikelets on each lower branch. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, tip widened.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, 1 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 3–4 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma midvein scabrous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2–5 mm long overall. Palea 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2 mm long, yellow. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

$2n = 14$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe, Africa.

**Region.** Southwestern Europe.

**Country /Province /State.** : Spain. Northern Africa. Morocco.

### ***Festuca pohleana* Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 78(5): 144 (1973).**

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: (LE).

HT: *R.Pohle s.n.*, 25 Aug 1905, Europ.Russia: [N Urals]: Adak: Usa rv.: limestone rocks (LE). Orig. label: "Po r.Use, Adak, izvestnyakovye skaly,...".



**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -anus, indicating connection. In honor of Richard Pohle (1869–1926) Latvian-born German botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 15–30 cm long. Culm-internodes smooth. Leaf-sheaths open for most of their length, with 0.25–0.33 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 0.45–0.6 mm wide, stiff, glaucous, pruinose. Leaf-blade venation comprising 5–7 vascular bundles, with 1–3 inner ridges, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with unevenly thickened subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, 3–4.5 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–9 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.4–4.1 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 3.8–4.7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.3–1.6 mm long overall, 0.25–0.33 length of lemma. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Eastern Europe.

**Country /Province /State.** North European Russia.

**TDWG4.**

**Festuca polesica** Zapal. *Bull. Acad. Cracov.* 1904, 303. (1904).

Regarded by K as a synonym (*F. beckeri*).

**Accepted by:** U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Pauca exempla in Rokitno, in celebra magnis paludibus Polesia Volhyniensis sito, *Rehman s.n.*.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Polesia, now Poles'ye a marshy plain across the border of Belorussuja (Belarus) and Ukraine.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths pallid or yellow or light brown, persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 20–60 cm long. Culm-internodes antrorsely scabrous, distally glabrous or pubescent. Leaf-sheaths open for most of their length, with 0 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades deciduous at the ligule, filiform, conduplicate, circular in section, 0.4–0.8 mm wide, glaucous, pruinose. Leaf-blade venation comprising 7–9 vascular bundles, with 5–7 inner ridges, with subepidermal sclerenchyma free from veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth to scabrous, rough abaxially. Leaf-blade apex acuminate, pungent.

**Inflorescence.** Inflorescence a panicle. Panicle open, 6–10.5 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.5–6.9 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.2–4.1

mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 4.6–5.2 mm long, chartaceous, light green, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acute, mucronate or awned, 1 -awned. Principal lemma awn 0.3–1.4 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 14$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Northern Europe, Middle Europe, Eastern Europe.

**Country /Province /State.** : Denmark, Finland, Sweden. : Germany, Netherlands, Poland. Baltic States, Central European Russia, North European Russia.

### **Festuca polita** (Halacsy) Tsvelev. *Bot. Zhurn.*, 56(9): 1255 (1971).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Greece. **Basionym or Replaced Name:** *Festuca ovina* var. *polita* Halac., *Consp. Fl. Graeca* 3:401 (1904). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Greece, Mt. Korax: Tuntas & Leonis in Heldreich 1398 (W holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. polio*, polish. Foliage glabrous.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths pubescent, persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms erect, 14–52 cm long. Leaf-sheaths tubular for much of their length, with 0.25–0.33 of their length closed, with flat margins. Ligule an eciliate membrane. Leaf-blades straight or curved, aciculate, conduplicate, 0.4–1.1 mm wide, coriaceous, stiff, pruinose. Leaf-blade venation comprising 7 vascular bundles, with 3–5 subepidermal sclerenchyma strands, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface glabrous. Leaf-blade apex obtuse, mucous or pungent, hardened.

**Inflorescence.** Inflorescence a panicle. Peduncle antrorsely scabrous above. Panicle open, lanceolate, dense, 3.5–9.5 cm long. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, tip widened.

**Fertile Spikelets.** Spikelets comprising 4–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 7.5–9.7 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or ovate, 5.5–6.1 mm long, 0.9–1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate or oblong, 5.4–7.5 mm long, chartaceous, glaucous or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma surface puberulous, hairy above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2–7 mm long overall, 0.33–19 length of lemma. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Europe, Temperate Asia.

**Region.** Southeastern Europe.

**Country /Province /State.** : Greece, Crete. **Caucasus, Western Asia.** North Caucasus. Turkey.

**TDWG4.**

### **Festuca poluninii** E.B.Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 83(4): 111 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Nepal. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Nepal, Maharigaon: Polunin, Sykes & Williams 2144 (K holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of Oleg Vladimir Polunin (1914–1985) English botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 40–80 cm long. Culm-internodes distally glabrous. Lateral branches lacking. Leaf-sheaths open for most of their length. Ligule an eciliate membrane. Leaf-blades filiform, flat or conduplicate, angular in section, 0.4–4 mm wide. Leaf-blade venation comprising 7 vascular bundles, with 5 inner ridges, with 9 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate or oblong, 20–26 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong or ovate, laterally compressed, 10.5–12.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6.8–7.2 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.5–2.5 mm long overall. Palea 2 -veined. Palea keels scabrous, adorned all along. Palea apex emarginate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 1.8–2.3 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Tropical Asia.

**Country /Province /State. Indian Subcontinent.** Nepal.

**Festuca polycolea** Stapf. *Hook. f. Fl. Brit. Ind.* vii. 349. (1896).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), N.L.Bor, *Grasses of Burma, Ceylon, India and Pakistan* (1960).

**TYPE** from India. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Sikkim: 12–16,000 ft, *J.D. Hooker &c.* (HT: ?).

**Illustrations (Books):** H.J.Noltie, *The Grasses of Bhutan* (2000) (539, Fig. 13).

**Derivation** (Clifford & Bostock 2007): Gk. polys, several; koleos, sheath. Lower leaf-sheaths very lax.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 5–30 cm long, 2 -noded. Lateral branches lacking. Leaf-sheaths open for most of their length, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 3–8 cm long, 1 mm wide. Leaf-blade venation with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface glabrous.

**Inflorescence.** Inflorescence a panicle. Peduncle smooth or scaberulous above. Panicle open, lanceolate or ovate, 2–6 cm long. Primary panicle branches 1–2 -nate, sparsely divided, 1–4 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4–5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2–4 mm long overall. Palea 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Tropical Asia.

**Country /Province /State. Indian Subcontinent.** Eastern Himalaya.

**TDWG4.** Bhutan, Sikkim.

**Festuca pontica** I. Markgraf-Dannenbergh. *Willdenowia*, 11(2): 204 (1981).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Turkey. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Turkey, Maska: Hennipman et al. 1830 (K holo, L).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Pontus in ancient times, a Province of Asia Minor, now Turkey.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms erect, 15–35 cm long. Leaf-sheaths open for most of their length, with 0.2 of their length closed, with flat margins. Leaf-sheath auricles erect. Ligule a ciliolate membrane. Leaf-blades filiform, conduplicate, 0.4–0.65 mm wide, pruinose. Leaf-blade venation comprising 5 vascular bundles, with 5 subepidermal sclerenchyma strands, with sclerenchyma strands widened to form a discontinuous subepidermal layer. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Peduncle pubescent above. Panicle open, lanceolate, 4–8 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 8.5–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume linear, 5.3–5.8 mm long, 0.9–1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate or oblong, 5.5–6.3 mm long, chartaceous, yellow or mid-green, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2–2.5 mm long overall, 0.33–0.5 length of lemma. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG), Continent.** Temperate Asia.

**Country /Province /State.** Western Asia. Turkey.

**Festuca popovii** Alexeev. *Bull. Mosk. Obsh. Isp. Prirod., Biol.* 83,5:94 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Russia. **Basionym or Replaced Name:** *Festuca insularis* Popov, non Steud.(1854), *Not. Syst. Herb. Inst. Bot. Acad. Sci. URSS*, 18: 4 (1957). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: : Based on *F. insularis* Popov ; Russia, Baical, Kaltygei Is.: Popov, Peshkova & Novokshanov (LE holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of Mikhail Gregorievic Popov (1893–1955) Russian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Stolons present. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Culms geniculately ascending, 25–30 cm long. Culm-internodes smooth, distally glabrous. Leaf-sheaths open for most of their length, glabrous on surface. Ligule a ciliolate membrane, 0.5–2 mm long, truncate. Leaf-blades 4–15 cm long, 1–4 mm wide, stiff. Leaf-blade venation comprising 3–5 vascular bundles. Leaf-blade surface ungrooved, smooth, glabrous. Leaf-blade apex acute. Monoecious, with male and female spikelets in different inflorescences.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 7–10 cm long. Primary panicle branches 2–3 cm long, bearing 2–5 fertile spikelets on each lower branch. Panicle axis smooth. Panicle branches capillary, straight or flexuous, scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, 5 mm long, 0.9 length of upper glume, membranous, pallid, 1-keeled, 1 -veined. Lower glume lateral veins absent. Lower glume apex

acute. Upper glume linear, 6 mm long, 0.7–0.8 length of adjacent fertile lemma, membranous, pallid, 1-keeled, 3-veined. Upper glume apex acute.

**Florets.** Fertile florets female. Fertile lemma ovate, 8–10 mm long, chartaceous, light green and purple, suffused with last colour, keeled, lightly keeled, 5-veined, more than 3-veined. Lemma lateral veins with distinct primaries but obscure intermediates. Lemma surface smooth or scaberulous, rough on veins. Lemma apex awned, 1-awned. Principal lemma awn 1 mm long overall. Palea 1 length of lemma, 2-veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3 mm long. Ovary with a few apical hairs. Caryopsis with adherent pericarp. Hilum linear.

Male inflorescence similar to female. Male spikelets resembling female.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Siberia. Buryatiya, Chita.

### ***Festuca porcii*** Hack. *Monog. Fest.* 147. (1881).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Rumania. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Rumania, Alt Rodna: Porcius (K iso, LE).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Florian Porcius (1816–1906) Romanian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Butt sheaths withering. Basal innovations extravaginal. Culms 45–90 cm long. Leaf-sheaths tubular for much of their length, with 0.66 of their length closed, with infolded margins, glabrous on surface. Ligule a ciliolate membrane. Leaf-blades flat or conduplicate, 0.7–1.2 mm wide. Leaf-blade venation comprising 13 vascular bundles, with 7 inner ridges, with sclerenchyma strands below veins, with subepidermal sclerenchyma attached to veins below. Leaf-blade surface ribbed, scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 13–18 cm long. Panicle branches pilose. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9.4 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume obovate, 4.9 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keel, 3-veined. Upper glume apex obtuse.

**Florets.** Fertile lemma lanceolate, 6.2 mm long, chartaceous, without keel, 5-veined, more than 3-veined. Lemma apex acuminate, mucous. Palea 2-veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3 mm long. Ovary glabrous. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 28$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe, Southeastern Europe, Eastern Europe.

**Country /Province /State.** : Czechoslovakia, Poland. : Romania. Northwest European Russia, Ukraine.

**TDWG4.**

### ***Festuca potaninii*** Tsvelev & Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 79(4): 141 (1974).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China, Peitai Mt.: Potanin (LE holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Grigorij Nikolajevic Potanin (1835–1920) Russian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms 7–20 cm long. Lateral branches lacking. Leaf-sheaths tubular for much of their length, with 0.5 of their length closed. Ligule an

eciliate membrane. Leaf-blades elliptic in section, 4–10 cm long, 0.55–0.85 mm wide. Leaf-blade venation with 7 secondary veins, 3–5 inner ridges, 3 subepidermal sclerenchyma strands.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear or lanceolate, 3–5 cm long. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 5.5–6 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3 mm long, 0.75 length of upper glume, membranous, without keels. Lower glume apex acute. Upper glume lanceolate, 4 mm long, 1 length of adjacent fertile lemma, membranous, without keels. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 3.8–4.2 mm long, membranous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1.2–2.2 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.7–2.2 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China North-Central.

### ***Festuca potosiana*** S.A. Renvoize. *Gramineas de Bolivia*: 122 (1998).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Bolivia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: S.A. Renvoize, *G. Flores & C. Peca 5294*, 8 Apr 1992, Bolivia: Potosi: Sud Lipez, 37 km from San Pablo towards Tupiza, steep stony slopes (LPB; IT: K, MO-5151203, NY-74024, US-3323521).

**Illustrations (Books):** S.A.Renvoize, *Gramineas de Bolivia* (1998) (118, Fig 28).

**Derivation** (Clifford & Bostock 2007): L. *-ana*, indicating connection. From Potosi Department, Bolivia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths papery, glossy. Culms 20–25 cm long. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 7–10 cm long, 0.5–0.8 mm wide, glaucous. Leaf-blade venation with subepidermal sclerenchyma attached to veins below. Leaf-blade surface scabrous, rough abaxially, pubescent, hairy adaxially.

**Inflorescence.** Inflorescence a panicle, comprising 7–11 fertile spikelets. Panicle open, linear, 6–8 cm long, bearing few spikelets. Primary panicle branches appressed. Panicle branches glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 8–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes pubescent.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4–4.5 mm long, 0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous, rough above. Lower glume apex acute. Upper glume lanceolate, 6–7 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface scabrous, rough above. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acute, muticous. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Bolivia.

### ***Festuca pratensis*** Honck, non Huds (1762). *Vollst. Syst. Gew. Teutschl.* 268 (1782).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), D.Sharp, D. & B.K.Simon, *AusGrass* (2002), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N.L.Bor, *Grasses of Burma, Ceylon, India and Pakistan* (1960), T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983), W.D.Clayton & N.Snow, *Key to Pacific Grasses* (2010).

**TYPE** from Europe. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Europe: Herb. Linn. 92.1 (LINN lecto).

**Illustrations (Books):** C.E.Hubbard, *Grasses* (1968) (142 374), N.N.Tsvelev, *Grasses of the Soviet Union* (1983) (563 (377), Pl.7), J.P.Jessop, G.R.M. Dashorst & F.M.James, *Grasses of South Australia* (2006) (126, Fig 82), S.W.L.Jacobs, R.D.B.Whalley & D.J.B.Wheeler., *Grasses of New South Wales*, 4th edn (2008) (268), K.F.Best, et al, *Prairie Grasses* (1971) (127 as *F. elatior* var. *pratensis*), S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig.331).

**Images:** D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002);.

**Derivation** (Clifford & Bostock 2007): *L. pratense*, a meadow; -ense, place of origin. Meadow species.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Caespitose, clumped moderately. Cataphylls inconspicuous. Rhizomes short, fleshy, not obviously scaly. Basal innovations extravaginal or intravaginal. Culms of moderate stature, straight, without nodal roots. Culm-internodes terete. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves basal and cauline, 3–5 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined. Ligule an eciliate membrane, membranous, white, erose, truncate. Leaf-blade base symmetrical. Leaf-blades straight or flexuous, linear in section, firm or flaccid, light green or mid-green. Leaf-blade midrib evident. Leaf-blade venation distinct, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface glabrous. Leaf-blade margins smooth, glabrous. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle straight or flexuous, terete, eglandular, glabrous. Panicle contracted, lanceolate, continuous, loose, straight, 15–20 cm long, 3–5 cm wide. Primary panicle branches ascending, moderately divided, bearing spikelets almost to the base. Panicle branches straight or arcuate.

**Fertile Spikelets.** Spikelets comprising 5–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 9–11 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes scaberulous. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume lanceolate, 2.7–3 mm long, 0.8–0.9 length of upper glume, membranous, mid-green, without keels, 1 -veined. Lower glume apex acute. Upper glume lanceolate, 3.7–4 mm long, 0.6 length of adjacent fertile lemma, membranous or chartaceous, mid-green, without keels, 3 -veined. Upper glume apex obtuse or acute.

**Florets.** Fertile lemma elliptic, symmetrical, 6–6.5 mm long, chartaceous or herbaceous, mid-green.

**Flower and Fruit.**  $2n = 14$  (14 refs TROPICOS), or 28 (1 ref TROPICOS).

**Distribution (TDWG).** **Continent.** Europe, Africa, Temperate Asia, Tropical Asia, Australasia, North America (+).

**Region.** Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, and Eastern Europe.

**Country /Province /State.** : Denmark, Finland, Foroyar, Great Britain, Iceland, Ireland, Northern Ireland, Norway, Svalbard, Sweden. : Austria, Liechtenstein, Belgium, Luxembourg, Czechoslovakia, Germany, Hungary, Netherlands, Poland, Switzerland. : Corsica, Channel Islands, France, Monaco, Portugal, Sardinia, Andorra, Gibraltar, Spain, Azores. : Albania, Bulgaria, Greece, Italy, San Marino, Romania, Malta, Sicily, Yugoslavia. Belarus, Estonia, Latvia, Lithuania, Central European Russia, East European Russia, North European Russia, South European Russia, Northwest European Russia, Ukraine. **Northern Africa, Macaronesia.** Azores. Siberia, Russian far east, **Middle Asia, Caucasus, Western Asia, China (+), Eastern Asia.** Altay, Buryatiya, Chita, Irkutsk, Krasnoyarsk, Tuva. Primorye, Sakhalin. Kazakhstan, Turkmenistan, Tadzhikistan. Iraq. China South Central, Manchuria, Qinghai, China Southeast, Xinjiang. **Indian Subcontinent.** Pakistan. **Australia.** Western Australia (\*), South Australia (\*), New South Wales (\*). Hawaii (\*). Falkland Is (Malvinas).

**TDWG4.** Jiangsu. Guizhou, Sichuan, Yunnan. South-West. Southern. Coast, Tablelands, Western Slopes.

**Festuca presliana** Hitchcock. *Contrib. U. S. Nat. Herb.* xxiv. 320 (1927).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from USA. **Basionym or Replaced Name:** *Bromus depauperatus* J. Presl, *Reliq. Haenk.* 1(4–5): 263 (1830)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: : Based on *Bromus depauperatus* ; USA, Nootka Sound: Haenke.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating connection. In honor of Karel Borivoj Presl (1794–1852) Bohemian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Culms erect, 40–100 cm long. Culm-internodes distally glabrous. Culm-nodes brown. Lateral branches lacking. Leaf-sheaths striately veined, glabrous on surface. Ligule an eciliate membrane, erose. Leaf-blades 1 mm wide. Leaf-blade surface scabrous, rough on both sides.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, nodding, 25 cm long. Primary panicle branches 2-nate. Panicle branches flexuous, scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets cuneate, laterally compressed, 8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 0.5 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume lanceolate, 0.5 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 5 mm long, membranous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, glabrous. Lemma apex dentate, 2 -fid, setaceously acuminate, awned, 1 -awned. Principal lemma awn from a sinus, 4 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Palea surface scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Peru.

**Festuca prima** Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 78(3): 106 (1973).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *V. Prima*, *M. Umarov s. n.*, 21 Aug 1968, [Caucasus]: Checheno-Ingushetia: Mt. Matsiachkort: elev. 2800 m (LE).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of V.M. Prima (fl. 1971) who collected along the upper reaches of Shon-Den river, Caucasus, former Soviet Union.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms 10–20 cm long. Leaf-sheaths tubular for much of their length, with 0.5–0.75 of their length closed, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 0.2–0.6 mm wide, glaucous, pruinose. Leaf-blade venation comprising 5 vascular bundles, with 5 secondary veins, with 1–3 inner ridges, with 3 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth, puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, 3–6 cm long. Panicle axis smooth. Panicle branches smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4.8–5.5 mm long, chartaceous, light green, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 3–6 mm long overall. Palea 2 -veined. Palea keels scabrous, adorned above, with 0.33 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.8–2.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Caucasus. North Caucasus.

**TDWG4.**



**Festuca pringlei** St.- Yves. *Candollea*, ii. 305 (1925).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Mexico. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Pringle 1438*, 16 Sept 1887, Mexico: Chihuahua (G; IT: F, US). see also *F. amplissima* var. *elliptica* Beal.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Cyrus Guernsey Pringle (1838–1911) United States botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms 100–150 cm long. Leaves heterophyllous being wider on the culm. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.5 mm long. Leaf-blades filiform, involute, 20–30 cm long, 3 mm wide. Leaf-blade surface glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, elliptic, 15–20 cm long. Primary panicle branches spreading. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10–15 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, 4–4.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume lanceolate, 5–6.5 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 6.5–8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 4–4.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** Mexico. Northeast Mexico, Southwest Mexico.

**TDWG4.** Aguascalientes, Chihuahua, Durango, Zacatecas. Jalisco.

**Festuca probatoviae** E.B.Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 87(5): 102 (1982).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *N. Probatova 683*, 24 Jun 1966, Russia: Sakhalin: Mt. Chekhov, near the top, ca. 1000 m, in vicinity of Yuzhno-Sakhalinsk (?; IT: MO).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of N. S. Probatova (1939-) Russian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 10–20 cm long. Culm-internodes smooth. Lateral branches lacking. Leaf-sheaths tubular for much of their length, with 0.66–0.75 of their length closed, smooth. Ligule an eciliate membrane, 0.1 mm long, truncate. Leaf-blades filiform, conduplicate, angular in section or elliptic in section, 5–10 cm long, 0.3–0.6 mm wide, glaucous. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with sclerenchyma strands below veins, with (5–)7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate or oblong, 1.5–5 cm long. Panicle branches terete, smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 6–6.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or ovate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 3.4–4.2 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface smooth or scaberulous, rough above. Lemma apex acute, awned, 1 -awned. Principal

lemma awn 1.2–1.8 mm long overall. Palea 2 -veined. Palea keels scaberulous, with 0.33 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 1.1–1.3 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Russian far east and **Eastern Asia.** Sakhalin.

### **Festuca procera** H. B. & K. *Nov. Gen. et Sp.* i. 154. (1815).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Ecuador. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *Humboldt & Bonpland s.n.*, Ecuador: Pichincha: 1280–1470 m (B; ILT: P). LT designated by Alexeev, *Novosti Sist. Vyss. Rast.* 23: 12 (1986).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 78, fig 36 (2007)), *Ruizia* (13:97, Fig10c-d (1993)).

**Derivation** (Clifford & Bostock 2007): L. tall. Culms tall.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Culms geniculately ascending, 80–120 cm long, 2–3 -noded. Culm-internodes scaberulous. Leaf-sheaths smooth or scaberulous, glabrous on surface. Ligule an eciliate membrane, 1 mm long, truncate. Leaf-blades 20–45 cm long, 2–3 mm wide. Leaf-blade surface pubescent, densely hairy, hairy adaxially. Leaf-blade margins smooth. Leaf-blade apex abruptly acute or acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, elliptic, 18–25 cm long. Primary panicle branches ascending, 7–14 cm long. Panicle branches smooth or scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, smooth or scaberulous, glabrous.

**Fertile Spikelets.** Spikelets comprising 5–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or ovate, laterally compressed, 9–11 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3–4 mm long, 0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein smooth or scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5–6 mm long, 0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein smooth or scabrous. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 6–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acute, mucronate or awned, 1 -awned. Principal lemma awn 0.5–2 mm long overall. Palea 1 length of lemma, 2 -veined. Palea surface puberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–3.5 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** **Western South America.** Colombia, Ecuador, Peru.

### **Festuca prolifera** (Piper) Fernald. *Rhodora*, v. 133 (1933).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from USA. **Basionym or Replaced Name:** *Festuca rubra* subsp. *prolifera* Piper, *Contr. U.S. Natl. Herb.* 10(1): 21 (1906)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *C.G. Pringle s.n.*, 2 Sep 1877, USA: New Hampshire: Mt. Washington (US-1005526 IT: LL, MO-2967997, MO-2967998, MO-2967999).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (421).

**Derivation** (Clifford & Bostock 2007): L. *proles*, offspring; *fero*, carry or bear. Producing runners.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Stolons absent or present. Butt sheaths red or purple, distinctly ribbed, persistent and investing base of culm, with fibrous dead sheaths. Culms erect or geniculately ascending, 10–40 cm long. Leaf-sheaths tubular for much of their length, without keel. Ligule an eciliate membrane, 0.2 mm long. Leaf-blades filiform, conduplicate, 10–20 cm long, 0.5–1 mm wide. Leaf-blade surface glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, 3–10 cm long. Primary panicle branches indistinct the panicle almost racemose. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–13 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 5–14 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 2–4 mm long, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume oblong, 4–6 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma ovate, 5.5–8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, muticous. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.5–2 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

Vegetative proliferation occurs.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** **Western Canada, Eastern Canada, Northeast USA.** Manitoba, Newfoundland, Nova Scotia, Ontario, Quebec.

### **Festuca prudhommei** M. Kerguelen & F. Plonka. *Lejeunia*, 142: 17 (1993).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from France. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: France, Pic Perique: Prudhomme.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of J. Prudhomme.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 4.5–15 cm long. Lateral branches lacking. Leaf-sheaths tubular for much of their length. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate or involute, elliptic in section, 1–3 cm long, 0.3–0.4 mm wide, mid-green or glaucous. Leaf-blade venation comprising 3–4 vascular bundles, with 1–3 inner ridges, with 3 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation or with sclerenchyma strands widened to form a discontinuous subepidermal layer. Leaf-blade surface smooth. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, oblong, 0.8–2 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 4–6 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or ovate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 2.5–3.5 mm long, chartaceous, purple, without keel, 5 -veined, more than 3-veined. Lemma surface smooth or scaberulous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.8–2 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : France.

### **Festuca psammophila** (Hack. ex Celak) Fritsch. *Excursions fl.* 64, in *adnot.* (1897).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Czechoslovakia. **Basionym or Replaced Name:** *Festuca glauca* subsp. *psammophila* Hack. ex Celak, *Prodr. Fl. Bohm.* 4:721 (1881). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Czechoslovakia, Elbthal: Coll?.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. psammos, sand; phileo, love. Dune species.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 20–57 cm long. Culm-internodes smooth. Leaf-sheaths open for most of their length, with 0 of their length closed, with flat margins, glabrous on surface or puberulous. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 0.5–1.1 mm wide, glaucous, pruinose. Leaf-blade venation comprising 9–13 vascular bundles, with 5 inner ridges, with subepidermal sclerenchyma free from veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, 9–12 cm long. Primary panicle branches ascending or spreading. Panicle branches smooth or scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.2–7.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.2–4 mm long, 0.8–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma ovate, 3.4–4.9 mm long, chartaceous, glaucous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 0.5–1 mm long overall, 0.1–0.25 length of lemma. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 14$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region. Middle Europe.**

**Country /Province /State.** : Czechoslovakia, Germany, Poland.

## **Festuca pseudeskia** Boiss. *Elench.* 91. (1838).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Spain. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Spain: Boissier 145 (K iso).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Cataphylls evident. Rhizomes short. Butt sheaths purple. Basal innovations extravaginal. Culms 20–40 cm long. Leaf-sheaths open for most of their length, glabrous on surface. Ligule an eciliate membrane, 2–3 mm long, lacerate, truncate. Leaf-blades aciculate, conduplicate, angular in section, 1–2 mm wide, firm, glaucous. Leaf-blade venation comprising 9–15 vascular bundles, with 7 inner ridges, with sclerenchyma strands below veins or above all veins. Leaf-blade surface smooth, glabrous. Leaf-blade apex pungent.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear or oblong. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume ovate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex obtuse. Upper glume ovate, chartaceous, without keels, 3 -veined. Upper glume apex obtuse.

**Florets.** Fertile lemma ovate, 3.5–3.9 mm long, chartaceous, without keel, 3 -veined, 0–3 -veined. Lemma lateral veins obscure. Lemma apex acute, muticous. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, obovoid. Hilum linear, 1 length of caryopsis. Disseminule comprising a caryopsis.

**Distribution (TDWG). Continent.** Europe.

**Region. Southwestern Europe.**

**Country /Province /State.** : Spain.

**Festuca pseudodalmatica** Krajina ex Domin. *Acta Bot. Bohem.* viii. 61 (1929).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Czechoslovakia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *K.Domin & V.Krajina, Flora Cechoslovenica exsiccata, no 126, 20 May 1929, Slovakia: Kovachovska mt.: elev. 150–380 m: near Dunaj rv. (LE).*

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. *pseudos*, false. Resembling *Festuca dalmatica*.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 30–50 cm long. Culm-internodes antrorsely scabrous. Leaf-sheaths open for most of their length, with 0 of their length closed, with flat margins, smooth or scaberulous, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 15–30 cm long, 0.4–0.7 mm wide, mid-green or glaucous, pruinose. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 8–15 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.5–8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume linear, 3.4–5 mm long, 0.75–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 5–5.6 mm long, chartaceous, dark green or glaucous, without keel, 5 -veined, more than 3-veined. Lemma surface smooth or scaberulous. Lemma margins eciliate or ciliolate. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1.6–2.5 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe, Southeastern Europe, Eastern Europe.

**Country /Province /State.** : Austria, Czechoslovakia, Hungary, Poland. : Romania, Krym, Central European Russia, East European Russia, North European Russia, South European Russia, Northwest European Russia, Ukraine.

**Festuca pseudodura** Steud. *Syn. Pl. Gram.* 306 (1854).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Austria. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Austria: Coll?.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. *pseudos*, false. Resembling *Festuca dura*.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 15–30 cm long. Culm-internodes distally glabrous or pubescent. Leaf-sheaths tubular for much of their length, with 0.8–1 of their length closed, with flat margins, glabrous on surface or pubescent. Ligule a ciliolate membrane. Leaf-blades filiform, conduplicate, 0.5–1 mm wide, stiff, light green. Leaf-blade venation comprising 7 vascular bundles, with 3 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 4–7 cm long. Primary panicle branches moderately divided. Panicle branches glabrous or puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile.

Spikelets oblong, laterally compressed, 7.1–8.4 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.5–5.3 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume margins ciliate (at tip). Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4.9–6.2 mm long, chartaceous, glaucous, without keel, 5 -veined, more than 3-veined. Lemma margins ciliate. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2.5–3 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–2.3 mm long. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe, Southeastern Europe.

**Country /Province /State.** : Austria, Switzerland. : Italy.

### ***Festuca pseudosclerophylla*** Krivot. *Not. Syst. Herb. Inst. Bot. Acad. Sci. URSS*, xvii. 73 (1955).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Iran. **Basionym or Replaced Name:** *Leucopoa pseudosclerophylla* (Krivot.) Bor, K. H. Rechinger, *Fl. Iran., Lief.* 70, 73 (1970). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: T: *J.Bornmuller* 4952, 10 Jun 1892, Persia SE [Iran]: Kerman prov.: Kerman: Kuh-i-Dschupar mts. (LE).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. pseudos, false. Resembling *Festuca sclerophylla*.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Rhizomes elongated. Butt sheaths glabrous. Culms geniculately ascending, 50–100 cm long. Culm-internodes smooth, distally glabrous. Lateral branches lacking. Ligule an eciliate membrane. Leaf-blades 20–45 cm long, 5 mm wide, stiff. Leaf-blade surface scabrous, rough adaxially, glabrous. Leaf-blade margins scabrous. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, 10–21 cm long, 1–1.5 cm wide. Primary panicle branches ascending, 2–4 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, scabrous.

**Fertile Spikelets.** Spikelets comprising 5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 10–12 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume oblong, 3.5–4.5 mm long, 0.75 length of upper glume, hyaline, pallid, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.5–5.5 mm long, 0.9 length of adjacent fertile lemma, hyaline, pallid, without keels, 3 -veined. Upper glume surface smooth or asperulous, rough on veins. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 5–6 mm long, membranous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn apical or subapical. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Western Asia, China. Iran. Xinjiang.

### ***Festuca pseudosulcata*** Drobov. *Trav. Mus. Bot. Acad. Petersb.* xiv. 156 (1915).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Russia, Yakutia, Chona R.: Drobov 556 (LE lecto).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. pseudos, false. Resembling *Festuca sulcata*.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms 20–60 cm long. Culm-internodes smooth. Leaf-sheaths open for most of their length, with 0.15 of their length closed, glabrous on surface. Ligule an eciliate membrane. Leaf-blades flexuous, filiform, elliptic in section, 20–30 cm long, 0.3–0.7 mm wide. Leaf-blade venation comprising 5–7 vascular bundles. Leaf-blade surface scabrous, rough abaxially.

**Inflorescence.** Inflorescence a panicle. Peduncle scaberulous above. Panicle open, 3–8 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 5–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.5–3 mm long, 0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.5–4.5 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 3.5–5 mm long, chartaceous, mid-green, dull, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.5–2.5 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

$2n = 28$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Siberia, Russian far east, **China, Mongolia.** Buryatiya, Chita, Irkutsk, Tuva, Amur, Kamchatka, Khabarovsk.

**TDWG4.**

**Festuca pseudosupina** Vetter. *Oesterr. Bot. Zeitschr.* 1 v. 63. (1936).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Greece. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Greece, Lesbos: Rechinger 5656 (W holotype).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. pseudos, false. Resembling *Festuca supina*.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with soft dead sheaths or fibrous dead sheaths. Basal innovations intravaginal. Culms slender, 10–17 cm long. Leaf-sheaths open for most of their length, with 0.3–0.4 of their length closed. Leaf-sheath auricles erect. Ligule an eciliate membrane, 0.4–0.8 mm long, pubescent on abaxial surface. Leaf-blades curved, filiform, conduplicate, 0.3–0.5 mm wide, glaucous. Leaf-blade venation comprising 5 vascular bundles, with 1 inner ridges, with subepidermal sclerenchyma free from veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth, glabrous. Leaf-blade apex attenuate, pungent.

**Inflorescence.** Inflorescence a panicle. Peduncle smooth. Panicle open, lanceolate, loose, 1.5–3.5 cm long. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, pubescent, tip widened.

**Fertile Spikelets.** Spikelets comprising 3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 8.2 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.6–4.9 mm long, 0.75 length of adjacent fertile lemma, chartaceous, with scarious margins, without keels, 3 -veined. Upper glume margins ciliolate. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5–5.2 mm long, 1.8–1.9 mm wide, chartaceous, light green, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 5–5.2 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–2.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear, 0.75 length of caryopsis.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Western Asia. East Aegean Is.

**Festuca pseudotrichophylla** Patzke. *Decheniana*, cxvii. 195 (1964).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Morocco. **Basionym or Replaced Name:** *Festuca rubra* var. *yvesiana* Litard. & Maire, *Mem. Soc. Sci. Nat. Maroc* 4: 25 (1924)

. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: LT: *R. de Litardiere s.n.*, 25 Jul 1922, Maroc: Grand Atlas, Ourika, pentes NNW de Djebel Tachdirt, porphyre, 3200 m (P).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. pseudos, false. Resembling *Festuca trichophylla*.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Rhizomes short. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations extravaginal. Culms 30–70 cm long, 1.1–1.5 mm diam. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 5–15 cm long, 0.4–0.6 mm wide. Leaf-blade venation comprising 5 vascular bundles, with subepidermal sclerenchyma free from veins. Leaf-blade surface scabrous, glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, 3–12 cm long. Panicle branches smooth or scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–9 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.5–5 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 5.5–6.2 mm long, chartaceous, mid-green, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2.5–3 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region. Southwestern Europe.**

**Country /Province /State.** : France, Portugal, Spain.

***Festuca pseudovaginata*** Penksza. *Acta Bot. Hung.* 45(3–4): 367 . (2003).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Hungary. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Hungary: Kis-tece pasture, near Vacratst, GPS coord. Unified Projection System: x=262650, y=663180, alt. ca 128 m., 06.05.2003, *K. Penksza s.n.* (HT: BP-647351).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. *pseudos*, false. Resembling *Festuca vaginata*..

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms 30–35 cm long. Culm-internodes distally glabrous. Leaf-sheaths open for most of their length, ribbed, glabrous on surface. Ligule a ciliolate membrane, 0.1–0.2 mm long. Leaf-blades filiform, conduplicate, circular in section, 0.3–0.6 mm wide, light green. Leaf-blade venation comprising 7 vascular bundles, with 3–5 inner ridges, with unevenly thickened subepidermal sclerenchyma layer on the underside.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate or ovate, 5–8.5 cm long. Panicle branches scaberulous, glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5–7.1 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.9–3.2 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 3.9–4.1 mm long, 0.8–0.85 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma ovate, 4.6–5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma margins scaberulous. Lemma apex mucicous or mucronate or awned, 1 -awned. Principal lemma awn 1.2–1.8 mm long overall. Palea 4.1–5 mm long, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.



**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp, ellipsoid, 2.5–3 mm long, glabrous. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe.

**Country /Province /State.** : Hungary.

**Festuca pseudovina** Hack. ex Wiesb. *Oestr. Bot. Zeitschr.* . 126 (1880).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Austria. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Austria, St Poelten: Hackel (K iso, LE).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. *pseudos*, false. Resembling *Festuca ovina*..

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 20–30 cm long. Culm-internodes smooth. Leaf-sheaths open for most of their length, with 0 of their length closed, with flat margins, smooth or scaberulous. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 0.3–0.6 mm wide, glaucous. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, interrupted, 2–4 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 4.7–6 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 2.2–2.9 mm long, 0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma ovate, 2.6–3.4 mm long, 1.2–1.6 mm wide, chartaceous, glaucous or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma surface glabrous or puberulous. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 0.5–1 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$N = 7$  (1 ref TROPICOS).  $2n = 14$  (2 refs TROPICOS), or 42 (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe, Temperate Asia.

**Region.** Middle Europe, Southeastern Europe, Eastern Europe.

**Country /Province /State.** : Austria, Czechoslovakia, Germany, Hungary. : Romania, Yugoslavia. Belarus, Central European Russia, East European Russia, North European Russia, South European Russia, Northwest European Russia. Siberia, **Middle Asia, Caucasus, China.** West Siberia. Kazakhstan. North Caucasus.

**Festuca pseudovivipara** (Pavlick) L.E. Pavlick. *Phytologia*, 82(2): 77 (1997).

Regarded by K as a synonym (*F. rubra*).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Canada. **Basionym or Replaced Name:** *Festuca rubra* fo. *pseudovivipara* Pavlick, *Phytologia* 57(1): 5 (1985)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Canada: Queens Charlotte Islands, scree meadow on limestone, north of Van Inlet, *Roemer 80266* (HT:V).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (421).

**Derivation** (Clifford & Bostock 2007): Gk. *pseudos*, false. Resembling *Festuca vivipara*..

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** **Western Canada.** British Columbia.

**Festuca pubigluma** Tovar. *Mem. Mus. Hist. Nat. Javier Prado*, 16: 31 (1972).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *E. Cerrate 2346*, 29 May 1954, Peru: Ancash (US-2207346).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. pubes*, signs of puberty; *gluma*, husk. Glumes densely hairy.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Culms erect, 40 cm long, 0 -noded. Culm-internodes smooth. Leaf-sheaths open for most of their length, antrorsely scabrous, glabrous on surface. Ligule a ciliolate membrane, 0.5–1 mm long. Leaf-blades conduplicate or involute, 30–45 cm long, 2–3 mm wide. Leaf-blade surface pubescent, hairy adaxially. Leaf-blade margins scaberulous. Leaf-blade apex abruptly acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, 25–30 cm long. Primary panicle branches ascending, 6–12 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, smooth, pubescent.

**Fertile Spikelets.** Spikelets comprising 4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–9 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4–5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface pubescent. Lower glume apex acuminate. Upper glume lanceolate, 5–6.5 mm long, 0.8–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume lateral veins prominent. Upper glume surface pubescent. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 6–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Palea surface pubescent, hairy above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3.5–3.8 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG).** Continent. South America.

**Country /Province /State.** Western South America. Peru.

**Festuca pubiglumis** S.L. Lu. *Acta Phytotax. Sin.*, 30(6): 531 (1992).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Eryuan, Ma-er Shan, 3600–3800 m, in shrub meadows, 25 July 1963, *Jinshajiang Exp. 63–6160* (HT: PE; IT: NJU).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig.328).

**Derivation** (Clifford & Bostock 2007): *L. pubes*, hair of adulthood; *gluma*, husk. Glumes densely hairy.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Rhizomes short. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Culms erect, 40–50 cm long, 2 mm diam., 2 -noded. Culm-internodes striate, distally glabrous. Leaf-sheaths loose, mostly shorter than adjacent culm internode, glabrous on surface. Ligule a ciliolate membrane, 0.5 mm long. Leaf-blades conduplicate, 14–25 cm long, 3–4 mm wide. Leaf-blade venation comprising 15 vascular bundles, with sclerenchyma strands below veins and above all veins, with subepidermal sclerenchyma attached to veins below. Leaf-blade surface glabrous.

**Inflorescence.** Inflorescence a panicle, embraced at base by subtending leaf. Panicle open, ovate, 16–20 cm long. Primary panicle branches 2–8 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 7–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 10–13 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet, similar to fertile lemma in texture. Lower glume linear, 5–6 mm long, 0.8–0.9 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface pilose. Lower glume margins ciliate. Lower glume apex acuminate. Upper glume lanceolate, 6–7 mm long, 0.8–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface pilose. Upper glume margins ciliate. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 7.5–8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface pubescent. Lemma apex acute, awned, 1 -awned. Principal lemma awn 5–7 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 4 mm long. Ovary glabrous. Caryopsis with adherent pericarp, 3 mm long. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

### **Festuca puccinellii** Parl. *Fl. Ital.* i. 440 (1848).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Italy. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: Aug 1847, Italy: in Apennino lucensi alle Tre Potenze (FI). LT designated by Signorini & Foggi, *Candollea* 52: 415 (1997).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Benedetto Puccinelli (1808–1850) Italian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Culms 30–50 cm long. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 0.25–0.6 mm wide. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins.

**Inflorescence.** Inflorescence a panicle. Peduncle glabrous. Panicle open, ovate, 6–9 cm long. Panicle branches glabrous or puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.3–6 mm long, 0.6–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 6–7.1 mm long, chartaceous, purple, without keel, 5 -veined, more than 3-veined. Lemma surface smooth or scaberulous, rough above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2.4–4.7 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–4 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe, Southwestern Europe, Southeastern Europe.

**Country /Province /State.** : Austria, Germany, Switzerland. : France. : Italy.

### **Festuca pulchella** Schrad. *Fl. Germ.* i. 336. t. 5. (1806).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Austria. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Austria, Salzburg: Mielichhofer.

**Illustrations (Books):** G.Hegi, *Flora von Mitteleuropa* 1 (1909).

**Derivation** (Clifford & Bostock 2007): L. pretty. Attractive in some respect, usually the inflorescence.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Rhizomes short. Basal innovations extravaginal. Culms 25–55 cm long. Leaf-sheaths tubular for much of their length, with 0.5–0.75 of their length closed, glabrous on surface. Ligule absent. Leaf-blades flat or convolute, 2–5 mm wide. Leaf-blade venation with sclerenchyma strands below veins or above all veins, subepidermal sclerenchyma attached to veins above and below (primary veins only).

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, bearing few spikelets. Primary panicle branches spreading. Panicle branches flexuous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.6–4.9 mm long, 0.8–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 5.8–6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acute, mucous. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp, obovoid. Hilum linear. Disseminalve comprising a caryopsis.

**Distribution (TDWG).** Continent. Europe.

**Region.** Middle Europe, Southwestern Europe, Southeastern Europe.

**Country /Province /State.** : Austria, Germany, Switzerland. : France. : Romania, Yugoslavia.

### ***Festuca punctoria* Sibth. & Sm. *Fl. Graec. Prod.* i. 60. (1806).**

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Turkey. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Turkey, Olympum Bithynae: Sibthorp (OXF holo, BM).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. pungo*, prick; -oria, indicating capability. Tips of leaf-blades pungent.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms erect, 15–30 cm long. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, scaberulous. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades curved, filiform, conduplicate, elliptic in section, 5–10 cm long, 0.8–1.1 mm wide, coriaceous, stiff, light green, pruinose. Leaf-blade venation comprising 7(–9) vascular bundles, with 5 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth. Leaf-blade apex pungent.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 4–5.5 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 7–8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes eventually visible between lemmas, pilose.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 3–3.5 mm long, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.1–5.5 mm long, 0.8–0.9 length of adjacent fertile lemma, chartaceous, with scarious margins, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 5.1–6.2 mm long, chartaceous, much thinner on margins, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1–2.7 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** Western Asia. Iran.

### ***Festuca purpurascens* Banks & Soland. ex Hook. f. *Fl. Antarct.* 383. t. 140. (1847).**

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Chile. **Basionym or Replaced Name:** *Festuca trachylepis* Hackel ex Druce, *Rep. Bot. Exch. Cl. Brit. Isles*, 4: 30 (1915). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *Banks*

& *Solander 1769*, Fuegia [Good Success Bay] (K; ILT: BM, S). LT designated by Alexeev, Bot. Zhurn. (Moscow & Leningrad) 69: 348 (1984): LT proposed on same coll., but on BM sheet, by D. M. Porter, Bot. J. Linn. Soc. 93: 31 (1986)..

ST: *Capt. King*, Port Famine

ST: *C. Darwin*, Good Success Bay.

**Recent Synonyms:** *Festuca insularis* Steud., *Syn. Pl. Glum.* 1:812 (1854).

**Illustrations (Books):** M.N. Correa, *Flora Patagonica* Parte III, Gramineae (1978) (98, Fig. 56).

**Derivation** (Clifford & Bostock 2007): *L. purpurasco*, become purple. Inflorescences reddish-purple.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Rhizomes elongated, scaly. Culms 40–120 cm long, 2–3 -noded. Culm-nodes pubescent. Lateral branches lacking. Leaf-sheaths open for most of their length, smooth or scaberulous, glabrous on surface. Ligule a ciliolate membrane, 0.5–1 mm long, glabrous on abaxial surface or pubescent on abaxial surface. Leaf-blades 10–30 cm long, 4–8 mm wide, flaccid. Leaf-blade venation distinct. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate.

**Inflorescence.** Inflorescence a panicle. Panicle open, elliptic, equilateral or nodding, 10–20 cm long. Primary panicle branches ascending, 2 -nate, 9–18 cm long. Panicle axis scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9–15 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1–1.5 mm long, pubescent. Floret callus pubescent.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3–4.5 mm long, 0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface smooth or scabrous, glabrous or puberulous. Lower glume apex acute. Upper glume lanceolate, 4.5–6 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface smooth or scabrous, glabrous or puberulous. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 6–8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, glabrous or puberulous. Lemma apex acute, muticous or mucronate or awned, 1 -awned. Principal lemma awn 0.5–3 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–4 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, 3–3.5 mm long, dark brown, hairy at apex. Hilum linear, 0.75 length of caryopsis.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG).** **Continent.** Europe (\*), South America.

**Region.** Northern Europe (\*).

**Country /Province /State.** : Great Britain (\*). **Southern South America.** Argentina South, Chile Central, Chile South.

**TDWG4.** Chubut, Neuquén, Río Negro, Tierra del Fuego. Rest of Chile- Biobio, La Auracania, Maule, O'Higgins, Santado, Valpariso, Chiloe, Aisen, Magellanes. Santiago, Biobio, La Araucania. Los Lagos, Aisen, Magellanes.

**Festuca pyrenaica** Reut. *Cat. Sem. Hort. Genev.* 4 (1861).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online, U. Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G. Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from France. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: France, Pene Blaque: Reuter & Barbey.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. -ica*, belonging to. From Pyrenaei Montes, that is the Pyrenees.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Rhizomes elongated. Butt sheaths persistent and investing base of culm. Basal innovations extravaginal. Culms geniculately ascending, 10–32 cm long. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, pubescent. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 0.3–0.6 mm wide. Leaf-blade venation comprising 5–7 vascular bundles, with 3–4 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface ribbed, smooth, glabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, dense, 2–3.5 cm long. Primary panicle branches simple. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally

compressed, 6–6.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.4–3.7 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4–4.2 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–1.5 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 28$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : France, Spain.

### **Festuca pyrogea** Speg. *Anal. Mus. Buenos Aires*, v. 97. (1896).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Argentina. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Argentina: Tierra del Fuego: Hab. Semel tantum caespites pleures inventi in scopulosis prope Ushuaia : [1882], [*Spegazzini*] (HT: LPS).

**Illustrations (Books):** M.N.Correa, *Flora Patagonica* Parte III, Gramineae (1978) (103, Fig. 60).

**Derivation** (Clifford & Bostock 2007): Gk. pyr, fire; ge, earth. From Patagonia, otherwise known as Land of Fire.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Culms 6–60 cm long, 1–2 -noded. Lateral branches lacking. Leaf-sheaths open for most of their length, glabrous on surface or pubescent. Ligule an eciliate membrane, 0.2–0.5 mm long. Leaf-blades 2–10 cm long, 0.5–0.7 mm wide, glaucous. Leaf-blade surface glabrous or pubescent, hairy adaxially. Leaf-blade margins ciliate. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Peduncle pubescent above. Panicle contracted, linear, 3–6 cm long. Panicle axis pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, puberulous.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6–12 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1 mm long, pubescent.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.5–4 mm long, 0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4–6 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume surface glabrous or puberulous, hairy at apex. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 5–6.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface pilose. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2–3 mm long overall. Palea 1 mm long, 2 -veined. Palea keels scabrous. Palea surface puberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 0.6–3 mm long. Ovary glabrous. Caryopsis with adherent pericarp, 4–5 mm long. Hilum linear, 0.75 length of caryopsis.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Southern South America. Argentina South, Chile Central, Chile South.

**TDWG4.** Chubut, Neuquén, Río Negro, Santa Cruz, Tierra del Fuego. Chiloe, Aisen, Magellanes. La Araucania. Aisen, Magellanes.

### **Festuca quadridentata** H. B. & K. *Nov. Gen. et Sp.* i. 154. (1815).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Ecuador. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Humboldt & Bonpland s.n.*, Jul, Ecuador: Chimborazo: 2860 m (P; IT: B, P).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 47, fig 18 (2007)).

**Derivation** (Clifford & Bostock 2007): L. quatuor, four; dens, tooth; -ata, possessing; Lower glume four-toothed.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Culms erect, 100–150 cm long. Culm-internodes smooth. Leaf-sheaths scaberulous, glabrous on surface. Ligule an eciliate membrane, 5–8 mm long. Leaf-blades flat or involute, 35–40 cm long, 0.7–0.8 mm wide, 6–10 cm long at summit of culm, coriaceous. Leaf-blade surface scaberulous, rough adaxially. Leaf-blade margins scaberulous. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 40 cm long. Primary panicle branches ascending or drooping, 8–16 cm long. Panicle branches smooth or scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 1–2 mm long, smooth or scaberulous.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 11–12 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3.6–4 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.5–5.5 mm long, 0.5–0.66 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 7.8–8.3 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins prominent. Lemma surface scabrous. Lemma apex erose or dentate, 3–4 -fid, obtuse, mucronate. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 4 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Ecuador, Peru.

**Festuca quadriflora** Honck. *Verz. Aller Gew. Teutschl.* 268 (1782).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Germany. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: NT: *I. Markgraf, M. Markgraf & M. Welten s.n.*, 23 Jul 1977, Germany: Mt. Taveyannaz, Vaud, Suisse, Wetl. Ausluf der Diablerets, 1900 m (Z). NT designated by Markgraf-Dannenberg, *Festuca-Probleme* 374 (1979).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. quatuor, four; flos, flower. Spikelets mostly with four florets.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms 10–20 cm long. Leaf-sheaths scaberulous, glabrous on surface. Ligule an eciliate membrane, 0.5–1 mm long, truncate. Leaf-blades filiform, 0.6 mm wide. Leaf-blade venation comprising 5 vascular bundles, with 1 inner ridges, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous, rough adaxially.

**Inflorescence.** Inflorescence a panicle. Peduncle antrorsely scabrous above. Panicle open, ovate, 2–4 cm long, bearing few spikelets. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 3.8–5.2 mm long, 0.9 length of adjacent fertile lemma, chartaceous, with hyaline margins, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 4–6 mm long, chartaceous, glaucous or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 0.2–1.3 mm long overall. Palea 2 -veined. Palea keels ciliate. Palea surface scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3.5 mm long. Caryopsis with adherent pericarp, obovoid. Hilum linear. Disseminule comprising a caryopsis.

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe, Southwestern Europe, Southeastern Europe.

**Country /Province /State.** : Austria, Germany, Switzerland. : France, Spain. : Italy, Yugoslavia.

**Festuca queriana** Litard. *Cavanillesia*, viii. 54 (1936). (1936).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Spain. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Spain, Puerto de Manzanal: Font Quer & Rothmaler.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. *-ana*, indicating connection. In honor of Pio Font i Quer (1888–1964) Spanish botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 25–40 cm long. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with infolded margins, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 0.5–1 mm wide. Leaf-blade venation comprising 7–8 vascular bundles, with 5–6 inner ridges, with sclerenchyma strands below veins or above all veins, with subepidermal sclerenchyma attached to veins below, with sclerenchyma strands widened to form a discontinuous subepidermal layer. Leaf-blade surface ribbed. Leaf-blade apex pungent.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, 6–8.5 cm long. Panicle branches scabrous, glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–8.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.8 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4.5–5.3 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, mucous. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–2.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG).** Continent. Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : Spain.

**Festuca rechingeri** Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 80(2): 122 (1975).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Greece. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: T: *K. H. Rechinger 18024*, 1956, Greece: Macedonia: distr. Kozani, 2000–2190m. (MO-4377598).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Karl Heinz Rechinger (1906–) Austrian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms 50–60 cm long. Leaf-sheaths open for most of their length, with 0.33 of their length closed, pubescent. Ligule an eciliate membrane, 0.5–1 mm long, pubescent on abaxial surface, obtuse. Leaf-blades filiform, conduplicate, 0.45–0.8 mm wide. Leaf-blade venation comprising 7–13 vascular bundles, with 9 inner ridges, with sclerenchyma strands above some veins or above all veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface ribbed, with rectangular ribs, smooth, pubescent, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, nodding, 5.5–6.5 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8.7–10.2 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 5–5.6 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex obtuse.

**Florets.** Fertile lemma lanceolate, 6.5–7.1 mm long, chartaceous, much thinner on margins, mid-green or purple, suffused with last colour, shiny, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, mucous or mucronate, 1 -awned. Principal lemma awn 0.3–1.1 mm long overall. Palea 1 length of lemma, 2 -



veined. Palea keels ciliate, adorned above. Palea surface scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3.5–4 mm long. Caryopsis with adherent pericarp, obovoid. Hilum linear. Disseminule comprising a caryopsis.

**Distribution (TDWG). Continent.** Europe.

**Region. Southeastern Europe.**

**Country /Province /State.** : Greece, Yugoslavia.

**Festuca reclinata** Swallen. *Contrib. U. S. Nat. Herb.* xxix. 254 (1948).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Colombia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *J. Cuatrecasas & H. G. 9970*, 20 Jul 1940, Colombia: Norte de Santander (US-1798714; IT: COL).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 39, fig 13 (2007)).

**Derivation** (Clifford & Bostock 2007): *L. reclino*, lean back. Culms weakly procumbent.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, culms solitary or caespitose, clumped loosely. Cataphylls inconspicuous. Rhizomes short, fleshy, not obviously scaly. Basal innovations extravaginal. Culms slender, straight, 30–40 cm long, 2–3 -noded, without nodal roots. Culm-internodes terete. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves mostly basal, 2–4 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined, antrorsely scabrous. Leaf-sheath auricles absent. Ligule an eciliate membrane, 1–2.5 mm long, membranous, white, lacerate, acute. Leaf-blade base symmetrical. Leaf-blades straight or flexuous, linear in section, 5–15 cm long, 0.3–0.5 mm wide, flaccid, light green or mid-green. Leaf-blade midrib indistinct or evident. Leaf-blade venation distinct, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous, glabrous. Leaf-blade margins smooth, glabrous. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle terete, eglandular, glabrous. Panicle open, oblong or ovate, continuous, loose, nodding or secund, straight, 9–10 cm long, 2–3 cm wide. Primary panicle branches ascending or spreading, sparsely divided or moderately divided. Panicle branches straight or arcuate, glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets obovate, laterally compressed, 10–13 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes scaberulous, glabrous. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume lanceolate, 1.3–2 mm long, 0.4–0.6 length of upper glume, hyaline or membranous or chartaceous, pallid or mid-green, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface pubescent, hairy at apex. Lower glume apex acute. Upper glume lanceolate, 3–3.5 mm long, 0.4–0.5 length of adjacent fertile lemma, chartaceous, pallid or light green or mid-green, without keels, 3 -veined. Upper glume surface pubescent, hairy at apex. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, symmetrical, 7–8.5 mm long, chartaceous, pallid or light green or purple, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex dentate, 2 -fid, awned, 1 -awned. Principal lemma awn from a sinus, stiff, 1–2 mm long overall. Palea 0.8 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 3–3.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Western South America.** Colombia.

**Festuca renvoizei** Stancik. *Novon* 17: 100 (2007).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**Illustrations (Journals):** *Novon* (17: 101, Fig.1 (2007)), *Contrib. U.S.Nat. Herbarium* (56: 125, fig 63 (2007)).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped moderately. Basal innovations intravaginal. Culms erect, 40–50 cm long, 1 -noded. Culm-internodes terete, antrorsely scabrous. Lateral branches lacking. Leaf-sheaths open for most of their length, glabrous on surface. Leaf-sheath auricles absent.

Ligule a ciliolate membrane, 1.2–1.5 mm long, membranous. Leaf-blades filiform, involute, circular in section, 20–30 cm long, 0.5–0.7 mm wide. Leaf-blade venation comprising 5–8 vascular bundles, with 5 inner ridges, with 7 subepidermal sclerenchyma strands, with sclerenchyma strands widened to form a discontinuous subepidermal layer. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, continuous, 11–17 cm long, 0.5–0.7 cm wide. Primary panicle branches appressed. Panicle axis scabrous. Panicle branches scabrous. Spikelets appressed, solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 9–10.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes glabrous. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume lanceolate, 3.5–4.5 mm long, 0.5 length of upper glume, membranous, purple, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 7–7.5 mm long, 1 length of adjacent fertile lemma, membranous, purple, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 7–7.5 mm long, chartaceous, purple, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex mucronate or awned, 1 -awned. Principal lemma awn 0.5–1 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous, pubescent. Palea surface pubescent, hairy above. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, lanceolate, 0.8 mm long. Anthers 3, 1–1.2 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Peru.

**Festuca reverchonii** Hack. *Oesterr. Bot. Zeitschr.* 1903, 30. (1903).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Spain. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Hispania: Sierra del Pinar, in aridis calcearis, 1900 m, 1900, *Reverchon s.n.*

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Julien Reverchon (1837–1905) French-born United States plant collector.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 18–25 cm long. Culm-internodes smooth. Leaf-sheaths open for most of their length, with 0 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect, acute. Ligule an eciliate membrane, 2 mm long. Leaf-blades curved, filiform, conduplicate, 0.4–0.55 mm wide, glaucous, pruinose. Leaf-blade venation comprising 3 vascular bundles, with 1–3 inner ridges, with sclerenchyma strands below veins or above all veins, with subepidermal sclerenchyma free from veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous. Leaf-blade apex obtuse or abruptly acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 2.5–4 cm long. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5.7–6.7 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.3 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 3.8–4.2 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 3–4 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : Spain.

**Festuca richardii** E.B. Alekseev. *Bot. Zhurn.*, 71(8): 1109 (1986).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Ethiopia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Ethiopia, Ras Guna: Schimper 1560 (B holo, K).

**Illustrations (Books):** S.Phillips, *Poaceae* (Gramineae) in I.Hedberg & S.Edwards, *Flora of Ethiopia and Eritrea* (1995) (25, Fig 11).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms erect, 20–45 cm long. Leaf-sheaths loose to inflated, smooth, glabrous on surface. Ligule an eciliate membrane. Leaf-blades aciculate, conduplicate, 10–20 cm long, 0.5 mm wide, stiff. Leaf-blade venation comprising 7 vascular bundles, with 7 inner ridges, with sclerenchyma strands below veins, with 8 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, 7–15 cm long, bearing few spikelets. Primary panicle branches appressed, simple. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 13–15 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume elliptic, 0.75 length of upper glume, chartaceous, 3 -veined. Lower glume apex acute. Upper glume elliptic, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 7–9 mm long, chartaceous, purple, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2–4(–8) mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.5–2.8 mm long. Ovary glabrous or with a few apical hairs. Caryopsis with adherent pericarp, glabrous or hairy at apex. Hilum linear.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** Northeast tropical Africa, East tropical Africa. Ethiopia (inc. Eritrea).

**Festuca richardsonii** Hook. *Fl. Bor. Am.* ii. 250. (1840).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Canada. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: LT: *Richardson s.n.*, Canada: Arctic coast, region near Mackenzie River (K; ILT: G, NY). LT designated by Pavlick, *Phytologia* 57(1): 11 (1985).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of John Richardson (1787–1865) English physician, naturalist and Arctic explorer.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Rhizomes elongated. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations extravaginal. Culms 22–40 cm long. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, flat or conduplicate, 0.5–1 mm wide. Leaf-blade venation comprising 7 vascular bundles, with 3–5 inner ridges, with sclerenchyma strands below veins or below veins or above some veins, with subepidermal sclerenchyma free from veins. Leaf-blade surface ribbed, smooth or scabrous, rough adaxially. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 4–7 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–8.6 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 3–3.6 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex obtuse or acute.

**Florets.** Fertile lemma oblong, 4–5.3 mm long, chartaceous, pallid, without keel, 5 -veined, more than 3-veined. Lemma surface pubescent. Lemma apex acute, muticous or awned, 1 -awned. Principal lemma awn 1–1.6 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Northern Europe, Eastern Europe.

**Country /Province /State.** : Finland, Foroyar, Iceland, Norway, Svarlbad, Sweden. Central European Russia, East European Russia, North European Russia.

**Festuca rifana** Litard. & Maire. *Mem. Soc. Sc. Nat. Maroc*, No. 17, 13 (1927).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Morocco. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Morocco, Mt. Timellatin: Emberger & Maire.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ana, denoting location. From the Rif district of Morocco.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Stolons present. Basal innovations extravaginal. Culms erect or geniculately ascending, 20–70 cm long, 2 -noded, with 0.2–0.25 of their length below uppermost node. Lateral branches lacking. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with infolded margins, smooth or scaberulous, glabrous on surface. Leaf-sheath oral hairs ciliate. Ligule an eciliate membrane, 0.2–1 mm long, truncate or obtuse. Leaf-blades straight or curved, filiform, angular in section, 7–8 cm long, 0.3–0.5 mm wide, firm. Leaf-blade venation with 4–5 secondary veins. Leaf-blade surface scabrous, glabrous. Leaf-blade apex abruptly acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, 3.5–12 cm long. Primary panicle branches appressed, 1–2 -nate. Panicle axis smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, scabrous, tip rectangular.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1 mm long, smooth.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.25–3 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume margins ciliolate. Lower glume apex acute. Upper glume lanceolate, 3.25–4 mm long, 0.5–0.66 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume margins ciliolate. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4.5–5 mm long, chartaceous, without keel, rounded except near apex, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2.5–3 mm long overall. Palea 2 -veined. Palea keels scabrous. Palea surface scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.75–3 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** Northern Africa. Morocco.

**Festuca rigescens** (Presl) Kunth. *Enum. Pl.* i. 403. (1833).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. **Basionym or Replaced Name:** *Diplachne rigescens* J. Presl, *Reliq. Haenk.* 1(4–5): 260 (1830)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *T. Haenke* 69, 1871, Peru: habitat in montanis Peruviae huanoccensibus (PR; IT: MO-2114172, MO-2968424 (line drawig), US-865884).

**Recent Synonyms:** *Festuca haenkei* Kunth, *Enum. Pl.* i. 403. (1830).

**Illustrations (Books):** S.A.Renvoize, *Gramineas de Bolivia* (1998) (104, Fig 22).

**Derivation** (Clifford & Bostock 2007): L. rigesco, become rigid. Leaf-blades stiff and erect.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 15–25 cm long, 1 -noded, with 0.25 of their length below uppermost node. Leaf-sheaths glabrous on surface. Ligule a ciliolate membrane, 0.5–1 mm

long, truncate. Leaf-blades involute, 4–10 cm long, 1–2 mm wide. Leaf-blade surface pubescent, hairy adaxially. Leaf-blade margins scaberulous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 4–7 cm long. Primary panicle branches appressed, bearing spikelets almost to the base. Panicle branches smooth or scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, smooth or scaberulous.

**Fertile Spikelets.** Spikelets comprising 2–3 fertile florets, with a barren rhachilla extension. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6–7 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.3 mm long, 0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface glabrous or puberulous, hairy above. Lower glume apex obtuse. Upper glume lanceolate, 3.2–4 mm long, 0.66 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface glabrous or puberulous, hairy above. Upper glume apex obtuse.

**Florets.** Fertile lemma oblong, 4.8–5.8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, puberulous, hairy above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1 mm long overall. Palea 2 -veined. Palea keels scabrous. Palea surface pubescent, hairy above.

**Flower and Fruit.** Anthers 3, 2.3–2.8 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America, Southern South America. Bolivia, Peru.

**TDWG4.** Catamarca, Jujuy, San Juan. Tarapaca, Antofagasta, Atacama, Coquimbo.

**Festuca rigidifolia** Tovar. *Mem. Mus. Hist. Nat. Javier Prado*. 16: 26 (1972).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *W. Rauh & G. Hirsch P1721*, 7 Jan 1957, Peru: Junin: Huancayo Prov. (US-2180783).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. rigidus*, stiff; folium, leaf. Leaf-blades rigid.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms erect, 70–80 cm long, 0 -noded. Leaf-sheaths open for most of their length, antrorsely scabrous, glabrous on surface. Ligule an eciliate membrane, 1–1.2 mm long, scarious, truncate. Leaf-blades conduplicate, 30–45 cm long, 2–3 mm wide, coriaceous, stiff. Leaf-blade surface ribbed, pubescent, hairy adaxially. Leaf-blade apex pungent.

**Inflorescence.** Inflorescence a panicle. Peduncle scaberulous above. Panicle open, elliptic, 30–40 cm long. Primary panicle branches ascending, 6–12 cm long, bearing spikelets almost to the base. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, scabrous.

**Fertile Spikelets.** Spikelets comprising 6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 11–12 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4.5–5.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface smooth or asperulous. Lower glume apex acute. Upper glume lanceolate, 6–7 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume lateral veins prominent. Upper glume surface smooth or asperulous. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 6.2–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.5–1 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Palea surface puberulous, hairy above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3.5–4 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Peru.

**Festuca rigidiuscula** E.B.Alekseev. *Bot. Zhurn.*, 71(8): 1111 (1986).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths or fibrous dead sheaths. Culms 15–80 cm long, 1–2 mm diam., 2-noded. Culm-internodes smooth. Leaf-sheaths tubular for much of their length, with 0.5–0.75 of their length closed, smooth or scaberulous. Ligule a ciliolate membrane, 0.5–1 mm long, truncate. Leaf-blades filiform, conduplicate, angular in section, 5–40 cm long, 0.7–0.9 mm wide, stiff. Leaf-blade venation comprising (5–)7 vascular bundles, with 3–5 inner ridges, with 5 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scaberulous, rough abaxially. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 7–20 cm long. Primary panicle branches appressed, 2–4 cm long. Panicle axis scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 8–11 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 5–7 mm long, membranous, much thinner on margins, without keels, 3-veined. Lower glume apex acute. Upper glume lanceolate or ovate, 6–8.5 mm long, chartaceous, without keels, 3-veined. Upper glume apex obtuse.

**Florets.** Fertile lemma elliptic, 7.5–9 mm long, chartaceous, without keel, 5-veined, more than 3-veined. Lemma surface scaberulous. Lemma apex acute, mucicous or awned, 1-awned. Principal lemma awn 0.8–2 mm long overall. Palea 2-veined. Palea keels scabrous, with 0.33–0.5 of their length adorned. Palea apex dentate, 2-fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.8–2.6 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear, 1 length of caryopsis.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** West-central tropical Africa. Cameroon.

**Festuca riloensis** (Hackel ex Hayek) I.Markgraf-Dannenberg. *Bot. J. Linn. Soc.*, 76(4): 327 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Bulgaria. **Basionym or Replaced Name:** *Festuca halleri* subsp. *riloensis* Hack. ex Hayek, *Fedde. Rep., Beih.* 30:282 (1932). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Bulgarien: Rilo Dag, m. Elenin vrch, in rupibus excelsis, 2600 m, *Stiefelhagen s.n.*(Specimen originale!), Accd. to Chase & Niles, Index Grass Sp. ; Bulgaria, Rilo Dag: Stiefelhagen.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Mt. Rila, Bulgaria.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm. Basal innovations intravaginal. Culms 10–20 cm long. Leaf-sheaths tubular for much of their length, with 0.66 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 0.5–0.8 mm wide. Leaf-blade venation comprising 7 vascular bundles, with 3 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, 1–3.5 cm long. Primary panicle branches simple, bearing 1–2 fertile spikelets on each lower branch. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.5–8.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 2.9–3.6 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 4.1–4.7 mm long, chartaceous, purple, without keel, 5-veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acute, awned, 1-awned. Principal lemma awn 2.1–2.7 mm long overall. Palea 2-veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–2.5 mm long. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 14$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region. Southeastern Europe.**

**Country /Province /State.** : Bulgaria, Yugoslavia.

**Festuca rivasmartinezii** V. de la Fuente & E. Ortunez. *Bot. J. Linn. Soc.*, 114(1): 25 (1994).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Spain. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Spain, Puerto de Navafria: Ortunez & Fuente (MAF holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of Salvador Rivas-Martinez (1935-) Spanish botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm. Basal innovations intravaginal. Culms erect, 7–40 cm long, 2–3 -noded, with 0.25 of their length below uppermost node. Culm-internodes distally glabrous. Lateral branches lacking. Leaf-sheaths open for most of their length, with 0.25 of their length closed, glabrous on surface. Leaf-sheath oral hairs ciliate. Leaf-sheath auricles erect. Ligule an eciliate membrane, 0.2 mm long, truncate. Leaf-blades curled, filiform, conduplicate, elliptic in section, 3–20 cm long, 1 mm wide, glaucous. Leaf-blade venation comprising 7–9 vascular bundles, with sclerenchyma strands widened to form a discontinuous subepidermal layer. Leaf-blade margins scabrous, glabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle, comprising 10–47 fertile spikelets. Panicle contracted, linear, 3–8 cm long. Primary panicle branches simple, 1.8–3 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 3–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 1.2–2.3 mm long, 0.6–0.7 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous, rough at apex. Lower glume apex acute. Upper glume lanceolate or oblong, 2–3.3 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface scabrous, rough at apex. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 3–4 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma margins scaberulous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.5–1.4 mm long overall. Palea lanceolate, 2.5–3.9 mm long, 2 -veined. Palea keels scabrous. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp, 2–2.5 mm long. Hilum linear.

$2n = 14$  (2 refs TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region. Southwestern Europe.**

**Country /Province /State.** : Spain.

**Festuca rivularis** Boiss. *Elench.* 90 (1838).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Spain. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Habitat ad aquas in parte superiori Sirra Nevada,.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. rivulus, river; -are, pertaining to. Growing adjacent to rivers.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Rhizomes elongated. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations extravaginal. Culms 30–70 cm long. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, glabrous on surface. Ligule an eciliate membrane. Leaf-blades flat or conduplicate, 0.6–1.1 mm wide, light green. Leaf-blade midrib keeled beneath. Leaf-blade venation comprising 7–9 vascular bundles, with

sclerenchyma strands below veins, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma free from veins. Leaf-blade surface ribbed, smooth or scaberulous, pubescent, sparsely hairy.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, loose, 10–22 cm long. Primary panicle branches spreading. Panicle branches smooth or scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.3–6 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 6–7.1 mm long, chartaceous, mid-green or purple, without keel, 5 -veined, more than 3-veined. Lemma apex acute, mucronate or awned, 1 -awned. Principal lemma awn 0.3–2 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Dissemuline comprising a caryopsis and palea.

$2n = 14$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : France, Portugal, Spain.

**Festuca roblensis** M. Gonzalez-Ledesma. *Novon*, 8(2): 147 (1998).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Mexico. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: IT: Gonzalez-Ledesma & Garcia 530, 7 Sep 1993, Mexico (MO-4928316).

**Illustrations (Journals):** *Novon* (8: 148 Fig.1 (1998)).

**Derivation** (Clifford & Bostock 2007): *L. -ensis*, denoting origin. From Rancho El Roble near El Derramadero, Mexico.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms erect, 100–130 cm long, 1.6–2.6 mm diam. Leaf-sheaths smooth or scaberulous. Leaf-sheath auricles absent. Ligule an eciliate membrane, 1.3–5 mm long, lacerate. Leaf-blades flat or involute, 30–55 cm long, 1.5–3.6 mm wide. Leaf-blade midrib conspicuous. Leaf-blade surface ribbed, grooved adaxially, smooth or scaberulous, rough abaxially. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle. Peduncle smooth or scaberulous above. Panicle open, ovate, 16–26 cm long. Primary panicle branches 2 -nate, bearing 2–7 fertile spikelets on each lower branch. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 3–8 mm long.

**Fertile Spikelets.** Spikelets comprising 3–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 13–20 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.5–4.8 mm long, 0.33–0.5 length of upper glume, chartaceous, much thinner on margins, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.8–6 mm long, 0.33–0.5 length of adjacent fertile lemma, chartaceous, with hyaline margins, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 9.7–12.7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface smooth or scaberulous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.5–3.7 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, 1–1.5 mm long. Anthers 3, 4–5.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp, 5.5–7 mm long. Hilum linear.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** Mexico. Northeast Mexico.

**TDWG4.** Guanajuato, Zacatecas.



**Festuca robustifolia** I. Markgraf-Dannenberg. *Bot. J. Linn. Soc.*, 76(4): 328 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Italy. **Basionym or Replaced Name:** *Festuca ovina* subvar. *robusta* Hack., *Monogr.* :91 (1882). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: : Based on *F. ovina* subvar. *robusta* ; Italy, Mt. Ferrato: Coll?.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. robustus*, robust; folium, leaf. Foliage coarse.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 24–36 cm long. Culm-internodes smooth or antrorsely scabrous. Leaf-sheaths open for most of their length, with 0.2–0.33 of their length closed, with flat margins, smooth or scaberulous, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 0.4–0.8 mm wide, stiff, pruinose. Leaf-blade venation comprising 7 vascular bundles, with 3 inner ridges, with subepidermal sclerenchyma free from veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 3–5.5 cm long. Panicle branches scaberulous, glabrous or puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9–9.7 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.2–6 mm long, 0.8–0.9 length of adjacent fertile lemma, chartaceous, with scarious margins, without keels, 3 -veined. Upper glume surface scabrous, rough above, glabrous or puberulous, hairy above. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 5–6.7 mm long, chartaceous, light green or glaucous or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above, glabrous or puberulous, hairy above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2.5–3.3 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region. Southeastern Europe.**

**Country /Province /State.** : Italy, Sicily.

**Festuca roemerii** (Pavlick) E.B. Alekseev. *Novosti Sist. Vyssh. Rast.*, 22: 23: (1985).

Regarded by K as a synonym (*F. idahoensis*).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Canada. **Basionym or Replaced Name:** *Festuca idahoensis* var. *roemerii* Pavlick, *Canad. J. Bot.* 61(1): 350 (1983)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Canada, *Pavlick* 78–233 (HT: V).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (441).

**Derivation** (Clifford & Bostock 2007): in honor of Hans L. Roemer (fl. 1983) Canadian ecologist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** **Western Canada, Northwest USA, Southwestern USA.** British Columbia. Oregon, Washington. California.

**Festuca roigii** Dubcovs. & Rzigolo. *Bol. Soc. Argent. Bot.* 26(3–4): 236 (1990).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Argentina. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *F. A. Roig* 9774, 27 Nov 1979, Argentina: Prov. Mendoza, dpto. Las Heras, Cordon de los Pajaritos (SI).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Fidel A. Roig (fl. 1990) Argentinian agriculturalist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Flower and Fruit.**  $2n = 28$  (1 ref TROPICOS).

**Distribution (TDWG).** **Continent.** South America.

**Country /Province /State.** **Southern South America.** Argentina Northwest.

**TDWG4.** Mendoza.

**Festuca rosei** Piper. *Contrib. U. S. Nat. Herb.* x. 45 (1906).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Mexico. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Mexico: Est. Mixico: near Cima, 19 Sep 1903, *Rose & Painter 7210* (HT: US).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Joseph Nelson Rose (1862–1928) who collected widely in the Americas.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms 100–150 cm long, 2–3 mm diam., 3–4 -noded. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.5–1 mm long. Leaf-blades filiform, involute, 20–40 cm long, 1–2 mm wide. Leaf-blade surface scabrous, rough adaxially, glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear or lanceolate, 15–30 cm long. Primary panicle branches appressed or ascending, 1 -nate, 3–5 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9–12 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, 3–4.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous, rough at apex. Lower glume apex acuminate. Upper glume lanceolate, 4–7 mm long, 0.66 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface scabrous, rough at apex. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 6–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acuminate. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.7–4 mm long, yellow. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG).** **Continent.** North America, South America.

**Country /Province /State.** **Mexico.** Central Mexico, Northeast Mexico, Gulf (Mexico), Southwest Mexico, Southeast Mexico. **Mesoamerica.** Guatemala.

**TDWG4.** Distrito Federal, Mexico State, Morelos, Puebla, Tlaxcala. Aguascalientes, Durango, Queretaro, San Luis Potosi, Tamaulipas, Zacatecas. Veracruz. Guerrero, Jalisco, Michoacan. Chiapas.

**Festuca rothmaleri** (Litard.) I. Markgraf-Dannenber. *Bot. J. Linn. Soc.*, 76(4): 325 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Spain. **Basionym or Replaced Name:** *Festuca rubra* var. *rothmaleri* Litard., *Cavanillesia* 8: 57 (1936)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: LT designated by Fuente Garcia & Sanchez-Mata, *Candollea* 41: 163–171 (1986).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Werner Hugo Paul Rothmaler (1908–1967) German botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Rhizomes short. Butt sheaths persistent and investing base of culm, with compacted dead sheaths or fibrous dead sheaths. Basal innovations extravaginal. Culms 35–50 cm long. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 0.6–0.75 mm wide, stiff. Leaf-blade venation comprising 7–9 vascular bundles, with 7–8 subepidermal

sclerenchyma strands, with subepidermal sclerenchyma strands unequal in size, with subepidermal sclerenchyma free from veins. Leaf-blade surface smooth, puberulous, sparsely hairy. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, effuse, 7–12.5 cm long. Primary panicle branches spreading. Panicle branches smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9.1 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, chartaceous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume linear, 4.5–5 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4.5–5 mm long, chartaceous, mid-green or purple, without keel, 5-veined, more than 3-veined. Lemma apex acuminate, awned, 1-awned. Principal lemma awn 1–2.5 mm long overall. Palea 2-veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 56$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : Spain.

### **Festuca rubra** Linn. *Sp. Pl.* 74. (1753).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), D.Sharp, D. & B.K.Simon, *AusGrass* (2002), E.Edgar, & H.Connor, *Flora of New Zealand Gramineae* 5 (2000), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N.L.Bor, *Grasses of Burma, Ceylon, India and Pakistan* (1960), T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983) (& as *F. polonica*), T.Koyama, *Grasses of Japan and its neighboring regions* (1987), W.D.Clayton & N.Snow, *Key to Pacific Grasses* (2010).

**TYPE** from Sweden. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Sweden, Upsala: Anon (GB lecto).

**Recent Synonyms:** *Festuca ammobia* L.E. Pavlick, *Sp. Pl.* 74. (1753).

**Illustrations (Books):** C.E.Hubbard, *Grasses* (1968) (136 & 138 as subsp. *commutata* & *rubra*), G.Hegi, *Flora von Mitteleuropa* 1 (1909), T.Koyama, *Grasses of Japan and its neighbouring regions* (1987) (84, Fig 25), C-C Hsu, *Flora of Taiwan*, Vol 5 (1978) (320), C-C Hsu, *Taiwan Grasses* (1975) (as var. *nankotaizanensis*), J.P.Jessop, G.R.M. Dashorst & F.M.James, *Grasses of South Australia* (2006) (127, Fig 83 as subsp. *rubra*), W.L.Wagner et al., *Manual of the Flowering Plants of Hawai'i*, Vol. 2 (1990) (1544, Pl. 228), K.F.Best, et al, *Prairie Grasses* (1971) (135), W.Burger, *Flora Costaricensis* 15, Gramineae: *Fieldiana Botany New Series* 4 (1980) (240, Fig 83), M.N.Correa, *Flora Patagonica* Parte III, Gramineae (1978) (98, Fig. 58), H.J.Noltie, *The Grasses of Bhutan* (2000) (539, Fig. 13 as ssp. *clarkei*), S.W.L.Jacobs, R.D.B.Whalley & D.J.B.Wheeler., *Grasses of New South Wales*, 4th edn (2008) (269), M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (416 & 418, as subspecies *rubra*, *arctica*, *arenaria*, *aucta*, *fallax*, *commutata*, *mediana*, *pruinosa*, *secunda* & *vallicola*), S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig.333 as ssp. *rubra* & ssp. *arctica*), E.Hafliger & E.Schultz, *Grass Weeds*, CIBA-GEIGY (2:82(1980)).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 58, fig 25 (2007)).

**Images:** D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002);, R.Darke, *Ornamental Grasses* (2004);

**Derivation** (Clifford & Bostock 2007): L. red. Spikelets red.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Rhizomes absent or elongated. Basal innovations extravaginal or intravaginal. Culms erect or geniculately ascending, 15–90 cm long, 1–3-noded. Leaf-sheaths tubular for much of their length, without keel, glabrous on surface or pubescent. Ligule an eciliate membrane, 0.2 mm long. Leaf-blades filiform, conduplicate, 3–40 cm long, 0.5–1(–2) mm wide, stiff. Leaf-blade venation comprising 5–7 vascular bundles. Leaf-blade surface smooth or scabrous, glabrous. Leaf-blade apex obtuse or abruptly acute.

**Inflorescence.** Inflorescence a panicle. Peduncle smooth. Panicle open or contracted, lanceolate or oblong, 3–17 cm long. Primary panicle branches appressed or ascending. Panicle branches angular, scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 1–5 mm long.

**Fertile Spikelets.** Spikelets comprising 3–9 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 5–14 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 2–4 mm long, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume oblong, 3–5 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma ovate, 4–6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.5–3 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous, adorned above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–3 mm long. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear, 1 length of caryopsis.

$N = 21$  (1 ref TROPICOS), or 28 (1 ref TROPICOS).  $2n = 14$ , or 28, or 42 (10 refs TROPICOS), or 56, or 70.

**Distribution (TDWG).** **Continent.** Europe, Africa, Temperate Asia, Tropical Asia, Australasia, Pacific, North America, South America, Antarctica.

**Region.** Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe.

**Country /Province /State.** : Denmark, Finland, Foroyar, Great Britain, Iceland, Ireland, Northern Ireland, Norway, Svalbard, Sweden. : Austria, Liechtenstein, Belgium, Luxembourg, Czechoslovakia, Germany, Hungary, Netherlands, Poland, Switzerland. : Corsica, Channel Islands, France, Monaco, Portugal, Andorra, Gibraltar, Spain, Azores. : Albania, Bulgaria, Greece, Italy, San Marino, Vatican, Romania, Malta, Sicily, Yugoslavia. Belarus, Estonia, Kaliningrad, Latvia, Lithuania, Baltic States, Krym, Central European Russia, East European Russia, North European Russia, South European Russia, Northwest European Russia, Moldova, Ukraine. **Northern Africa, Macaronesia.** Algeria, Morocco. Azores, Canary Is, Madeira. Siberia, Russian far east, **Middle Asia, Caucasus, Western Asia, China, Mongolia, Eastern Asia.** Altay, Buryatiya, Chita, Irkutsk, Krasnoyarsk, Tuva. Amur, Kamchatka, Khabarovsk, Kuril Is, Magadan, Primorye, Sakhalin. Kazakhstan, Kirgizistan, Turkmenistan, Tadzhikistan, Uzbekistan. Afghanistan, Iran, Iraq. China South Central, Hainan, Inner Mongolia, Manchuria, China North-Central, Qinghai, Tibet, Xinjiang. Mongolia. Japan, Taiwan. Japan Hokkaido, or Honshu, or Shikoku, or Kyushu. **Indian Subcontinent.** Assam, Eastern Himalaya, Pakistan, West Himalaya. **Australia, New Zealand.** Western Australia, South Australia, New South Wales, Victoria, Tasmania. Antipodes Is, Chatham Is, New Zealand North I, New Zealand South I, Stewart Is, Campbell Is, Auckland Is. **North-central Pacific.** Hawaii (\*). **Subarctic America, Western Canada, Eastern Canada, Northwest USA, North-central USA, Northeast USA, Southwestern USA, South-central USA, Southeastern USA, Mexico.** Aleutian Is, Alaska, Yukon, Northwest Territories, Nunavut, Greenland. Alberta, British Columbia, Manitoba, Saskatchewan. Labrador, New Brunswick, Newfoundland, Nova Scotia, Ontario, Prince Edward I, Quebec. Colorado, Idaho, Montana, Oregon, Washington, Wyoming. Iowa, Minnesota, Missouri. Connecticut, Indiana, Maine, Massachusetts, Michigan, Ohio, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, West Virginia. Arizona, California, Nevada, Utah. New Mexico. Georgia, Maryland, North Carolina, South Carolina, Virginia, District of Columbia. Central Mexico, Northeast Mexico, Gulf (Mexico). **Mesoamerica, Western South America, Southern South America.** Costa Rica. Colombia, Ecuador. Argentina South, Chile Central, Chile South. **Subantarctic islands.** Falkland Is (Malvinas). **TDWG4.** Gansu, Hebei, Shanxi. Sichuan. Bhutan, Sikkim. Meghalaya. Himachal Pradesh. South-West. Southern. Coast, Tablelands. Mendoza. Neuquén, Río Negro, Tierra del Fuego. Coquimbo, Valparaiso. Magellanes. Distrito Federal, Mexico State, Puebla. Coahuila, Chihuahua, Durango, Neuvo Leon, Queretaro, Tamaulipas. Veracruz.

**Festuca rupicaprina** (Hack.) Kerner. *Sched. Fl. Exsicc. Austro-Hung.* 3:145 (1884).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Spain. **Basionym or Replaced Name:** *Festuca ovina* var. *rupicaprina* Hack., *Monogr.* :115 (1882). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Spain, Sierra Nevada: Boissier.

**Illustrations (Books):** G.Hegi, *Flora von Mitteleuropa* 1 (1909).

**Derivation** (Clifford & Bostock 2007): *L. rupes*, rock; caper, he-goat; -ina, belonging to. A component of high mountain goat pastures.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms 7–24 cm long. Leaf-sheaths unthickened at base, tubular for much of their length, with 1 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect. Ligule a ciliolate membrane. Leaf-blades filiform, conduplicate, 0.3–0.6 mm wide, light green. Leaf-blade venation comprising 5 vascular bundles, with 1 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface scaberulous.

**Inflorescence.** Inflorescence a panicle. Panicle open, 2–4 cm long. Primary panicle branches spreading, simple, bearing 1–2 fertile spikelets on each lower branch. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5.8–7.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 2.7–3.9 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 3.8–4.9 mm long, chartaceous, glaucous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.1–1.6 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–2.6 mm long. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 14$  (2 refs TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe, Southeastern Europe.

**Country /Province /State.** : Austria, Germany, Switzerland. : Yugoslavia.

**Festuca rupicola** Heuff. *Verh. Zool.-Bot. Ges. Wien.* viii. 233 (1858).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Rumania. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Romania: In rupestribus umbrosis montis Domugled ad Thermas Herculis.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. rupes*, rock; -cola, dweller. Growing on rocky slopes.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms 25–50 cm long. Culm-internodes smooth or scaberulous, distally glabrous. Lateral branches lacking. Ligule an eciliate membrane. Leaf-blades flexuous, filiform, conduplicate, 20–40 cm long, 0.5 mm wide. Leaf-blade midrib keeled beneath. Leaf-blade venation with 5–7 secondary veins, 3 inner ridges. Leaf-blade surface grooved on either side of midline, grooved abaxially, glabrous. Leaf-blade margins scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, nodding, 3–7 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume oblong, 3 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4 mm long, 0.75–1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 4–5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface glabrous or pubescent. Lemma apex acute, awned, 1 -awned. Principal lemma awn 3 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.  $N = 21$  (2 refs TROPICOS).  $2n = 42$  (4 refs TROPICOS).

**Distribution (TDWG). Continent.** Europe, Temperate Asia.

**Region.** Northern Europe (\*), Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe.

**Country /Province /State.** : Great Britain (\*). : Austria, Czechoslovakia, Germany, Hungary, Poland, Switzerland. : France. : Bulgaria, Italy, Romania, Yugoslavia. Central European Russia, East European Russia, Northwest European Russia. Siberia, **Middle Asia, Caucasus, Western Asia, China.** Afghanistan, Iran.

**Festuca rzedowskiana** E.B. Alekseev. *Bot. Zhurn.*, 66(10): 1500 (1981).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Mexico. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Mexico: alrededores de la presa Iturbide, Municipio de Iturbide (Santiago Tlazala), ladera andesitica con vegetacion de bnosque de Pinus hartwegi, *Rzedowski 25957* (HT: MHA).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating connection. In honor of Jerzy Rzedowski (1926–1969) Mexican botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms erect, 25–50 cm long. Culm-internodes smooth. Lateral branches lacking. Leaf-sheaths open for most of their length, with 0.33 of their length closed, smooth. Ligule an eciliate membrane, 0.1 mm long. Leaf-blades filiform, conduplicate, angular in section, 0.35–0.45 mm wide. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 5–7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate or oblong, 6–10 cm long. Panicle branches terete, smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 8.5–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or ovate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5–5.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface smooth. Lemma apex acute, mucicous. Palea 2 -veined. Palea keels smooth. Apical sterile florets distinct from fertile, with internodes 3–3.5 mm long between them.

**Flower and Fruit.** Lodicules 2. Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** Mexico. Central Mexico.

**TDWG4.** Mexico State.

**Festuca sabalanica** Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 80(2): 113 (1975).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Iran. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Iran, Sabalan Mts.: Rechinger 44184 (W holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Sabalan, Kuhha-ye mountains, Iran.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms 10–20 cm long. Leaf-sheaths tubular for much of their length, with 1 of their length closed, 1.5–3 cm long, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 3–6 cm long, 0.4–0.5 mm wide, glaucous. Leaf-blade venation comprising 5 vascular bundles, with 5 secondary veins, with 3 subepidermal sclerenchyma strands. Leaf-blade surface scabrous, rough abaxially, puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, 2.5–3.5 cm long. Panicle axis smooth. Panicle branches smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.5–7.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper

glume lanceolate, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4–4.3 mm long, chartaceous, light brown, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.2–2 mm long overall. Palea 2 -veined. Palea keels scabrous, adorned above, with 0.33 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.75–2 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Western Asia. Iran.

**Festuca samensis** Joch.Müll. *Brittonia* 58(1): 43 (-45; fig. 1) (2006).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Bolivia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Bolivia, Tarija, Camacho: Muller 9230 (JE holo, LPB, NY).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Rhizomes absent. Basal innovations intravaginal. Culms 60–120 cm long, 1.5–2.7 mm diam., 2–3 -noded. Culm-internodes antrorsely scabrous. Leaf-sheaths open for most of their length, subequal to internodes, antrorsely scabrous, glabrous on surface. Leaf-sheath auricles absent. Ligule an eciliate membrane, 1.3–2.5 mm long, acute. Leaf-blades filiform, conduplicate, elliptic in section, 10–50 cm long, 0.5–1 mm wide. Leaf-blade venation comprising 7–9 vascular bundles, with 7–9 inner ridges, with sclerenchyma strands below veins and above all veins, with 4 subepidermal sclerenchyma strands, with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous, rough abaxially.

**Inflorescence.** Inflorescence a panicle, comprising 20–100 fertile spikelets. Panicle open, ovate, loose, equilateral or nodding, 10–30 cm long, 3–10 cm wide. Primary panicle branches 3–8 in number. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 2–7 mm long.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 11–13.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 5.5–7.5 mm long, 0.75–1 length of upper glume, chartaceous, much thinner on margins, without keels, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume surface scabrous, rough above. Lower glume apex acute. Upper glume lanceolate or elliptic, 6.5–8.5 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface scabrous, rough above. Upper glume margins scaberulous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6.5–8.7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acute, muticous or awned, 1 -awned. Principal lemma awn 0.2–1.2 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous, ciliate, adorned above, with 0.5–0.75 of their length adorned. Palea surface pilose, hairy on margins, hairy above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, 2-toothed. Anthers 3, 3.3–4 mm long. Ovary pubescent on apex.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Bolivia.

**Festuca sanctae-martae** Stancmk. *Darwiniana* 41:140 (2003).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Colombia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Colombia: Magdalena. Sierra Nevada de Santa Marta, SE slope, Hoya del Rmo Donachum, Laguna de Calocribe (E. of Meollaca), paramo, 3600–3700m, 30 Oct 1959, *Cuatrecasas & Castañeda 24532* (HT: COL; IT: US).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 127, fig 65 (2007)).

**Derivation** (Clifford & Bostock 2007): From Sierra Nevada de Santa Marta, Colombia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Cataphylls inconspicuous. Rhizomes absent. Basal innovations intravaginal. Culms of moderate stature or slender, straight, 60–80 cm long,

2–3 -noded, without nodal roots. Culm-internodes terete. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves mostly basal, 0–2 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined, glabrous on surface. Leaf-sheath auricles absent. Ligule an eciliate membrane, 1–1.6 mm long, membranous, white, entire, truncate. Leaf-blade base symmetrical. Leaf-blades straight or curved, flat or conduplicate, angular in section, 25–35 cm long, 1.5–2 mm wide, indurate, firm, mid-green or glaucous. Leaf-blade midrib indistinct or evident. Leaf-blade venation indistinct or distinct, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface puberulous, moderately hairy, hairy adaxially. Leaf-blade margins smooth, glabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle terete, eglandular, smooth or scaberulous above, glabrous. Panicle open or contracted, lanceolate, continuous, dense, straight, 10–16 cm long, 1.5–2 cm wide, evenly furnished or contracted about primary branches. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 10–13 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes scaberulous, pubescent. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume lanceolate, 8.5–9.5 mm long, 0.9–1 length of upper glume, hyaline or membranous or chartaceous, pallid or light green or purple, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface asperulous. Lower glume apex obtuse or acute. Upper glume elliptic or oblong, 8.5–10.5 mm long, 1 length of adjacent fertile lemma, chartaceous, pallid or light green or purple, without keels, 3 -veined. Upper glume surface asperulous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, symmetrical, 9–10 mm long, chartaceous, pallid or mid-green, without keel, 5 -veined, more than 3-veined. Lemma apex muticous or awned, 1 -awned. Principal lemma awn stiff, 0.5–1 mm long overall. Palea 0.75 length of lemma, 2 -veined. Palea surface asperulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, lanceolate, 1–1.4 mm long, 2-toothed. Anthers 3, 0.8–1.1 mm long. Ovary glabrous. Caryopsis with adherent pericarp, lanceolate. Hilum linear, 0.75 length of caryopsis.

**Distribution (TDWG).** Continent. South America.

**Country /Province /State.** Western South America. Colombia.

**Festuca sanjappae** Chandra Sek. & S.K.Srivast. *J. Jap. Bot.* 80(2): 72 (-75; fig. 1) (2005).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from India. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: India, Himachal Pradesh, Pin Valley Nat. Park: Chandra Sekar 103271 (CAL holo, BSD).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms erect, slender, 35–43 cm long, 1–2.5 mm diam. Ligule an eciliate membrane, 1–1.4 mm long, lacerate. Leaf-blades 6–10 cm long, 3–4 mm wide, light green. Leaf-blade venation comprising 7 vascular bundles, with 3 subepidermal sclerenchyma strands. Leaf-blade surface pubescent, sparsely hairy.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate or elliptic, 6.5–14 cm long, 1.5–2.5 cm wide. Primary panicle branches ascending, 1.5–2.3 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate or ovate, laterally compressed, 4–5 mm long, 1.8–2.2 mm wide, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture. Lower glume lanceolate, 3.7–4 mm long, 0.9 length of upper glume, chartaceous, light green, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume ovate, 4–4.5 mm long, 1 length of adjacent fertile lemma, chartaceous, light green, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma elliptic or ovate, 3.9–4.2 mm long, 0.9–1.1 mm wide, chartaceous, light green, without keel, 5 -veined, more than 3-veined. Lemma surface pubescent, hairy above. Lemma hairs 0.3–0.5 mm long. Lemma apex emarginate, awned, 1 -awned. Principal lemma awn 14–16 mm long overall. Palea lanceolate, 3.2–3.8 mm long, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.



**Flower and Fruit.** Lodicules 2, 0.2–0.35 mm long. Anthers 3, 0.3–0.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, 3–3.5 mm long, dark brown.

**Distribution (TDWG). Continent.** Tropical Asia.

**Country /Province /State. Indian Subcontinent.** Eastern Himalaya.

**Festuca sardoa** (Nees ex Barbey) Hack. *Barb. Comp. Fl. Sard.* 71. (1884).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Sardinia. **Basionym or Replaced Name:** *Festuca varia* subsp. *sardoa* Nees ex Barbey, *Fl. Sard.* :71 (1884). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Sardinia, Mont Limbaro: Reverchon.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Sardous, now Sardinia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms 12–37 cm long, 0.5–0.7 mm diam. Leaf-sheaths open for most of their length, with 0.1–0.25 of their length closed, glabrous on surface. Ligule a ciliolate membrane, 0.5–1 mm long. Leaf-blades filiform, 0.3–0.4 mm wide. Leaf-blade venation comprising 5–7 vascular bundles, with 1 inner ridges, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Peduncle antrorsely scabrous above. Panicle open, ovate, 2–5 cm long. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume oblong, 4.6 mm long, 0.75–1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex obtuse or acute or acuminate.

**Florets.** Fertile lemma oblong, 5.2–5.8 mm long, chartaceous, mid-green, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.5–1.2 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels ciliolate. Palea surface scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.5–2 mm long. Caryopsis with adherent pericarp, obovoid. Hilum linear. Disseminule comprising a caryopsis.

**Distribution (TDWG). Continent.** Europe.

**Region. Southwestern Europe.**

**Country /Province /State.** : Corsica, Sardinia.

**Festuca saurica** E. B. Alekseev. *NovostiSist. Vyssh. Rast.*, 13: 2 (1976).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Russia, Kazakhstan, Kzylkya: Vasilevich et al. (LE holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Sauria, in Classical times a town in Akarania, Greece.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms 7–15 cm long. Culm-internodes distally glabrous. Leaf-sheaths tubular for much of their length, with 0.66–0.75 of their length closed, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 2–6 cm long, 0.6–0.7 mm wide. Leaf-blade venation with 7 secondary veins, 3 inner ridges, 3 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scaberulous, rough abaxially, puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, 1.5–3 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5–5.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4–4.5 mm long, chartaceous, light brown, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–1.8 mm long overall. Palea 2 -veined. Palea keels scabrous, adorned all along. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. Middle Asia.** Kazakhstan.

**TDWG4.**

### **Festuca saximontana** Rydb. *Bull. Torr. Bot. Club*, vi. 536. (1909).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Canada. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *W.C. McCalla 2331*, 28 Jul 1899, Canada: Alberta (NY; IT: US-79640).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (431, as var. *saximontana*, var. *purpusiana* & var. *robertsiana*).

**Derivation** (Clifford & Bostock 2007): *L. saxum*, rock; *mons*, mountain; *-ana*, indicating location. Growing amongst rocks on mountains.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms slender, 20–40 cm long. Culm-internodes distally glabrous. Ligule an eciliate membrane, obtuse. Leaf-blades involute, 3–10 cm long, 0.5 mm wide. Leaf-blade venation distinct.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 4–10 cm long. Primary panicle branches appressed. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9–15 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2 mm long, 0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.5 mm long, 0.75–1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 3–5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–2 mm long overall. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.**  $2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** North America.

**Country /Province /State. Subarctic America, Western Canada, Eastern Canada, Northwest USA, North-central USA, Southwestern USA, South-central USA.** Alaska, Yukon, Northwest Territories, Nunavut, Greenland. Alberta, British Columbia, Manitoba, Saskatchewan. Colorado, Idaho, Montana, Oregon, Washington, Wyoming. Illinois, Iowa, Minnesota, Missouri, North Dakota, Nebraska, Oklahoma, South Dakota, Wisconsin. Arizona, California, Nevada, Utah. New Mexico.

### **Festuca scabra** Lag., non Vahl(1791). *Gen. et Sp. Nov.* 4 (1816).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from South Africa. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Bulow s.n.*, South Africa: Cape of Good Hope.

**Illustrations (Books):** L.K.A. Chippindall, *Grasses and Pastures of South Africa* (1955) (56, Fig 26).

**Images:** F.van Oudtshoorn, *Guide to Grasses of Southern Africa* (1999).

**Derivation** (Clifford & Bostock 2007): *L. rough* or gritty to the touch. Plants with rough leaf-blades, spikelets or stems.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Rhizomes short or elongated. Butt sheaths thickened and forming a bulb, pubescent, persistent and investing base of culm, with fibrous dead sheaths. Culms erect,

20–100 cm long. Leaf-sheaths open for most of their length, with flat margins. Ligule an eciliate membrane, 2–7 mm long. Leaf-blades flat or involute, 5–30 cm long, 5–10 mm wide. Dioecious.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, lanceolate, 5–30 cm long, 1–3 cm wide. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 7–15 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 5 mm long, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 6 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile florets female. Fertile lemma lanceolate, 6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface asperulous. Lemma apex acuminate, mucicous or mucronate or awned, 1 -awned. Principal lemma awn 0–1 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

Male inflorescence similar to female. Male spikelets resembling female.

$N = 7$  (1 ref TROPICOS), or 21 (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State. Southern Africa.** Limpopo, Gauteng, Mpumalanga, Swaziland, Free State, Kwazulu-Natal, Lesotho, Northern Cape, Western Cape, Eastern Cape.

### ***Festuca scabriculumis* (Hack.) Richt. Pl. Eur. 1:104 (1890).**

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Italy. **Basionym or Replaced Name:** *Festuca varia* var. *scabriculumis* Hack., *Monogr.* ;176 (1882). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Italy, Alps: Burnat.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. scaber, rough; culmus, stem. Culms rough.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms 33–55 cm long, 0.6–1.5 mm diam. Leaf-sheaths open for most of their length, with 0.1–0.25 of their length closed, glabrous on surface. Ligule a ciliolate membrane, 0.8–1.7 mm long, obtuse. Leaf-blades filiform, 0.4–0.6 mm wide, stiff. Leaf-blade venation comprising 7 vascular bundles, with 1 inner ridges, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with unevenly thickened subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth or scaberulous.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, equilateral or nodding, 3–10 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10.3–14.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.9–6.1 mm long, 0.66 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 6–9.5 mm long, chartaceous, mid-green or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1.7 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels ciliate. Palea surface scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–4 mm long. Caryopsis with adherent pericarp, obovoid. Hilum linear. Disseminule comprising a caryopsis.

**Distribution (TDWG). Continent.** Europe.

**Region. Middle Europe, Southwestern Europe, Southeastern Europe.**

**Country /Province /State.** : Switzerland. : France. : Italy.

**Festuca scabriflora** L. Liou. *Fl. Reipubl. Popularis Sin.* 9(2): 387–388 (2002).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Zhandian, 17 Aug. 1981, *Hengduanshan Exped.* 3111 (HT: PE).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. scaber*, rough; *flos*, flower. Spikelets with scabrous glumes and/or lemmas.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Culms 60–80 cm long, 3–4 -noded. Leaf-sheaths glabrous on surface. Leaf-sheath auricles erect. Ligule an eciliate membrane, 0.4–0.6 mm long. Leaf-blades 10–15 cm long, 4–6 mm wide. Leaf-blade margins scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, loose, 15–25 cm long. Primary panicle branches 2-nate, 5–8(–15) cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong or ovate, laterally compressed, 16–18 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 1.5–2.5 mm long, 0.5–0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3–3.5 mm long, 0.5 length of adjacent fertile lemma, chartaceous, without keels. Upper glume apex acuminate.

**Florets.** Fertile lemma ovate, 6–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex emarginate, mucronate, 1 -awned. Principal lemma awn 6–8 mm long overall. Palea 2 -veined. Palea keels ciliolate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.3–1.7 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. China.** China South Central, Tibet.

**TDWG4.** Sichuan, Yunnan.

**Festuca scabrifolia** S.A. Renvoize. *Gramineas de Bolivia: 109* (1998).

**Accepted by:** R.J. Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D. Clayton & K. Harman, *GrassBase* (2008) and online, U. Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Bolivia. **Basionym or Replaced Name:** *Festuca dissitiflora* var. *trachyphylla* Hack. ex St.-Yves, *Candollea* 3: 246 (1927)

. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Bolivia: Bolivie a l'hacienda de Huancapampa, *Buchtien s.n.* (HT: Bolivia).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. scaber*, rough; *folium*, leaf. Leaf-blades rough.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths papery, dull. Culms erect, 30–90 cm long. Leaves mostly basal. Ligule a ciliolate membrane. Leaf-blades filiform, involute, 10–20 cm long, 0.5–0.8 mm wide, stiff. Leaf-blade surface scabrous, rough abaxially, pubescent, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, 6–20 cm long. Primary panicle branches appressed, 1–2 cm long. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6–11 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes pubescent.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3–3.5 mm long, 0.9 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous. Lower glume apex attenuate. Upper glume lanceolate, 3.5–4 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface scabrous. Upper glume apex attenuate.

**Florets.** Fertile lemma lanceolate, 5–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acuminate to setaceous acuminate, mucicous. Palea 1 length of lemma,

2 -veined. Palea keels scabrous, eciliate or pubescent. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Bolivia.

### **Festuca scabriuscula** Phil. *Linnaea*, 29: 98 (1858).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Chile. **Basionym or Replaced Name:** *Festuca pascua* R. Phil., *Anal. Univ. Chil.* 94: 176 (1896). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: ST: Chile: region alpina de Chillan type locality corrected to this by Philippi, *Anales Univ. Chile* 94: 177 (1896).

HT: Chile: Valdivia in praedis mess. S. Juan (SGO-PHIL-306: IT: SGO-63842, US-556545 (fragm. ex SGO-PHIL-306 & photo), US-556546 (fragm. ex SGO-PHIL-303), US-1126359 (fragm. ex SGO ex W), W). type locality corrected from this by Philippi, *Anales Univ. Chile* 94: 177 (1896)7 (1896), see previous specimen record..

**Recent Synonyms:** *Festuca pascua* R. Phil., *Anal. Univ. Chil.* 94: 176. (1896).

**Illustrations (Books):** M.N.Correra, *Flora Patagonica* Parte III, Gramineae (1978) (111, Fig. 66 as *F. pascua*).

**Derivation** (Clifford & Bostock 2007): *L. scabrius*, rougher; -ula, diminutive. Somewhat scabrous usually of leaf-blades or leaf-sheaths.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 40–60 cm long. Lateral branches lacking. Leaf-sheaths open for most of their length, glabrous on surface to pubescent. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 10–30 cm long, 0.6–0.9 mm wide. Leaf-blade surface scabrous, rough abaxially, puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear or oblong, 10–15 cm long. Primary panicle branches 3–6 cm long. Panicle axis scaberulous. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, scaberulous.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 13–14 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1.5–2 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4–5 mm long, 0.9 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.5–5.5 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume lateral veins prominent, all extending to apex. Upper glume surface scabrous, rough at apex. Upper glume apex obtuse.

**Florets.** Fertile lemma lanceolate, 5.5–7.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough generally or above. Lemma apex acuminate, muticous or awned, 1 -awned. Principal lemma awn 1–1.2 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels ciliate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–4 mm long. Ovary with a few apical hairs. Caryopsis with adherent pericarp. Hilum linear.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Southern South America. Chile Central, Chile South.

**TDWG4.** Neuquén, Río Negro. Rest of Chile- Biobio, La Araucania, Maule, O'Higgins, Santado, Valpariso. Santiago, Biobio, La Araucania. Los Lagos.

### **Festuca scariosa** (Lag.) Pau. *Mem. Mus. Ci. Nat. Barcelona, Ser. Bot. i. No. 1*, 73 (1922).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Spain. **Basionym or Replaced Name:** *Poa scariosa* Lag., *Gen. et Sp. Nov.* 3 (1816). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Spain, Cadiz: Cabrera.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L.* of thin and membranous texture, but not green. In general of glumes or lemmas.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations extravaginal or intravaginal. Culms erect, 60–110 cm long, 3–4 -noded, with 0.5–0.66 of their length below uppermost node. Lateral branches lacking. Leaf-sheaths open for most of their length, with 0.05 of their length closed, smooth, glabrous on surface. Ligule an eciliate membrane, 4–6 mm long, lacerate, acute. Leaf-blades conduplicate, 30–50 cm long, 1–1.2 mm wide, stiff. Leaf-blade venation with 13–17 secondary veins, without layer of subepidermal sclerenchyma masking vein striation or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, rough adaxially, glabrous. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, interrupted, 15–50 cm long, 1–2 cm wide. Primary panicle branches appressed or ascending, 2–3 -nate, bearing spikelets almost to the base. Panicle axis smooth. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.5–3.5 mm long, 0.8–0.9 length of upper glume, scarious, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3–4 mm long, 0.7–0.8 length of adjacent fertile lemma, scarious, without keels, 1 -veined. Upper glume lateral veins absent. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 3.5–4 mm long, scarious, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous. Lemma apex entire or dentate, 3 -fid, obtuse, muticous or mucronate. Palea 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, obovoid, 2 mm long, hairy at apex. Hilum linear, 0.4–0.5 length of caryopsis.

$N = 7$  (1 ref TROPICOS).  $2n = 14$  (4 refs TROPICOS).

**Distribution (TDWG). Continent.** Europe, Africa.

**Region. Southwestern Europe.**

**Country /Province /State. :** Spain. **Northern Africa.** Morocco.

**Festuca schischkinii** Krivot. *Not. Syst. Herb. Inst. Bot. Acad. Sci. URSS*, xvii. 83 (1955).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Russia, Su-Alma Mt.: Lipshitz 178 (LE holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Boris Konstantinovich Shishkin (1886–1963) Russian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Butt sheaths pilose, persistent and investing base of culm, with compacted dead sheaths. Basal innovations extravaginal or intravaginal. Culms 40–80 cm long. Culm-internodes smooth, distally glabrous. Leaf-sheaths glabrous on surface. Ligule absent. Leaf-blades convolute, 2–4 mm wide. Leaf-blade surface ribbed. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Dioecious.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, oblong, 6–10 cm long. Primary panicle branches 1–2 cm long, bearing 1–2 fertile spikelets on each lower branch. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10–12 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 5–6 mm long, 0.75 length of upper glume, membranous, pallid, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 7–8 mm long, 0.9 length of adjacent fertile lemma, membranous, pallid, without keels, 3 -veined. Upper glume lateral veins prominent. Upper glume apex acute.

**Florets.** Fertile florets female. Fertile lemma oblong, 8–9 mm long, chartaceous, much thinner on margins, without keel, 5 -veined, more than 3-veined. Lemma lateral veins prominent. Lemma surface scaberulous. Lemma apex acute, muticous. Palea 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

Male inflorescence similar to female. Male spikelets resembling female.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. Middle Asia.** Kirgizistan.

**TDWG4.**

**Festuca scirpifolia** (Presl) Kunth. *Enum. Pl.* i. 403. (1830).

Regarded by K as a synonym (*F. dolichophylla*).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. **Basionym or Replaced Name:** *Diplachne scirpifolia* J. Presl, *Reliq. Haenk.* 1(4–5): 261 (1830)

. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Peru, Huanoco: Haenke (PR holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. folium, leaf. The leaf-blades resemble those of *Scirpus*.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Flower and Fruit.**  $2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Western South America.** Peru.

Tarapaca, Antofagasta, Atacama, Coquimbo.

**Festuca sclerophylla** Boiss. ex Bisch. *Diagn. Ser. I.* xiii. 59 (1849).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Iran. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: IT: *Th. Kotschy Ed. R.F. Hohenacker, 1846*, 5 Jun 1843, Iran: Prov. Derbend: Mt. Elbrus (LE).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. skleros, hard; phyllon, leaf. Leaf-blades indurate or coriaceous.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Cataphylls evident. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations extravaginal or intravaginal. Culms erect, 80–100 cm long, 3-noded. Lateral branches lacking. Leaf-sheaths open for most of their length, with flat margins, antrorsely scabrous. Ligule an eciliate membrane, 2–4 mm long, lacerate, acute. Leaf-blades flat or convolute, 50–60 cm long, 3–4 mm wide, stiff, glaucous. Leaf-blade venation with subepidermal sclerenchyma attached to veins above, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface ribbed, with rectangular ribs. Leaf-blade margins scabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, 20–30 cm long. Primary panicle branches 2-nate, 7–15 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong or ovate, laterally compressed, 10–11 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes pubescent.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 4.5–5 mm long, 0.8–0.9 length of upper glume, scarious, without keels, 1-veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 5–6 mm long, 0.7–0.8 length of adjacent fertile lemma, scarious, without keels, 3-veined. Upper glume primary vein scabrous. Upper glume apex acuminate.

**Florets.** Fertile lemma ovate, 7–8 mm long, chartaceous, much thinner above, much thinner on margins, pallid or glaucous, without keel, 5-veined, more than 3-veined. Lemma midvein scabrous. Lemma lateral veins prominent. Lemma surface scaberulous. Lemma apex acuminate, muticous or mucronate. Palea 1 length of lemma, 2-veined. Palea keels scaberulous. Palea surface scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 4–4.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Hilum linear, 1 length of caryopsis.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. Caucasus, Western Asia, China.** Iran. China South Central, Qinghai.

TDWG4. Sichuan.

**Festuca serana** I. Markgraf-Dannenberg. *Blumea*, 41(1): 221 (1996).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, J.F.Veldkamp, Poaceae ms (*Flora Malesiana*).

**TYPE** from Indonesia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *E. Stresemann* 255, Aug 1911, Indonesia: Moluccas: Seram: Pinaia, Gunung [2750–3000 m] (L; IT: BO).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. *-ana*, indicating connection. From Seran (Ceram) Island in the Moluccan Islands, Indonesia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Culms erect, 9–27 cm long. Lateral branches lacking. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 2.5–9 cm long, 0.25–0.4 mm wide. Leaf-blade venation comprising 4–5 vascular bundles, with 3 inner ridges, with 7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface glabrous.

**Inflorescence.** Inflorescence a panicle. Peduncle glabrous. Panicle open, elliptic, equilateral, 2.5–6.5 cm long. Primary panicle branches 0.75–2 cm long, bearing 1–2 fertile spikelets on each lower branch. Panicle axis scaberulous. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 6.75–9 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes smooth.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate or elliptic, 6.75–9 mm long, 0.66–1 length of upper glume, chartaceous, without keels, 3 -veined. Lower glume apex acute. Upper glume lanceolate or elliptic, 4.5–6.2 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 5.6–8.1 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface smooth or asperulous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn straight or flexuous, 3–6 mm long overall, 0.4–1 length of lemma. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.8–2.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Tropical Asia.

**Country /Province /State. Malesia.** Moluccas.

**Festuca setifolia** Griseb. *Abh. Ges. Wiss. Goett.* 19:251 (1874).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *Lechler* 1826, Jun 1852, Peru: in summis Cordillera Ingis, prope Agapata (GOET; ILT: herb. Parodi, LE). LT designated by Miller, *Brittonia* 58(1): 42 (2006).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. *seta*, bristle; *folium*, leaf. Leaf-blades bristle-like.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 25–45 cm long. Ligule an eciliate membrane, 2.5–5 mm long. Leaf-blades involute, 10–35 cm long, 1–1.5 mm wide. Leaf-blade surface pubescent, hairy adaxially. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 8–15 cm long. Primary panicle branches appressed, bearing spikelets almost to the base. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, with lower narrower than upper, shorter than spikelet. Lower glume lanceolate, 3.5–4 mm long, 0.66–0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface puberulous. Lower glume apex acute. Upper glume lanceolate,



5–6 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface puberulous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5–5.7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, mucicous or awned, 1 -awned. Principal lemma awn 1–2 mm long overall. Apical sterile florets resembling fertile though underdeveloped.

**Distribution (TDWG).** Continent. South America.

**Country /Province /State.** Western South America and Southern South America. Peru.

### **Festuca sibirica** Hack. ex Boiss. *Fl. Orient.* v. 626. (1884).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N.L.Bor, *Grasses of Burma, Ceylon, India and Pakistan* (1960) (as *Leucopoa albida*), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. **Basionym or Replaced Name:** *Leucopoa albida* (Turcz.) Krecz. & Bobr., Komarov, *Fl. URSS*, 2: 495 (1934). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Russia, Cisbaical, Turrenses: Tuczaniinov (LE lecto).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 321).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Siberia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 20–45 cm long. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 1 mm long. Leaf-blades 20–40 cm long, 2–4 mm wide, grey-green. Leaf-blade surface glabrous. Leaf-blade apex acuminate. Dioecious.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear or oblong, 3–7 cm long. Primary panicle branches 1–2 -nate. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4(–5) fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet, thinner than fertile lemma. Lower glume lanceolate, 3.5–4 mm long, 0.8–0.9 length of upper glume, hyaline, pallid, 1-keeled, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 4–5 mm long, 0.6–0.7 length of adjacent fertile lemma, hyaline, 1-keeled, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 7–7.5 mm long, membranous, much thinner above, keeled, 5 -veined, more than 3-veined. Lemma surface pubescent. Lemma apex acute, mucicous. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, membranous. Anthers 3. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Hilum linear.

Male inflorescence similar to female, a panicle. Male spikelets resembling female.

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** Siberia, Russian far east, **Western Asia, China, Mongolia.** Buryatiya, Chita, Irkutsk, Tuva. Kamchatka, Magadan. Afghanistan. Inner Mongolia, Manchuria. Mongolia.

**TDWG4.**

### **Festuca sikkimensis** Alexeev. *Byull. Mosk. Obshch. Isp. Prirod. Otd. Biol.* 83:97 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from India. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: India, Sikkim: Hooker (LE holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ense, denoting origin. From Sikkim.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, robust, 15–30 cm long. Culm-internodes distally glabrous. Leaf-sheaths open for most of their length, with 0.33 of their length closed, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 7–15 cm long, 0.5–0.6 mm wide. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 3 subepidermal sclerenchyma strands. Leaf-blade surface glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, dense, 3–6 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile.

Spikelets ovate, laterally compressed, 7–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume lanceolate, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 4.4–4.6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, muticous. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Palea apex entire. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.2–1.45 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Tropical Asia.

**Country /Province /State. Indian Subcontinent.** Eastern Himalaya.

**Festuca simensis** Hochst. ex A. Rich. *Tent. Fl. Abyss.* ii. 433. (1850).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Ethiopia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: IT: *Schimper, pl. Schimp. Abyss., sect. II, 684*, In montibus Simensibus (K, MO).

**Illustrations (Books):** S.Phillips, *Poaceae* (Gramineae) in I.Hedberg & S.Edwards, *Flora of Ethiopia and Eritrea* (1995) (26, Fig 12).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Siemen Province, Ethiopia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Rhizomes elongated. Culms geniculately ascending, 40–140 cm long. Leaf-sheaths smooth, glabrous on surface. Leaf-sheath oral hairs lacking. Leaf-sheath auricles falcate. Ligule an eciliate membrane. Leaf-blades flat, 10–30 cm long, 2–4 mm wide.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 12–30 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising (2–)3–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10–17 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3–4.5 mm long, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4–5.5 mm long, 0.6–0.7 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 7–9 mm long, chartaceous, much thinner above, without keel, 5 -veined, more than 3-veined. Lemma surface smooth or scaberulous. Lemma apex acute, awned, 1 -awned. Principal lemma awn subapical, 8–15 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–4 mm long. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear.

$2n = 28$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State. West-central tropical Africa, Northeast tropical Africa, East tropical Africa.** Rwanda, DRC. Ethiopia (inc. Eritrea), Sudan. Kenya, Uganda.

**Festuca simlensis** (Stapf) E.B. Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 83(4): 110 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from India. **Basionym or Replaced Name:** *Festuca kashmiriana* var. *simlensis* Stapf ex Hook. f., *Fl. Brit. India* 7(22): 351 (1897) [1896]

T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: ST: *Thomson s.n.*, India: Simla

ST: *Duthie s.n.*, India: Simla.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Simla, Kashmir, India.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Rhizomes absent or short. Culms erect or geniculately ascending, 25–110 cm long. Leaf-sheaths open for most of their length. Ligule an eciliate membrane, 0.5 mm long. Leaf-blades filiform, conduplicate, angular in section, 20–40 cm long, 1–2 mm wide,

glaucous. Leaf-blade venation with 7–9 subepidermal sclerenchyma strands, subepidermal sclerenchyma free from veins.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate or ovate, 6–20 cm long. Primary panicle branches ascending or spreading. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 14–17 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 3.5–5.5 mm long, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5–8 mm long, 0.75–1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma elliptic or oblong, 6–8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 5–7 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Tropical Asia.

**Country /Province /State. Indian Subcontinent.** India, Pakistan, West Himalaya.

**Festuca simpliciuscula** (Hack.) E.B. Alekseev. *Bot. Zhurn.*, 69(3): 351: (1984).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Argentina. **Basionym or Replaced Name:** *Festuca rubra* var. *simpliciuscula* Hack., *Ark. Bot.* 7(2): 10, f. 2 (1907)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *P. Dusen* 5925, 1 Apr 1905, Argentina: Santa Cruz: Lago San Martin, Rio Fosiles, ca. 800 m (S; IT:Herb. Parodi,K,SI).

ST: (SI).

HT: *Dusen* 5925, 1 Apr 1905, Argentina: Santa Cruz: Lago San Martin, ca. 800 m (S; IT:Herb. Parodi,K).

IT: *P. Dusen* 5925, 1 Apr 1905, Argentina: Prov. Santa Cruz, Rio Fosiles.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. simplicior*, simpler; -ula, diminutive.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Rhizomes elongated. Basal innovations intravaginal. Culms geniculately ascending, slender, 30–80 cm long. Lateral branches lacking. Leaf-sheaths tubular for much of their length, glabrous on surface. Ligule an eciliate membrane, 1.1–2 mm long, truncate. Leaf-blades conduplicate, 10–40 cm long, 1–2 mm wide. Leaf-blade venation comprising 5 vascular bundles, with 5 inner ridges, with sclerenchyma strands below veins, with 7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, 6–12 cm long, bearing few spikelets. Primary panicle branches 2 -nate. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 14–15 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4.5–6.5 mm long, 0.75 length of upper glume, chartaceous, much thinner on margins, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 6.5–8 mm long, 0.66–1 length of adjacent fertile lemma, chartaceous, with hyaline margins, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 6.5–12 mm long, chartaceous, much thinner on margins, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1–5 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels ciliolate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 0.6–0.9 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Southern South America.** Argentina South.

**TDWG4.** Mendoza. Chubut, Neuquén, Santa Cruz.

**Festuca sinensis** Keng ex E.B. Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 93(1): 112 (1988).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China, Sikang: Chu 7443 (N holo, NAS).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 320).

**Derivation** (Clifford & Bostock 2007): L. -ense, denoting origin. From Sina, now China.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Basal innovations extravaginal. Culms erect or geniculately ascending, robust, 60–75 cm long, 1–2 mm diam., 4 -noded. Culm-nodes constricted, purple or black. Leaf-sheaths loose, 16–22 cm long, longer than adjacent culm internode, striately veined, glabrous on surface. Ligule a ciliate membrane, 0.3–1.5 mm long, glabrous on abaxial surface or scaberulous on abaxial surface. Leaf-blades erect, flat or involute, 6–16 cm long, 1.5–3.5 mm wide, stiff. Leaf-blade venation comprising 7–13 vascular bundles. Leaf-blade surface glabrous or puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 11–18 cm long. Primary panicle branches ascending, 2 -nate, 6–11 cm long, bearing 2–4 fertile spikelets on each lower branch. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 0.5–4 mm long.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 8–9 mm long, 3 mm wide, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1 mm long, pilose.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume lanceolate, 5–6 mm long, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume lanceolate, 7–8 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate or oblong, 7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface puberulous, hairy above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 0.8–2 mm long overall. Palea 6 mm long, 0.7–0.8 length of lemma, 2 -veined. Palea keels ciliate. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.2–1.8 mm long. Caryopsis with adherent pericarp. Hilum linear.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG).** Continent. Temperate Asia.

**Country /Province /State.** China. China South Central, China North-Central, Qinghai.

**TDWG4.** Gansu. Sichuan.

**Festuca sinomutica** X. Chen & S.M. Phillips. *Novon* 15(1): 69 (2005).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Eryuan, in vicinity of Nandaping Heishanmen, in meadows, 2900 m, 31 July 1963, *Jinshajiang Exped.* 63–6359 (HT: PE; IT: NJU).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007).

**Derivation** (Clifford & Bostock 2007): L. *Sina*, China. Resembling *Festuca mutica* and coming from China.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, robust, 68–75 cm long, 1.5–2 mm diam. Culm-internodes distally glabrous. Leaf-sheaths loose, glabrous on surface. Ligule an eciliate membrane, 1.5–2 mm long, 0.5 mm long on basal shoots. Leaf-blades flat or involute, 13–20 cm long, 1–3 mm wide. Leaf-blade venation comprising 7 vascular bundles, with 7 inner ridges, with 9 subepidermal sclerenchyma strands.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 7–9 cm long. Primary panicle branches 2.5–5 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 8–10 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 17–18 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1 mm long, smooth.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume lanceolate, 2.5 mm long, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or oblong, 3.5 mm long, 0.5 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 6.5–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, muticous. Palea 1 length of lemma, 2 -veined. Palea keels smooth. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

**Festuca sipylea** (Hack.) I. Markgraf-Dannenb. *Veroff. Geobot. Inst. Rubel*, 56: 110 (1976).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Turkey. **Basionym or Replaced Name:** *Festuca ovina* subsp. *sipylea* Hack., *Mitt. Thur. Bot. Ver.* 24:128 (1908). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Turkey, Mt. Sypilo: Bornmuller 10165 (B holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): from Mt Sipylo, now Manissa Dagh, Turkey.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths light brown, persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms erect, 8–20 cm long. Leaf-sheaths tubular for much of their length, with 0.25–0.33 of their length closed, with flat margins. Ligule an eciliate membrane, 0.3–1.2 mm long, pubescent on abaxial surface, bilobed. Leaf-blades filiform, conduplicate, 0.3–0.5 mm wide, glaucous. Leaf-blade venation comprising 5 vascular bundles, with 2–3 inner ridges, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth. Leaf-blade apex obtuse, hardened.

**Inflorescence.** Inflorescence a panicle. Panicle open, 2–2.5 cm long. Panicle branches hispidulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, pubescent, hairy all along but hairs longer above, tip widened.

**Fertile Spikelets.** Spikelets comprising 2–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 6–7.8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4–4.9 mm long, 0.75–1 length of adjacent fertile lemma, chartaceous, with scarious margins, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 4.6–5.5 mm long, chartaceous, glaucous, without keel, 5 -veined, more than 3-veined. Lemma surface puberulous. Lemma margins ciliate. Lemma apex attenuate, awned, 1 -awned. Principal lemma awn 6 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear, 0.75 length of caryopsis.

**Distribution (TDWG). Continent.** Europe, Temperate Asia.

**Region.** Southeastern Europe.

**Country /Province /State.** : Crete. **Western Asia.** Turkey.

**Festuca skrjabinii** E.B.Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 84(5): 123 (1979).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Russia, Yukotsk, Lake Nidzheli: Skrjabin N5/2 (LE holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of S. Skrjabin (fl. 1967) Russian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Rhizomes elongated. Basal innovations extravaginal. Culms erect, 50–70 cm long. Lateral branches lacking. Leaf-sheaths tubular for much of their length, with 0.66 of their length closed, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, angular in section, 10–15 cm long, 0.4–1 mm wide, glaucous. Leaf-blade venation comprising 7–11 vascular bundles, with 3–5 inner ridges, with 9 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 5–7 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 9–11 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5.5–6.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface glabrous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.8–2.5 mm long overall. Palea 2 -veined. Palea keels scabrous, with 0.33–0.5 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 2.7–3 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Siberia. Yakutiya.

**Festuca skvortzovii** Alekseev. *Bull. Mosk. Obshch. Ispyt. Prir., Biol.*, 76(2): 119 (1971).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Russia, Armenia, Ankavan: Alexeev (MW holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Alexei Konstantinovich Skvortsov (1920-) Russian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms 15–40 cm long, 2 -noded. Culm-internodes antrorsely scabrous. Leaf-sheaths open for most of their length, 10–14 cm long, antrorsely scabrous, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 15–25 cm long, 0.4–1 mm wide, glaucous, pruinose. Leaf-blade venation with 7 secondary veins, 5 inner ridges, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, rough adaxially, puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, 8–16 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 6–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 3.5–4.2 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, muticous or mucronate. Palea 2 -veined. Palea keels scabrous, adorned above, with 0.3 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Caucasus. Transcaucasus.

**TDWG4.**

**Festuca sodiroana** Hack. ex E.B. Alekseev. *Bot. Zhurn.*, 69(11): 1545 (1984).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Ecuador. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Sodiro* 36/6, 1884, Ecuador: Pinchacha, Silv. super. et pasq. (W; IT: MO-923640, PRC (ex QPLS), QPLS, US).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56, 29, fig 8 (2007)).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating connection. In honor of Luigi Sodiro (1836–1909) Italian-born Ecuadorean cleric and amateur botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Rhizomes short. Culms erect, 70–150 cm long, 2–3 mm diam., 3–4 -noded, with 0.5–0.66 of their length below uppermost node. Culm-nodes glabrous. Lateral branches lacking. Leaf-sheaths open for most of their length, smooth, glabrous on surface or pilose. Leaf-sheath auricles absent. Ligule an eciliate membrane, 0.5–1 mm long, truncate. Leaf-blades 15–30 cm long, 4–9 mm wide. Leaf-blade venation with subepidermal sclerenchyma attached to veins above and below. Leaf-blade surface scabrous, rough on both sides.

**Inflorescence.** Inflorescence a panicle. Panicle open, elliptic, loose, 15–30 cm long. Primary panicle branches 5–10 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 7.5–11.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, coriaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface smooth. Lower glume apex acute. Upper glume lanceolate, 2.2–3 mm long, coriaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5–6.3 mm long, coriaceous, without keel, 5 -veined, more than 3-veined. Lemma apex mucous. Palea 2 -veined. Palea keels scabrous, adorned all along. Palea apex emarginate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 0.9–1.4 mm long. Ovary glabrous. Caryopsis with adherent pericarp, sulcate on hilar side. Hilum linear, 0.66–0.75 length of caryopsis.

**Distribution (TDWG), Continent.** South America.

**Country /Province /State.** Western South America. Colombia, Ecuador.

**Festuca sommieri** Litard. *Candollea*, 10: 108 (1945).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. **Basionym or Replaced Name:** *Festuca ovina* fo. *longearistata* Hack., Albov, *Prodr. Fl. Colch.* :263 (1895). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: : Based on *Festuca ovina* var. *longearistata* ; Russia, Adzituko: Albov 70 (W holo, G, LE).

**Illustrations (Books):** G.E.Gibbs Russell et al, *Grasses of Southern Africa* (1990).

**Derivation** (Clifford & Bostock 2007): in honor of Carlo Pietro Stefano Sommier (1848–1922) Italian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, mat forming, clumped densely. Culms geniculately ascending, 5–15 cm long. Culm-internodes distally glabrous. Ligule an eciliate membrane. Leaf-blades filiform, involute, 4–10 cm long, 0.3–0.4 mm wide. Leaf-blade surface glabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle, comprising 4–7 fertile spikelets. Panicle open, oblong, nodding, bearing few spikelets. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 6–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet, similar to fertile lemma in texture. Lower glume lanceolate, 3.5 mm long, 0.7–0.8 length of upper glume, chartaceous, much thinner on margins, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface smooth or asperulous. Lower glume apex acute. Upper glume lanceolate, 5 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, with membranous margins, without keels, 3 -veined. Upper glume surface smooth or asperulous. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4–5.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 5–10 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels ciliate. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1–1.6 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Caucasus, Western Asia. North Caucasus. Turkey.

**TDWG4.**

**Festuca soratana** E.B. Alekseev. *Bot. Zhurn.*, 70(9): 1244 (1985).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Bolivia. **Basionym or Replaced Name:** *Festuca tectoria* var. *mutica* St.-Yves, *Candollea* 3: 243 (1927)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Mandon 1361*, Aug 1858-May 1859, Bolivia: Viciniis Sorata, Nelatulini prope Millipuya, reg. alpina, 3700–4200m (G (hb. DC et Laus); IT: LE, LE).

**Illustrations (Books):** S.A.Renvoize, *Gramineas de Bolivia* (1998) (Fig. 21).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating location. From Sorata, Bolivia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths papery, glossy. Culms 70–170 cm long. Leaves basal and cauline. Ligule an eciliate membrane, 0.4 mm long. Leaf-blades flat or convolute, 20–40 cm long, 2–6 mm wide. Leaf-blade surface scabrous, rough adaxially or on both sides.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong, 15–30 cm long. Primary panicle branches appressed or ascending or spreading, 2–10 cm long. Panicle axis pubescent. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–9 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 8–12 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes smooth or scaberulous, glabrous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4–4.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous. Lower glume apex acute or acuminate. Upper glume lanceolate, 5.5–6 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface scabrous. Upper glume apex acute or acuminate.

**Florets.** Fertile lemma lanceolate, 5–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acute or acuminate, muticous. Palea 1 length of lemma, 2 -veined. Palea keels ciliate, adorned above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–3 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Bolivia.

**Festuca sororia** Piper. *Contrib. U. S. Nat. Herb.* 16: 198 (1913).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from USA. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *G.C. Nealley 177*, Sep 1891, USA: Arizona: Rincon Mountains, 2286 m (US-45866; IT: US-919881).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (403).

**Derivation** (Clifford & Bostock 2007): L. soror, sister. Readily confused with related species.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Rootstock evident. Culms 40–100 cm long. Lateral branches lacking. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane. Leaf-blades 20–40 cm long, 3–7 mm wide. Leaf-blade surface smooth, glabrous. Leaf-blade margins scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, elliptic, loose, nodding, 10–15 cm long. Primary panicle branches drooping, 1–2 -nate. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.



**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 7–12 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3 mm long, 0.6 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5 mm long, 0.5–0.6 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6–9 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins distinct. Lemma surface smooth or scaberulous. Lemma apex acuminate, mucous or awned, 1 -awned. Principal lemma awn 0–2 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** Northwest USA, North-central USA, Southwestern USA, South-central USA. Colorado. Missouri. Arizona, Utah. New Mexico.

**Festuca soukupii** Stancmk. *Folia Geobot.* 39(1): 103 (-104, 101; fig. 2) (2004).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Ecuador. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Ecuador: Imbabura. Munic. Cayambe, Volcan Cayambe, 78:55.6'W, 00:31.6'N, swamps below the refuge with *Loricaria sp.*, *Festuca glumosa*, *Distichia muscoides* etc., 4450 m, 20 Oct 2000, *Stančik 4162* (HT: PRC; IT: AAU, QCA).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 60, fig 26 (2007)).

**Derivation** (Clifford & Bostock 2007): In honor of Jaroslav Soukup (1903–1989) Czech missionary and ethno-botanist who collected in Peru.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped moderately. Cataphylls inconspicuous. Rhizomes absent. Basal innovations extravaginal or intravaginal. Culms erect, slender, straight, 10–50 cm long, 1(–2) -noded, without nodal roots. Culm-internodes terete. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves mostly basal, 0–1 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined, pubescent. Leaf-sheath auricles absent. Ligule a ciliolate membrane, 0.3–0.5 mm long, membranous, white, entire, truncate. Leaf-blade base symmetrical. Leaf-blades straight or curved, involute, angular in section, 5–25 cm long, 5–8 mm wide, firm, mid-green. Leaf-blade midrib indistinct or evident. Leaf-blade venation indistinct, with subepidermal sclerenchyma strands unequal in size, with subepidermal sclerenchyma attached to veins below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface glabrous. Leaf-blade margins smooth, glabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle terete, eglandular, glabrous. Panicle contracted, linear or lanceolate, continuous, dense, straight, 2.5–17 cm long, 0.3–0.5 cm wide, bearing few spikelets, contracted about primary branches. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4(–5) fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 6–9 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes smooth, glabrous. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume lanceolate or ovate, 1.2–1.7(–2) mm long, 0.6–0.75 length of upper glume, chartaceous or coriaceous, dark green or purple, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface pilose, hairy at apex. Lower glume apex acute. Upper glume linear or ovate, 2–2.7 mm long, 0.5 length of adjacent fertile lemma, chartaceous, dark green or purple, without keels, 3 -veined. Upper glume surface pilose, hairy at apex. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, symmetrical, 4.5–5.5 mm long, chartaceous, purple, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous or papillose, rough above. Lemma apex awned, 1 -awned. Principal lemma awn stiff, 0.5–0.7 mm long overall. Palea 2 length of lemma, 2 -veined. Palea keels scaberulous. Palea apex dentate, 2 -fid, ciliate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 0.8–1.1 mm long. Ovary glabrous. Caryopsis with adherent pericarp, lanceolate. Hilum linear, 0.6 length of caryopsis.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Colombia, Ecuador.

**Festuca spectabilis** Jan. *Elench.* 2. (1827).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Italy, Greece.

**Illustrations (Books):** G.Hegi, *Flora von Mitteleuropa* 1 (1909) (as *F. sieberi*).

**Derivation** (Clifford & Bostock 2007): *L. showy*. Attractive or outstanding in some respect such as height.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths distinctly ribbed, persistent and investing base of culm, with compacted dead sheaths. Basal innovations extravaginal. Culms 80–100 cm long. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane. Leaf-blades flat or conduplicate, 1–3 mm wide, glaucous. Leaf-blade venation with sclerenchyma strands below veins or above all veins, subepidermal sclerenchyma attached to veins above and below. Leaf-blade surface ribbed, scabrous, rough adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, nodding, 9–30 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 5.8–7.6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins prominent. Lemma surface scabrous. Lemma apex acuminate, muticous. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary pubescent on apex. Caryopsis with adherent pericarp, obovoid. Hilum linear. Disseminule comprising a caryopsis.

**Distribution (TDWG). Continent.** Europe.

**Region. Southeastern Europe.**

**Country /Province /State.** : Albania, Bulgaria, Greece, Italy, Yugoslavia.

**Festuca spiralifibrosa** Vetter. *Fedde, Repert.* viii. 385 (1935).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Albania. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Albania, Gusinje: Vetter.

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths (spirally twisted). Basal innovations intravaginal. Culms erect, 25–50 cm long, 2 -noded, with 0.2–0.33 of their length below uppermost node. Lateral branches lacking. Leaf-sheaths tubular for much of their length, with 1 of their length closed, pubescent. Ligule a ciliolate membrane, 0.5 mm long. Leaf-blades filiform, conduplicate, 0.6–0.8 mm wide, glaucous. Leaf-blade venation with 7 secondary veins. Leaf-blade surface smooth, glabrous, hairless except near base. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Peduncle scaberulous above. Panicle contracted, linear, 3.5–6 cm long. Primary panicle branches 2–3 cm long, bearing 5 fertile spikelets on each lower branch. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma margins scaberulous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2–3.5 mm long overall. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp.

**Distribution (TDWG). Continent.** Europe.

**Region. Southeastern Europe.**

**Country /Province /State.** : Albania.

**Festuca stapfii** E.B.Alekseev. *Bull. Mosk. Obshch. Ispyt. Prir., Biol.*, 83(4): 115 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from India. **Basionym or Replaced Name:** *Festuca undata* var. *aristata* Stapf, *Fl. Brit. India* 7(22): 351 (1897) [1896]. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Sikkim: 11,000 ft, *J.D. Hooker & T. Thomson [Bromus? no. 15, Herb. Ind. Or.]* (HT: ?).

**Illustrations (Books):** H.J.Noltie, *The Grasses of Bhutan* (2000) (537, Fig.12), S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig.333).

**Derivation** (Clifford & Bostock 2007): In honor of Otto Stapf (1857–1933) Austrian-born English botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths glabrous or sparsely hairy or pubescent. Basal innovations extravaginal. Culms erect or geniculately ascending, 20–70 cm long, 2-noded. Leaf-sheaths glabrous on surface. Leaf-sheath auricles erect. Ligule a ciliolate membrane, 0.3–0.5 mm long. Leaf-blades conduplicate, 3–10 cm long, 0.8–1 mm wide, flaccid. Leaf-blade venation with 7–9 secondary veins, sclerenchyma strands below veins.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 6–23 cm long. Primary panicle branches 1–2-nate, 3–6 cm long. Panicle axis scaberulous. Panicle branches flexuous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4(–7) fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 6–8.5(–9.5) mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1–1.5 mm long.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2–2.5(–3.8) mm long, 0.66 length of upper glume, chartaceous, much thinner on margins, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3–4.5(–6.5) mm long, 0.66 length of adjacent fertile lemma, chartaceous, with membranous margins, without keels, 3-veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 5–6.5 mm long, chartaceous, shiny, without keel, 5-veined, more than 3-veined. Lemma surface smooth. Lemma apex acuminate, awned, 1-awned. Principal lemma awn (3–)5–8 mm long overall. Palea 2-veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1–1.8 mm long. Ovary glabrous or with a few apical hairs.

**Distribution (TDWG). Continent.** Temperate Asia, Tropical Asia.

**Country /Province /State. China.** China South Central, Tibet. **Indian Subcontinent.** Eastern Himalaya, India, Nepal.

**TDWG4.** Sichuan, Yunnan. Darjeeling, Bhutan, Sikkim.

**Festuca staroplaninica** Velchev. *Phytologia Balcan.* 8(1): 5. (2002).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Bulgaria. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Bulgaria, Kozya Stena: Velchev (SOM holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. *-ica*, belonging to. From the Stara Planin Mountains, Serbia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms erect, 40–80 cm long. Culm-internodes smooth. Leaf-sheaths open for most of their length, with 0.25 of their length closed, glabrous on surface. Leaf-sheath auricles erect. Ligule a ciliolate membrane. Leaf-blades filiform, conduplicate, 0.5–0.9 mm wide. Leaf-blade venation comprising 7–11 vascular bundles, with 5–7 inner ridges, with sclerenchyma strands below veins, with 5–7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation.

**Inflorescence.** Inflorescence a panicle. Peduncle smooth or scaberulous above. Panicle open, oblong, 5–14 cm long, contracted about primary branches. Panicle axis scaberulous. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7.5–14 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.1–5.7 mm long, 0.8–0.9 length of adjacent fertile lemma, chartaceous, with hyaline margins, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 4.2–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface pubescent. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2.7–4.5 mm long overall, 0.5 length of lemma. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Vegetative proliferation absent, or occurs.

**Distribution (TDWG). Continent.** Europe.

**Region. Southeastern Europe.**

**Country /Province /State. :** Bulgaria.

**Festuca stebeckii** S.A. Renvoize. *Gramineas de Bolivia*: 121 (1998).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Bolivia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Beck & Seidel 14583*, Bolivia: Cochabamba; 3200 m (LPB).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of Stephan G. Beck (1944-) Bolivian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, culms solitary. Culms 60–70 cm long. Ligule an eciliate membrane. Leaf-blades convolute, 40–50 cm long, 1 mm wide. Leaf-blade surface scabrous, rough abaxially, pubescent, hairy adaxially. Leaf-blade apex acuminate.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong, loose, 25 cm long. Primary panicle branches ascending or spreading, 8–17 cm long. Panicle branches scabrous, glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 7–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–11 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4–5 mm long, 0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous. Lower glume apex attenuate. Upper glume lanceolate, 6–6.5 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface scabrous. Upper glume apex attenuate.

**Florets.** Fertile lemma lanceolate, 6–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acute, muticous. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Palea surface scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Western South America.** Bolivia.

**Festuca steinbachii** E.B. Alekseev. *Bot. Zhurn.*, 70(9): 1243 (1985).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Bolivia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Josi Steinbach 9533*, 7 Mar 1929, Bolivia: Dept. Cochabamba: Prov. Chapare: Cyawald bei "La Aduana", 3000 m (HT: S; IT: K, MO-974650, US-1761599, US-1574167).

**Illustrations (Books):** S.A.Renvoize, *Gramineas de Bolivia* (1998) (101, Fig. 20).

**Derivation** (Clifford & Bostock 2007): in honor of J. Steinbach (fl. 1929) who collected in Bolivia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, culms solitary. Rhizomes elongated. Culms 150–180 cm long. Culm-nodes glabrous. Leaves cauline. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.7 mm long. Leaf-blades 20–30 cm long, 10–15 mm wide. Leaf-blade surface scabrous, rough adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 15–20 cm long. Primary panicle branches 3–7 cm long. Panicle axis scabrous. Panicle branches flexuous, scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 11.5–13 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 5–5.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous. Lower glume apex acuminate. Upper glume lanceolate, 7–8 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface scabrous. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 9–10 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough generally. Lemma apex entire or dentate, 2 -fid, acuminate to setaceous acuminate, muticous. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Bolivia.

### ***Festuca stanantha*** (Hack.) Richt. *Pl. Eur.* 1:96 (1890).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Austria. **Basionym or Replaced Name:** *Festuca ovina* var. *stanantha* Hack., *Monogr.* :110 (1882). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Austria, Styria: Halacsy.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. stenos, narrow; anthos, flower. Spikelets narrow.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms 15–30 cm long. Culm-internodes smooth or scaberulous. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, glabrous on surface or puberulous. Leaf-sheath auricles erect. Ligule a ciliolate membrane. Leaf-blades filiform, conduplicate, 0.4–0.7 mm wide. Leaf-blade venation comprising 7 vascular bundles, with 3 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong, 3.5–6.5 cm long. Primary panicle branches moderately divided. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume linear, 4.9–5.5 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 5.2–5.8 mm long, chartaceous, light green, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2.5–3 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.7–2.3 mm long. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe, Southwestern Europe, Southeastern Europe.

**Country /Province /State.** : Austria, Switzerland. : France. : Italy, Yugoslavia.

### ***Festuca stricta*** Host. *Gram. Austr.* ii. 62. t. 86 (1802).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Austria. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Austria: Coll?.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. erect. Inflorescence branches erect.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 23–43 cm long. Culm-internodes scaberulous. Leaf-sheaths open for most of their length, with 0 of their length closed, with flat margins, pubescent. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 0.55–1 mm wide, stiff, glaucous, without exudate or pruinose. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with unevenly thickened subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, glabrous, hairless throughout or except near base.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 4.5–6 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7.1–8.3 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.5–5.4 mm long, 0.8–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume margins ciliate. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 4.2–5.8 mm long, chartaceous, mid-green or purple, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above, glabrous or pubescent. Lemma margins ciliate. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1.5–2.5 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$N = 21$  (2 refs TROPICOS).  $2n = 42$  (3 refs TROPICOS), or 28 (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe, Temperate Asia.

**Region.** Middle Europe, Southeastern Europe, Eastern Europe.

**Country /Province /State.** : Austria, Czechoslovakia, Hungary, Poland. : Italy, Romania. Central European Russia, East European Russia, South European Russia, Ukraine. Siberia, **Middle Asia.** Altay. Kazakhstan.

**Festuca stubelii** Pilger. *Engl. Jahrb.* xxv. 717. (1898).

**Accepted by:** U. Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Bolivia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Stbel 60*, Bolivia Puno cerca de La Paz (B; IT: BAA-1337 (fragm. ex B)).

**Illustrations (Books):** S.A. Renvoize, *Gramineas de Bolivia* (1998) (102, Fig. 21).

**Derivation** (Clifford & Bostock 2007): in honor of Moritz Alphons Stbel (1835–1904) German botanist-traveller who collected in South America.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths papery, glossy. Culms 60–130 cm long. Leaves mostly basal. Ligule an eciliate membrane, 0.3–0.7 mm long. Leaf-blades filiform, conduplicate or involute, 15–60 cm long, 0.5–1.5 mm wide, stiff. Leaf-blade surface scabrous, pubescent, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear or oblong, loose, 15–30 cm long. Primary panicle branches appressed or ascending, 2–8 cm long. Panicle branches stiff or flexible, puberulous or pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 8–13 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes pubescent.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear or lanceolate, 2.5–5 mm long, 0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous, glabrous or puberulous. Lower glume apex acuminate. Upper glume linear or lanceolate, 4–7 mm long, 0.66–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface scabrous, glabrous or puberulous. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 6.5–8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface puberulous. Lemma apex acuminate, muticous or awned, 1 -awned. Principal lemma awn 1–3 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels ciliolate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–4 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Western South America.** Bolivia.

**Festuca stuckertii** St.- Yves. *Candollea*, iii. 304 (1927).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Argentina. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Argentina: Prov. Tucuman: dep. de Tafi, Barrancas, 2600 m: 26 Dec 1908, *Lillo 8873* (HT: Herb. Deless.; IT: LIL).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Teodoro Juan Vicente Stuckert (1852–1932) Swiss-born Argentinian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 20 cm long, 2 -noded. Culm-internodes terete, scaberulous. Leaf-sheaths open for most of their length, smooth, glabrous on surface. Ligule a ciliolate membrane, truncate. Leaf-blades filiform, conduplicate, 0.6–0.7 mm wide, stiff. Leaf-blade venation comprising 7 vascular bundles, with 5 inner ridges, with 15 subepidermal sclerenchyma strands, with subepidermal sclerenchyma attached to veins below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous, rough on both sides. Leaf-blade apex acute, pungent.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear or oblong, dense, 6–8 cm long. Primary panicle branches appressed, 2 -nate. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate or elliptic, laterally compressed, 8–9 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1.5 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5–5.5 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6.5–7 mm long, chartaceous, mid-green or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.5 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Southern South America.** Argentina Northwest.

**TDWG4.** Tucuman.

**Festuca subalpina** Chang & Skvortz. *Acta Soc. Harbin. Investig. Nat. Ethnogr., Bot., No.* 12, 29 (1954).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Jilin: Changbai Shan, mountain slopes, 2500–2600 m.,

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007).

**Derivation** (Clifford & Bostock 2007): L. sub, approaching. Resembling other species with the epithet *alpina*.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, robust, 20 cm long. Culm-internodes distally glabrous. Leaf-sheaths smooth, glabrous on surface. Ligule a ciliolate membrane, 0.2 mm long, truncate. Leaf-blades involute, 7–12 cm long, 0.5–1 mm wide, flaccid. Leaf-blade venation comprising 9 vascular bundles, with 3 subepidermal sclerenchyma strands.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong, 3–6 cm long. Primary panicle branches 0.5–2 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 6 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume lanceolate, 2 mm long, 0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous, rough above. Lower glume apex acuminate. Upper glume lanceolate, 3 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface scabrous, rough above. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 4 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1–1.5 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.2–2.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. Manchuria.

### ***Festuca subantarctica*** L. Parodi. *Rev. Argent. Agron.* xx. 225 (1953).

Regarded by K as a synonym (*F. thermanum*).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Argentina. **Basionym or Replaced Name:** *Festuca commersonii* Franch., non Spreng.(1825), *Miss. scient. Cap Horn*, v. Bot. 388 t. 8 fig. c. (1889). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: : Based on *F. commersonii* Franch. ; Argentina, Magellan Strait: Commerson (P syn).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Southern South America. Argentina South, Chile Central.

### ***Festuca sublimis*** Pilger. *Engl. Jahrb.* xxv. 718. (1898).

Regarded by K as a synonym (*F. procera*).

**TYPE** from Ecuador. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *A. Stbel* 297, 1 Feb 1874, Ecuador: Azuay: Pucara de Chisals (B; IT: BAA-1341 (fragm. ex B), US-81580).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. sublimo*, raise up. Culms tall.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Culms erect, 80 cm long. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, truncate. Leaf-blades 30–60 cm long, 2–3 mm wide. Leaf-blade surface pubescent, hairy adaxially. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 7–15 cm long. Primary panicle branches 2–3 -nate, 5–10 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2 mm long, 0.5 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex obtuse, mucicous. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Ecuador.



**Festuca subulata** Brong. *Veg. Sitcha*, 55 (1832).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.Koyama, *Grasses of Japan and its neighboring regions* (1987).

**TYPE** from USA. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: USA: Ile de Sitcha, Alaska, *Mertens s.n.* (HT: LE).

**Illustrations (Books):** T.Koyama, *Grasses of Japan and its neighbouring regions* (1987) (76, Fig 23a), M.E.Barkworth et al. *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (403).

**Derivation** (Clifford & Bostock 2007): *L. subulus*, a fine point; -ata, possessing. Glumes, lemmas or calluses sharply tapered.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 50–100 cm long. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane. Leaf-blades 10–25 cm long, 3–10 mm wide, flaccid.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, effuse, nodding, 15–40 cm long. Primary panicle branches spreading or reflexed, 2–3 -nate, 5–15 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong or cuneate, laterally compressed, 7–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes eventually visible between lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet, thinner than fertile lemma. Lower glume lanceolate, 3 mm long, 0.6 length of upper glume, membranous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume lanceolate, 5 mm long, 0.9–1 length of adjacent fertile lemma, membranous, without keels, 1 -veined. Upper glume lateral veins absent. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 5–6 mm long, chartaceous, without keel, rounded except near apex, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex attenuate, awned, 1 -awned. Principal lemma awn 5–20 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, membranous. Anthers 3. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia, North America, South America.

**Country /Province /State.** Siberia, Russian far east, **China, Eastern Asia.** Japan. Japan Hokkaido, or Honshu. **Western Canada, Northwest USA, Southwestern USA, Mexico.** British Columbia. Colorado, Idaho, Washington, Wyoming. California, Nevada, Utah. Southeast Mexico. **Mesoamerica, Southern South America.** Argentina Northwest.

**TDWG4.** Jujuy. Chiapas.

**Festuca subuliflora** Scribn. *Macoun, Can. Pl. Cat.* 2,5:396 (1890).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Canada. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *J. Macoun s.n.*, 29 Jun 1887, Canada: British Columbia: Vancouver Isl., Goldstream, gravel (CAN-37761). LT designated by Darbyshire & Pavlick, *Phytologia* 82(2): 76 (1997).

**Illustrations (Books):** M.E.Barkworth et al. *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (405).

**Derivation** (Clifford & Bostock 2007): *L. subulus*, a fine sharp point; flos, flower. Lemmas drawn out into long non-hygroscopic awns.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 60–100 cm long. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane. Leaf-blades 15–30 cm long, 2–4 mm wide. Leaf-blade surface pubescent, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, effuse, nodding, 10–20 cm long. Primary panicle branches drooping. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10–15 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1.5–2 mm long, eventually visible between lemmas, pubescent. Floret callus elongated, curved, 0.75 mm long, pubescent.

**Glumes.** Glumes persistent, similar, shorter than spikelet, thinner than fertile lemma. Lower glume lanceolate, 3–4 mm long, 0.7–0.8 length of upper glume, membranous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume lanceolate, 4–5 mm long, 0.6–0.7 length of adjacent fertile lemma, membranous, without keels, 1 -veined. Upper glume lateral veins absent. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 6–8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins obscure. Lemma surface scaberulous, rough above. Lemma apex dentate, 2 -fid (obscurely), attenuate, awned, 1 -awned. Principal lemma awn from a sinus, flexuous, 10–15 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, membranous. Anthers 3. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Hilum linear.

**Distribution (TDWG).** Continent. North America.

**Country /Province /State.** Western Canada, Northwest USA, Southwestern USA. British Columbia. Oregon, Washington. California.

### ***Festuca subulifolia* Benth. *Pl. Hartw.* 262. (1847).**

Regarded by K as a synonym (*F. dolichophylla*).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Ecuador & Colombia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *Hartweg 1455*, Ecuador: Hacienda de Antisana (K; ILT: B). LT designated by Alexeev, *Novosti Sist. Vyss. Rast.* 23: 18 (1986) [as holotype].

ST: *Hartweg 870*, Ecuador: In Andibus Quitensium, Popayanensium

ST: *Hartweg 1531*, Colombia: Bogotensium necnon secus flumen Magdalena.

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 128, fig 66 (2007)).

**Derivation** (Clifford & Bostock 2007): L. subulus, fine sharp point; folium, a leaf. Leaf-blades narrow, tapering.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Caespitose, clumped densely. Cataphylls inconspicuous. Rhizomes absent. Basal innovations intravaginal. Culms of moderate stature, straight, without nodal roots. Culm-internodes terete. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves mostly basal, 0–1 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined. Ligule a ciliolate membrane, membranous or scarious, white, entire, acute. Leaf-blade base symmetrical. Leaf-blades straight, elliptic in section, indurate, stiff or firm, yellowish green or mid-green or glaucous. Leaf-blade midrib indistinct. Leaf-blade venation indistinct, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma attached to veins below, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface pubescent, moderately hairy, hairy adaxially. Leaf-blade margins scabrous, glabrous. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle terete, eglandular, glabrous. Panicle open or contracted, lanceolate or oblong or ovate, continuous or interrupted, dense, equilateral or secund, straight, 12–35 cm long, 1–2 cm wide, evenly furnished or contracted about primary branches. Primary panicle branches ascending or spreading, moderately divided or profusely divided. Panicle branches straight or arcuate.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.5–9 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes scaberulous. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume lanceolate, (3–)3.5–4.5(–5.5) mm long, 0.8–0.9 length of upper glume, coriaceous, mid-green or light brown, without keels, 1 -veined. Lower glume apex acute. Upper glume oblong or ovate, 4–6 mm long, 0.8 length of adjacent fertile lemma, chartaceous or coriaceous, dark green or light brown, without keels, 3 -veined. Upper glume apex obtuse or acute.

**Florets.** Fertile lemma lanceolate or elliptic, symmetrical, 5–6.5(–8) mm long, scarious or coriaceous, mid-green or light brown. Lemma surface scabrous. Lemma apex awned, 1 -awned. Principal lemma awn stiff, 0.5–2.5 mm long overall.

**Distribution (TDWG).** Continent. South America.

**Country /Province /State.** Northern South America, Western South America. Colombia, Ecuador.

**Festuca subverticillata** (Pers.) E.B. Alekseev. *Novosti Sist. Vyssh. Rast.*, 17: 52 (1980).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from USA. **Basionym or Replaced Name:** *Poa subverticillata* Pers., *Syn.1* : 92 (1805) ; *Poa laxa* Lam., non Haenke(1791), *Illustr.1*: 183 (1791). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: : Based on *P. laxa* Lam. ; USA, Virginia: Coll?.

**Illustrations (Books):** F.W.Gould, *The Grasses of Texas* (1975) (105, Fig. 50 as *F. obtusa*), M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (401).

**Derivation** (Clifford & Bostock 2007): L. sub, approaching; verticillus, whorl. Lateral branches tending to form whorls in the inflorescence.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, culms solitary or caespitose. Culms erect, 50–100 cm long. Leaf-sheaths glabrous on surface or hirsute. Ligule an eciliate membrane, 0.5–1 mm long. Leaf-blades 10–20 cm long, 3–7(–9) mm wide. Leaf-blade surface glabrous or pubescent, sparsely hairy, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, effuse, 10–25 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5(–6) fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 5–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet, thinner than fertile lemma. Lower glume lanceolate, 2.5–3.5 mm long, 0.7–1 length of upper glume, membranous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3–4 mm long, 0.7–1 length of adjacent fertile lemma, membranous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 3.5–5 mm long, coriaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins obscure. Lemma apex obtuse, mucicous. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, membranous. Anthers 3. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Hilum linear.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** Eastern Canada, North-central USA, Northeast USA, South-central USA, Southeastern USA. Nova Scotia. Illinois, Iowa, Kansas, Minnesota, Missouri, North Dakota, Nebraska, Oklahoma, South Dakota, Wisconsin. Connecticut, Indiana, Maine, Massachusetts, Michigan, Ohio, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, West Virginia. Texas. Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, District of Columbia.

**Festuca sudanensis** E.B.Alekseev. *Bot. Zhurn.*, 72(9): 1264 (1987).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Sudan. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Sudan, Imatong Mts.: Myers 13497 (K holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. *-ensis*, denoting origin. From the Sudan.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths withering. Culms 45–90 cm long, 2–2.5 mm diam., 3–4 -noded, with 0.5 of their length below uppermost node. Culm-internodes smooth. Leaf-sheaths open for most of their length, with 0.33–0.5 of their length closed, smooth. Ligule an eciliate membrane, 0.2–0.5 mm long, truncate. Leaf-blades filiform, conduplicate, angular in section, 25–50 cm long, 0.6–0.7 mm wide, indurate. Leaf-blade venation comprising 7 vascular bundles, with 5 inner ridges, with 7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 16–25 cm long. Primary panicle branches appressed, 4–7 cm long. Panicle axis scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 8–9.2 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 6–7.5 mm long, membranous, much thinner on margins, without keels, 1–3 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 8–9.2 mm long, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 7–8.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous. Lemma apex acute, mucicous or awned, 1 -awned. Principal lemma awn 2–2.5 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous, with 0.33 of their length adorned. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** Northeast tropical Africa. Sudan.

**Festuca sumapana** Stancmk. *Darwiniana* 41(1–4): 144 (-145; figs. 7-1-p, 17a) (2003).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Colombia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Colombia: Meta: Paramo de Sumapaz, Cerro Nevado del Sumapaz, 4130m, 16 Jan 1973, *Cleef 7930* (HT: COL; IT: U, US).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 137, fig 68 (2007)).

**Derivation** (Clifford & Bostock 2007): L. *-ana*, indicating connection. From Paramo de Sumapaz, Colombia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Cataphylls inconspicuous. Rhizomes absent. Basal innovations intravaginal. Culms erect, slender, straight, 15–20 cm long, 2 -noded, without nodal roots. Culm-internodes terete. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves mostly basal, 0–1 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined, glabrous on surface. Leaf-sheath auricles absent. Ligule an eciliate membrane, 0.3 mm long, membranous, white, bilobed, truncate. Leaf-blade base symmetrical. Leaf-blades straight or curved, involute, angular in section, 8–12 cm long, 0.5–0.7 mm wide, indurate, firm, mid-green. Leaf-blade midrib indistinct. Leaf-blade venation indistinct, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous, glabrous. Leaf-blade margins smooth, glabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle terete, eglandular, glabrous. Panicle contracted, lanceolate, continuous or interrupted, dense, straight, 5–7 cm long, 0.4–0.6 cm wide, bearing few spikelets, contracted about primary branches. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 9.5–11 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes scaberulous, glabrous. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume lanceolate, 4–5 mm long, 0.75 length of upper glume, membranous or chartaceous, pallid or light green or purple, without keels or 1-keeled, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous. Lower glume apex acute. Upper glume lanceolate, 5.5–6 mm long, 0.9 length of adjacent fertile lemma, chartaceous, pallid or light green or purple, 1-keeled, 3 -veined. Upper glume surface scabrous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, symmetrical, 6.5–7 mm long, chartaceous, pallid or light green or purple, keeled, 5 -veined, more than 3-veined. Lemma surface papillose. Lemma apex awned, 1 -awned. Principal lemma awn stiff, 0.5–1.5 mm long overall. Palea 2 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 0.6–0.8 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Colombia.

**Festuca sumatrana** Jansen. *Acta Bot. Neerl.* ii. 373 (1953).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, J.F.Veldkamp, Poaceae ms (*Flora Malesiana*).

**TYPE** from Indonesia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: T: C.G.G.J. van Steenis 9629, 7 Mar 1937, Indonesia: Sumatra: Aceh: Kemiri, Gunung [3314 m] (L).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -anus, indicating location. From Sumatra, Indonesia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms 20–30 cm long. Leaf-sheaths open for most of their length. Ligule an eciliate membrane, truncate. Leaf-blades convolute, 6–10 cm long, 3–3.5 mm wide, stiff. Leaf-blade venation comprising 7–9 vascular bundles, with unevenly thickened subepidermal sclerenchyma layer on the underside. Leaf-blade apex abruptly acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong, 6–8 cm long. Primary panicle branches spreading, 1–2 -nate, 3–4 cm long. Panicle branches scaberulous, glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 4–6 mm long, scaberulous.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 9 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 0.5 mm long.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 3 mm long, 0.5 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume lanceolate, 6–7 mm long, 1.2–1.3 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma elliptic, 5–6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins obscure. Lemma apex acute, awned, 1 -awned. Principal lemma awn 3–6 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 0.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** Tropical Asia.

**Country /Province /State.** Malesia. Sumatra.

**Festuca summilusitanica** J. do Amaral Franco & M.L. Rocha Afonso. *Bol. Soc. Brot.*, 54: 94 (1980).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online.

**TYPE** from Portugal. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Portugal, Sa. de Estrela: Rothmaler 13685 (COI holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. *summa*, highest place; *Lusitana*, Lusitania. From the highest mountains of Lusitania, now mainly Portugal.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm. Basal innovations intravaginal. Culms erect, 18–57 cm long, 1 -noded. Lateral branches lacking. Leaf-sheaths tubular for much of their length, with 0.5–0.66 of their length closed, 5.6–6.7 cm long, pilose. Leaf-sheath auricles erect, 0.2–0.3 mm long. Ligule a ciliolate membrane, 0.2–0.25 mm long, truncate. Leaf-blades filiform, conduplicate, elliptic in section, 7–29 cm long, 2 mm wide. Leaf-blade venation comprising 7 vascular bundles, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface puberulous. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle, comprising 12–34 fertile spikelets. Peduncle antrorsely scabrous above. Panicle contracted, lanceolate, 3.5–10 cm long. Primary panicle branches simple, 1–4.5 cm long. Panicle axis angular, scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 0.8–1.1 mm long.

**Fertile Spikelets.** Spikelets comprising 4–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 5–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 2–4 mm long, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein scaberulous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or ovate, 3–5 mm long, 0.75–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume surface scabrous, rough at apex. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate or oblong, 4–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma midvein scabrous. Lemma surface scabrous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.8–2.4 mm long overall. Palea oblong, 3.5–5.5 mm long, 2 -veined. Palea keels scabrous. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, oblong, 0.9–1 mm long. Anthers 3, 1.6–3.6 mm long. Caryopsis with adherent pericarp, 2.8–3.5 mm long. Hilum linear.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : Portugal.

**Festuca superba** L. Parodi ex Turpe. *Darwiniana*, xv. 210 (1969).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Argentina. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Argentina: Jujuy: Dpto. Capital: Termas de Reyes, a 2000 m, 5 Feb 1943, *Parodi 14552* (HT: HP).

**Illustrations (Books):** E.G.Nicora, *Los Generos de Gramineas de America Austral* (1987) (299, Fig. 99).

**Derivation** (Clifford & Bostock 2007): L. extra. Plants large in some respect and especially with tall culms or long leaf-blades.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Basal innovations intravaginal. Culms 180–200 cm long, 3 -noded. Culm-nodes black, glabrous. Leaf-sheaths tubular for much of their length, with 1 of their length closed, smooth, glabrous on surface. Ligule an eciliate membrane, 4–5 mm long, truncate. Leaf-blades 25–30 cm long, 10–14 mm wide. Leaf-blade venation comprising 22–25 vascular bundles, with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 30–35 cm long. Primary panicle branches 2–6 -nate, whorled at most nodes. Panicle axis smooth. Panicle branches flexuous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 15–18 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1–1.5 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 5.5–6.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein scaberulous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 7.5–8 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein scaberulous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 10–11 mm long, chartaceous, mid-green, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acute, mucicous. Palea 1 length of lemma, 2 -veined. Palea keels ciliate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 4 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, oblong, 5 mm long, hairy at apex. Hilum linear, 0.75 length of caryopsis.

$2n = 56$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Southern South America. Argentina Northwest.

**TDWG4.** Jujuy.

**Festuca swallenii** E.B. Alekseev. *Bot. Zhurn.*, 66(10): 1495 (1981).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Panama. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Panama: Chiriqui volcano, savanna, 2700 m, 29–30 Nov 1911, *Hitchcock 8226* (HT: US).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Jason Richard Swallen (1903–1991) United States botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Basal innovations extravaginal. Culms erect, 150 cm long. Leaves basal and cauline. Leaf-sheaths open for most of their length, glabrous on surface. Leaf-sheath auricles absent. Ligule a ciliate membrane, 0.2–0.3 mm long. Leaf-blades 40 cm long, 5–9 mm wide. Leaf-blade venation with sclerenchyma strands below veins or above all veins. Leaf-blade surface scaberulous, rough abaxially, glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, nodding, 25 cm long, 20 cm wide. Primary panicle branches spreading, 2-nate, 12 cm long. Panicle axis scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, scaberulous.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9.5–11 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3.5 mm long, 0.9 length of upper glume, chartaceous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4 mm long, 0.66 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5.5–6.2 mm long, chartaceous, without keel, 5-veined, more than 3-veined. Lemma apex dentate, 2-fid, acuminate, awned, 1-awned. Principal lemma awn from a sinus, 0.5–1.3 mm long overall. Palea 1 length of lemma, 2-veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.4–2.7 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Mesoamerica. Panama.

**Festuca takasagoensis** Ohwi. *Acta Phytotax. & Geobot.* ii.163. (1933).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Taiwan. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *J. Ohwi* 2735, 1933, Taiwan (US-1647260).

**Illustrations (Books):** C-C Hsu, *Flora of Taiwan*, Vol 5 (1978) (322), C-C Hsu, *Taiwan Grasses* (1975).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Takasago, Honshu Island, Japan.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Culms erect, robust, 60 cm long, 3–4-noded. Culm-internodes smooth. Leaf-sheaths 5–15 cm long, mostly shorter than adjacent culm internode, smooth, glabrous on surface. Leaf-sheath auricles erect. Ligule an eciliate membrane, 2 mm long, truncate. Leaf-blades 3–5 mm wide, flaccid. Leaf-blade surface scaberulous, rough on both sides. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, effuse, nodding, 15–20 cm long. Primary panicle branches 1-nate. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 7–8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume lanceolate, 2 mm long, 0.66 length of upper glume, chartaceous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3 mm long, 0.5 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume primary vein scaberulous. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 6–7 mm long, chartaceous, much thinner above, without keel, rounded except near apex, 5-veined, more than 3-veined. Lemma lateral veins obscure. Lemma surface scaberulous, rough above. Lemma apex dentate, 2-fid, with lobes 0.3–0.5 mm long, acuminate, awned, 1-awned. Principal lemma awn from a sinus, 6–7 mm long overall. Palea 1 length of lemma, 2-veined. Palea keels smooth. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 0.6–0.7 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, oblong, 4 mm long. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China, Eastern Asia. Taiwan.

**Festuca takedana** Ohwi. *Acta Phytotax. & Geobot., Kyoto*, iv. 33 (1935).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.Koyama, *Grasses of Japan and its neighboring regions* (1987), W.D.Clayton & N.Snow, *Key to Pacific Grasses* (2010) (as *F. blepharogyna*).

**TYPE** from Japan. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *J. Matsumura* 232, Japan: in monte Tateyaama (W: IT; US-3413581 (fragm. ex W)).

**Illustrations (Books):** T.Koyama, *Grasses of Japan and its neighbouring regions* (1987) (74, Fig 22 as ssp. *takedana*).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating connection. In honor of Hisayohi Takeda (1883–1972), Japanese botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Rhizomes short. Stolons absent or present. Butt sheaths pubescent, persistent and investing base of culm, with fibrous dead sheaths. Culms 15–35 cm long, 0.8–1.3 mm diam. Leaves mostly basal. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.5–0.66 mm long, brown, truncate. Leaf-blades 4–15 cm long, 2.75–4 mm wide, pruinose. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acute or acuminate.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 4–10 cm long, 2–4 cm wide. Primary panicle branches 2–3 -nate, bearing 1–3 fertile spikelets on each lower branch. Panicle axis smooth or scaberulous. Panicle branches capillary, scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 6–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 0.7–1 mm long, scaberulous. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3–4.5 mm long, 0.8–1 length of upper glume, chartaceous, 1-keeled, 1 -veined. Lower glume primary vein smooth or scaberulous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.2–5.5 mm long, 0.5–0.66 length of adjacent fertile lemma, chartaceous, 1-keeled, 3 -veined. Upper glume primary vein smooth or scaberulous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate or ovate, 6–8 mm long, chartaceous, much thinner on margins, light brown, keeled, lightly keeled, 3–5 -veined, 0–3 -veined or more than 3-veined. Lemma midvein without distinctive roughness or scaberulous. Lemma surface asperulous. Lemma apex acute or acuminate. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, 3.5 mm long, hairy at apex. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Russian far east, **China, Eastern Asia.** Primorye. Japan, Korea. Japan Honshu. TDWG4.

**Festuca talamancensis** G. Davidse. *Novon*, 2(4): 324 (1992).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Costa Rica. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *G. Davidse* 24776, 17 Sep 1983, Costa Rica: San Josi–Cartago: Cordillera de Talamanca, Cerros Cuericm, Parque Nacional Chirripis, continental divide, 9:35'N, 83:38' W, *Chusquea-Hypericum*-ericad shrub params with open areas with tussock grasses (dominated by *Cortaderia*) near the summit, 3200–3394 m (MO; IT: AAU, BM, COL, EAP, ISC, K, L, LE, MEXU, NY, US-3278349).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Cordillera de Talamanca, Costa Rica.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations extravaginal. Culms 45–90 cm long, 2 -noded. Lateral branches lacking. Leaf-sheaths open for most of their length, glabrous on surface. Ligule a ciliolate membrane, 0.4–1 mm long. Leaf-blades involute, 10–30 cm long, 0.5–0.7 mm wide. Leaf-blade venation with subepidermal sclerenchyma free from veins. Leaf-blade surface scaberulous, rough adaxially, glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, elliptic, nodding, 10–14 cm long, 3–4 cm wide. Primary panicle branches ascending, 2 -nate, 4–6 cm long. Panicle axis smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, smooth.

**Fertile Spikelets.** Spikelets comprising 2 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.4–7 mm long, breaking up at maturity, disarticulating below each fertile floret.



**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, 3.4–4.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.8–6 mm long, 0.9–1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume inner surface scabrous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5–6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins obscure. Lemma surface scabrous, rough below, inner surface scabrous. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 0.3–1 mm long overall. Palea 0.9 length of lemma, 2 -veined. Palea keels scabrous. Palea surface scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.1–1.4 mm long. Ovary glabrous. Caryopsis with adherent pericarp, sulcate on hilar side, 2.8–3.5 mm long, dark brown, glabrous. Embryo 0.2 length of caryopsis. Hilum linear, 0.6 length of caryopsis.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Mesoamerica. Costa Rica.

**Festuca tancitaroensis** M. Gonzalez-Ledesma & S.D. Koch. *Novon*, 4(1): 25 (1994).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Mexico. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Mexico: Michoacan: Mun. Tancitaro, Mt. Tancitaro, rocky ledge, 10300 ft, 25 Jul 1941, W.C. Leavenworth & H. Hoogstral 1213 (HT: US; IT: CAS, F, MICH).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Mt. Tancmtaro, Mexico.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms erect, 85–130 cm long, 1–2 -noded. Leaf-sheaths glabrous on surface. Leaf-sheath auricles absent. Ligule an eciliate membrane, 1.5–2.8 mm long, truncate or obtuse. Leaf-blades flat or involute, 30–60 cm long, 3.3–6.5 mm wide. Leaf-blade surface ribbed, grooved adaxially, scabrous, rough abaxially. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle. Peduncle glabrous. Panicle open, ovate, 15–21 cm long. Primary panicle branches 2 -nate. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 15–21 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4.5–9 mm long, 0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous. Lower glume apex acute. Upper glume lanceolate, 6.5–10.5 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface scabrous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 8.7–12.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acute, awned. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 4–5.3 mm long. Ovary glabrous. Caryopsis with adherent pericarp, 5–7.5 mm long. Hilum linear.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** Mexico. Southwest Mexico.

**TDWG4.** Michoacan.

**Festuca tarmensis** Pilger. *Engl. Jahrb.* vii. 515 (1906).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: A. Weberbauer 2233, Jan 1903, Peru: Junmn: Tarma Prov.: Huacapistana, 3500 m (B; IT: BAA-1348 (fragm. ex B), US-732978).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Tarma Province, Peru.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 20–40 cm long. Leaf-sheaths glabrous on surface. Ligule a ciliolate membrane, 0.5–0.6 mm long. Leaf-blades conduplicate or involute, 7–20 cm long, 1–2 mm wide, stiff. Leaf-blade surface pubescent, densely hairy, hairy adaxially. Leaf-blade margins smooth. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, interrupted, 8–13 cm long. Primary panicle branches appressed. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, scabrous.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6–7 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes pubescent.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3.5–4 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface asperulous. Lower glume apex acute. Upper glume lanceolate, 4.5–5 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface asperulous. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 5–5.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.5–1 mm long overall. Palea 2 -veined. Palea keels scabrous. Palea surface pubescent, hairy above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.2–3 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Peru.

**Festuca tatrae** (Csako) Degen. *Magyar. Bot. Lapok* 3:171 (1904).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Hungary. **Basionym or Replaced Name:** *Festuca amethystina* var. *tatrae* Csako, *Jahrb. Ung. Karpath. Ver.* 15:271 (1888). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Hungary, Tatra: Kitaibel.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): from the Tatra Mountains, Czechoslovakia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms 20–45 cm long. Leaf-sheaths tubular for much of their length, with 0.5–0.66 of their length closed, with infolded margins, glabrous on surface. Ligule a ciliolate membrane. Leaf-blades flat or conduplicate, 0.7–0.9 mm wide. Leaf-blade venation comprising 5–9 vascular bundles, with 7–11 inner ridges, with sclerenchyma strands below veins, with 7–9 subepidermal sclerenchyma strands, with subepidermal sclerenchyma attached to veins below. Leaf-blade surface ribbed, smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 10 cm long. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7.9–8.6 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume oblong, 3–3.4 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma ovate, 4.2–4.8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, mucicous. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3 mm long. Ovary glabrous. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe.

**Country /Province /State.** : Czechoslovakia, Poland.

**Festuca taurica** (Hack.) Kern. ex Hack. *Monog. Fest.* 104 (1882).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Russia. **Basionym or Replaced Name:** *Festuca ovina* var. *taurica* Hack., *Monogr.* :104 (1882). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Russia, Crimea, Brachie: Rehmann 229.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Tauria, now the Crimea, Ukraine.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 40–50 cm long. Culm-internodes antrorsely scabrous. Leaf-sheaths open for most of their length, with 0.2 of their length closed, with flat margins, glabrous on surface or puberulous. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 20–35 cm long, 0.35–0.6 mm wide, without exudate. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation or with sclerenchyma strands widened to form a discontinuous subepidermal layer. Leaf-blade surface scabrous, pubescent, hairy on both sides.

**Inflorescence.** Inflorescence a panicle. Panicle open, interrupted, 5–11 cm long. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8.4–10.7 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume linear, 6.5–7.4 mm long, 0.9–1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma linear, 6.5–8.4 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface smooth or scaberulous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 4–8 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region. Southeastern Europe, Eastern Europe.**

**Country /Province /State.** : Bulgaria, Greece. Krym, Central European Russia, East European Russia, South European Russia, Northwest European Russia, Ukraine.

**Festuca tectoria** St.- Yves. *Candollea*, iii. 240 (1927).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: ST: A. *Weberbauer 5811*, 20 May 1911, Peru: Ayacucho: Coracora (B; IST: BAA-1349 (fragm. ex B), US-1517190).

ST: *Weberbauer 589*, Peru: Ayacucho: Coracora (B).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. that which serves as a covering. Covered, usually with leaf-sheaths, as of culms.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect or geniculately ascending, 80–100 cm long, 2 -noded. Lateral branches lacking. Leaf-sheaths pubescent. Ligule a ciliolate membrane, 1 mm long. Leaf-blades flat, 10–25 cm long, 1.5–3 mm wide. Leaf-blade venation comprising 20–24 vascular bundles, with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 15–20 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–9 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1–1.5 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2–3.2 mm long, 0.66–0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.5–4.6 mm long, 0.6–0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 6–6.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous. Lemma apex setaceously acuminate. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, 1 mm long. Anthers 3, 1–3 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG), Continent.** South America.

**Country /Province /State.** Western South America, Southern South America. Peru. Chile North. Tarapaca.

### ***Festuca tenuiculmis* Tovar. *Mem. Mus. Nat. Hist. Javier Prado*, 16: 55 (1972).**

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *E. Salaverry 109*, Mar 1955, Peru: Huancavelica: Tayacaja Prov. (US-2183155).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. tenuis*, thin; *culmis*, stem. Culms thin.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, culms solitary. Culms 18–23 cm long, 1 -noded. Leaf-sheaths glabrous on surface or puberulous. Ligule an eciliate membrane, 0.5–1 mm long, erose. Leaf-blades straight, involute, 3–6 cm long, 2 mm wide, 2 cm long at summit of culm. Leaf-blade surface smooth or scaberulous, rough adaxially. Leaf-blade apex obtuse or abruptly acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, lanceolate, 4.5–6 cm long. Primary panicle branches ascending. Panicle branches capillary. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, terete, smooth.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 9–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes smooth.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.3–2.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex obtuse or acute. Upper glume lanceolate, 3.3–3.5 mm long, 0.66 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex obtuse or acute.

**Florets.** Fertile lemma oblong, 5.5–6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins prominent. Lemma surface smooth or scaberulous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.5–1.5 mm long overall. Palea 2 -veined. Palea keels smooth or scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 0.6–0.8 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG), Continent.** South America.

**Country /Province /State.** Western South America. Peru.

### ***Festuca (Pseudobromus tenuifolius) nomnov* (A. Camus) FORSAN.**

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Madagascar. **Basionym or Replaced Name:** *Pseudobromus tenuifolius* A. Camus, *Bull. Soc. Bot. France*, 77: 513 (1930). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Madagascar, Ambatalaona: Viguier & Humbert 1197 (P holo).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 50–60 cm long. Culm-internodes striate, smooth, distally glabrous. Culm-nodes brown. Lateral branches lacking. Leaf-sheaths striately veined, glabrous on surface. Ligule an eciliate membrane, truncate. Leaf-blades involute, 15–22 cm long, 1 mm wide. Leaf-blade surface scaberulous, rough adaxially, glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate or ovate, 18–20 cm long, bearing few spikelets. Panicle branches flexuous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 3–12 mm long, glabrous.

**Fertile Spikelets.** Spikelets comprising 2 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 20–22 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 2.5 mm long.

**Glumes.** Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture. Lower glume lanceolate, 5–6 mm long, 0.7–0.8 length of upper glume, membranous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume lanceolate, 7–8 mm long, 0.4 length of adjacent fertile lemma, membranous, without keels, 3 -veined. Upper glume apex acuminate, awned, 1 -awned, awn 1.5 mm long.

**Florets.** Fertile lemma lanceolate, 10–12 mm long, membranous, without keel, 3–5 -veined, 0–3 -veined or more than 3-veined. Lemma apex awned, 1 -awned. Principal lemma awn 8–10 mm long overall. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5 mm long, yellow. Ovary pubescent on apex. Caryopsis with adherent pericarp.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** Western Indian ocean. Madagascar.

### **Festuca thermarum** Phil. *Anal. Univ. Chil.* ii. 385. (1862).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Chile. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *Philippi s.n.*, Chile: en los mamantiales de las Termas de Chillan (SGO-PHIL-280; IT: SGO-37437, SGO-63833, US-556543 (fragm. ex SGO-PHIL-280 & photo)).

**Illustrations (Books):** M.N.Correa, *Flora Patagonica* Parte III, Gramineae (1978) (111, Fig 67).

**Derivation** (Clifford & Bostock 2007): *L. thermarum*, warm baths. Of warm baths, that is growing near hot springs.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 25–60 cm long. Lateral branches lacking. Leaf-sheaths open for most of their length, striately veined. Ligule a ciliolate membrane, 0.5 mm long. Leaf-blades conduplicate, 10–30 cm long, 0.75–1 mm wide, stiff. Leaf-blade surface pilose, hairy adaxially. Leaf-blade apex acute, pungent.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, 5–12 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, scabrous.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 0.75–1.5 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3.5–4.5 mm long, 0.75 length of upper glume, chartaceous, much thinner on margins, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous, rough on veins. Lower glume apex acute. Upper glume lanceolate, 4.5–6 mm long, 0.75–0.9 length of adjacent fertile lemma, chartaceous, with scarious margins, without keels, 3 -veined. Upper glume surface scabrous, rough above. Upper glume apex obtuse.

**Florets.** Fertile lemma elliptic, 6–6.5 mm long, chartaceous, much thinner on margins, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, muticous or mucronate. Palea 1 length of lemma, 2 -veined. Palea surface scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–4 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Southern South America. Argentina South, Chile Central, Chile South.

**TDWG4.** Chubut, Neuquén, Tierra del Fuego. Rest of Chile- Biobio, La Araucania, Maule, O'Higgins, Santado, Valpariso, Chiloe, Aisen, Magellanes. Maule, Biobio, La Araucania. Los Lagos, Aisen, Magellanes.

### **Festuca thracica** (Acht.) I. Markgraf-Dannenber. *Veroff. Geobot. Inst. Rubel*, 56: 10 (1976).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**Basionym or Replaced Name:** *Festuca duriuscula* f. *thracica* Acht., *Bull. Inst. Bot. Sofia* 3:12 (1953).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. -ica*, belonging to. From Thrace, in Classical times the mid-Balkan peninsula.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 30–57 cm long. Culm-internodes smooth. Leaf-sheaths open for most of their length, with 0 of their length closed, with flat margins, antrorsely scabrous, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 0.4–0.65 mm wide, glaucous. Leaf-blade venation comprising 7 vascular bundles, with 3 inner ridges, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer. Leaf-blade surface scabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, loose, 6–9 cm long. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8.4–8.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.9–6.2 mm long, 0.7–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume margins ciliate. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 5.5–6.7 mm long, chartaceous, mid-green, without keel, 5 -veined, more than 3-veined. Lemma surface pubescent, hairy above. Lemma margins ciliate. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 3.6–4.4 mm long overall, 0.66 length of lemma. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 14$  (1 ref TROPICOS), or 42 (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region. Southeastern Europe.**

**Country /Province /State.** : Bulgaria, Greece.

**Festuca thurberi** Vasey. *Rothr. Rep. Bot. U. St. Surv.* vi. 292 (1874).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from USA. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *J. Wolfe 1154*, USA: Colorado: South Park (US).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico Vol 24 Poaceae*, part 1 (2007) (411).

**Derivation** (Clifford & Bostock 2007): in honor of George Thurber (1821–90) United States botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms 60–90 cm long. Lateral branches lacking. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 2–4 mm long. Leaf-blades erect, involute, 1–2 mm wide, coriaceous. Leaf-blade surface scabrous, glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 10–15 cm long, with spikelets clustered towards branch tips. Primary panicle branches ascending or spreading, 1 -nate. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 10–17 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume elliptic, 4 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume elliptic, 5 mm long, 0.66 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 7–8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins obscure. Lemma apex acute or cuspidate, muticous. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** Northwest USA, Southwestern USA, South-central USA, Mexico. Colorado, Oregon, Wyoming. Arizona, Utah. New Mexico. Northeast Mexico.

Coahuila, Neuvo Leon, Tamaulipas.

**Festuca tibestica** DeMire & Quezel. *Bull. Soc. Bot. France*. cvi. 138 (1959).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Chad. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Chad, Tibesti, Emi Koussi: Mire.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. *-ica*, belonging to. From Tibesti Mountains, on the border of Chad and Libya.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Culms erect, 15–30 cm long, 2–3 -noded. Culm-internodes smooth. Leaf-sheaths 5–15 cm long, smooth, glabrous on surface. Ligule an eciliate membrane, 1 mm long, truncate. Leaf-blades linear, convolute, 5–10 cm long, 2–4 mm wide. Leaf-blade venation comprising 7 vascular bundles, with 7 inner ridges, with sclerenchyma strands below veins and above all veins, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface ribbed, grooved adaxially, smooth or scaberulous, rough adaxially, glabrous.

**Inflorescence.** Inflorescence a panicle, without bracts or bracteate at pedicel base. Panicle open, lanceolate, dense, 5–16 cm long, 1 cm wide. Primary panicle branches appressed, 1–3 cm long, bearing 5–8 fertile spikelets on each lower branch. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 0.7–0.9 mm long.

**Fertile Spikelets.** Spikelets comprising 3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–11 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 7.6–8.5 mm long, 0.9 length of upper glume, chartaceous, much thinner above, without keels, 3 -veined. Lower glume lateral veins distinct. Lower glume surface scabrous. Lower glume apex acuminate. Upper glume oblong, 7.5–8.5 mm long, 1 length of adjacent fertile lemma, chartaceous, much thinner above, without keels, 5 -veined. Upper glume surface scabrous.

**Florets.** Fertile lemma lanceolate, 7.5–8.5 mm long, 2 mm wide, chartaceous, much thinner above, without keel, 5 -veined, more than 3-veined. Lemma lateral veins obscure. Lemma surface scabrous, rough on veins. Lemma apex acute, mucronate. Palea lanceolate, 5–6 mm long, 2 -veined. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3. Caryopsis with adherent pericarp, oblong, 5 mm long. Hilum linear.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** Northeast tropical Africa. Chad.

**Festuca tibetica** (Stapf) E.B. Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 83(4): 118 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. **Basionym or Replaced Name:** *Festuca valesiaca* var. *tibetica* Stapf, *Fl. Brit. India* 7(22): 349 (1897) [1896]

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Xizang: n. of Sikkim, 17–19,000 ft.,

**Illustrations (Books):** H.J.Noltie, *The Grasses of Bhutan* (2000) (539, Fig. 13).

**Derivation** (Clifford & Bostock 2007): L. *-ica*, belonging to. From Tibet.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 4–15 cm long. Ligule an eciliate membrane, 0.3 mm long. Leaf-blades filiform, conduplicate, 5–10 cm long, 1 mm wide, mid-green. Leaf-blade venation comprising 7 vascular bundles, with 3 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, oblong, 1.5–3 cm long. Primary panicle branches appressed. Panicle branches with occasional prickles. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 4–6.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 1.5–3 mm long, 0.5–0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3–4.5 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 3.5–4.2 mm long, chartaceous, mid-green or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1–2 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous, adorned all along or above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1–1.3 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia, Tropical Asia.

**Country /Province /State.** **China.** China South Central, Tibet. **Indian Subcontinent.** Eastern Himalaya, Pakistan, West Himalaya.

**TDWG4.** Yunnan. Bhutan, Sikkim.

**Festuca ticinensis** (I. Markgraf-Dannenberg) I. Markgraf-Dannenberg. *Bot. J. Linn. Soc.*, 76(4): 328 (1978).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online, U. Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G. Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Italy. **Basionym or Replaced Name:** *Festuca ovina* subsp. *ticinensis* Mark.-Dann., *Veroeff. Geobot. Inst. Zurich* 57:62 (1976). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Italy, Tessin, Monte Generoso: Markgraf-Dannenberg.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Ticinense territorium, that is Pavia, Italy.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 30–60 cm long. Culm-internodes smooth. Leaf-sheaths open for most of their length, with 0.1–0.25 of their length closed, with flat margins, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 0.45–1 mm wide, light green or glaucous. Leaf-blade venation comprising 7 vascular bundles, with 3 inner ridges, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, rough adaxially or on both sides. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, effuse, 5.5–12.3 cm long. Primary panicle branches spreading. Panicle branches scabrous, glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8.1–9.7 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.4–6.3 mm long, 0.66–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface scabrous, rough above. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 5.2–6.9 mm long, chartaceous, light green or glaucous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma margins ciliolate. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.7–3.5 mm long overall, 0.33–0.5 length of lemma. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe, Southeastern Europe.

**Country /Province /State.** : Switzerland. : Italy.

**Festuca toca** Stancmk. *Darwiniana* 41(1–4): 124 (126; figs. 10h-m, 17d) (2003).

**Accepted by:** R.J. Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D. Clayton & K. Harman, *GrassBase* (2008) and online, U. Quattrocchi, *CRC World Dictionary of Grasses* (2006).



**TYPE** from Colombia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Colombia: Boyaca: Munic. Toca, road from Pesca to Toca, Km 4–5, paramo Cortadero, 5:30N, 73:15W, 2700m, 14 Nov 1998, *Stančmk 1404* (HT: PCR; IT: COL, FMB).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 82, fig 38 (2007)).

**Derivation** (Clifford & Bostock 2007): From Toca, Colombia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, culms solitary or caespitose, clumped loosely. Cataphylls evident. Rhizomes short, fleshy, not obviously scaly. Basal innovations extravaginal or intravaginal. Culms erect, slender, straight, 50–90 cm long, 2–4 -noded, without nodal roots. Culm-internodes terete. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves basal and cauline, 2–4 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined. Leaf-sheath auricles absent. Ligule an eciliate membrane, 0.1–0.5 mm long, membranous, white, entire, truncate. Leaf-blade base symmetrical. Leaf-blades straight, conduplicate or involute, angular in section or elliptic in section, 10–35 cm long, 0.5–1.1 mm wide, firm, mid-green or glaucous. Leaf-blade midrib indistinct. Leaf-blade venation indistinct, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma attached to veins above and below, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface glabrous. Leaf-blade margins smooth, glabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle terete, eglandular, glabrous. Panicle contracted, linear or lanceolate, continuous, dense, straight, 6–20 cm long, 0.5 cm wide, bearing many spikelets, contracted about primary branches. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6–8 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes smooth, glabrous. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume lanceolate, 2–3 mm long, 0.66–0.75 length of upper glume, chartaceous, purple, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface asperulous, rough at apex. Lower glume apex acute. Upper glume lanceolate, 3–4 mm long, 0.75 length of adjacent fertile lemma, chartaceous, dark green or purple, without keels, 3 -veined. Upper glume surface asperulous, rough at apex. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, symmetrical, 4–5 mm long, chartaceous, pallid or mid-green or purple, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex mucronate, 1 -awned. Principal lemma awn stiff, 0–0.5 mm long overall. Palea 2 length of lemma, 2 -veined. Palea surface papillose. Palea apex ciliate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 1.1–1.6 mm long. Ovary glabrous. Caryopsis with adherent pericarp, lanceolate. Hilum linear, 0.6 length of caryopsis.

**Distribution (TDWG).** Continent. South America.

**Country /Province /State.** Western South America. Colombia.

## **Festuca toluensis** H. B. & K. *Nov. Gen. et Sp.* i. 153. (1815).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Mexico. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Humboldt & Bonpland s.n.*, Sep, Mexico: Mixico: between Islahuaca and Toluca (P; IT: B, BM, P).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 138, fig 69 (2007) as subsp. *toluensis*).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Toluca, Mexico.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 50–100 cm long, 1.5–2 mm diam. Culm-nodes constricted, brown, glabrous. Lateral branches lacking. Leaves mostly basal. Leaf-sheaths scaberulous, glabrous on surface. Ligule an eciliate membrane, 1–2.5 mm long. Leaf-blades filiform, involute, 12–25 cm long, 1–1.5 mm wide. Leaf-blade venation with 3–4 inner ridges. Leaf-blade surface ribbed, scabrous, glabrous.

**Inflorescence.** Inflorescence a panicle. Peduncle 15–30 cm long. Panicle open, lanceolate, 11–20 cm long, bearing few spikelets. Primary panicle branches 1–2 -nate. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 6–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 9–14 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4.5–6.3 mm long, 0.75–0.85 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 6–7.4 mm long, 0.9–1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma ovate, 6–8 mm long, chartaceous, purple, without keel, 5 -veined, more than 3-veined. Lemma lateral veins with distinct primaries but obscure intermediates. Lemma surface scaberulous. Lemma apex acuminate, muticous or awned, 1 -awned. Principal lemma awn 0–1 mm long overall. Palea 0.9 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.8–3.4 mm long, yellow. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** North America, South America.

**Country /Province /State. Mexico.** Central Mexico, Northeast Mexico, Gulf (Mexico), Southwest Mexico, Southeast Mexico. **Mesoamerica, Northern South America, Western South America.** Colombia.

**TDWG4.** Distrito Federal, Mexico State, Morelos, Puebla, Tlaxcala. Chihuahua, Durango, San Luis Potosi. Veracruz. Jalisco, Michoacan. Chiapas.

### **Festuca tovarensis** Stancik & Peterson. *Sida* 20:24 (2002).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Peru, Colchabamba to Paucabamba: Tovar 2057 (US holo).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 32, fig 9 (2007)).

**Derivation** (Clifford & Bostock 2007): L. *-ensis*, denoting origin. In honor of Oscar Tovar (1923-) Peruvian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, culms solitary or caespitose, clumped loosely. Cataphylls inconspicuous. Rhizomes short, fleshy, not obviously scaly. Butt sheaths papery or herbaceous. Basal innovations extravaginal or intravaginal. Culms erect, of moderate stature, straight or curved, 80–110 cm long, 6–12 -noded, without nodal roots. Culm-internodes terete, distally glabrous. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves basal and cauline, 3–5 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined, pubescent. Leaf-sheath auricles absent. Ligule an eciliate membrane, 2–3 mm long, membranous, translucent or white, lacerate, acuminate. Leaf-blade base symmetrical. Leaf-blades straight or flexuous, linear in section, 12–15 cm long, 3–9 mm wide, flaccid, mid-green or dark green. Leaf-blade midrib evident. Leaf-blade venation distinct, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface ribbed, grooved abaxially, scabrous, rough abaxially, glabrous. Leaf-blade margins scabrous, glabrous. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle straight or flexuous, terete, eglandular, glabrous. Panicle open, lanceolate, continuous, loose, secund, straight, 20–25 cm long, 5–10 cm wide. Primary panicle branches ascending or spreading, moderately divided, bearing spikelets almost to the base. Panicle axis scabrous. Panicle branches straight or arcuate. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7.5–9.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes 1.2–1.4 mm long, scaberulous, pubescent. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume lanceolate, 1.5–1.8 mm long, 0.5–0.6 length of upper glume, membranous or chartaceous, pallid or light green or purple, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous. Lower glume apex acute or acuminate. Upper glume lanceolate, 4–6 mm long, 0.6–0.7 length of adjacent fertile lemma, chartaceous, mid-green, without keels, 3 -veined. Upper glume lateral veins obscure. Upper glume surface scabrous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, symmetrical, 7–8.5 mm long, membranous or chartaceous, pallid or mid-green or purple, without keel, 3–5 -veined, 0–3 -veined or more than 3-veined. Lemma surface scabrous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn filiform, 3–4(–5) mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, oblong, membranous, 2-toothed. Anthers 3, 1.5–2 mm long. Ovary with a few apical hairs. Caryopsis with adherent pericarp, lanceolate, hairy at apex. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Peru.

**Festuca trabuttii** E.B.Alekseev. *Novosti Sist. Vyssh. Rast.*, 14: 39 (1977).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 10–30 cm long. Lateral branches lacking. Leaf-sheaths open for most of their length, with 0.25 of their length closed. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, angular in section, 0.6 mm wide, pruinose. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous, rough abaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate or oblong, 4–7 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 5–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5.2–5.8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.5–2.5 mm long overall. Palea 2 -veined. Palea keels scabrous, adorned above, with 0.8 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** Northern Africa. Algeria.

**Festuca trachyphylla** (Hackel) Kroy. *Acta Bot. Bohem.* ix. 190 (1930).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Germany. **Basionym or Replaced Name:** *Festuca ovina* subvar. *trachyphylla* Hack., *Monogr.* :91 (1882). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Germany, Prenzlau: Grantzow.

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (427).

**Derivation** (Clifford & Bostock 2007): Gk. trachys, rough; phyllon, leaf. Leaf-blades scabrid.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 30–75 cm long. Culm-internodes antrorsely scabrous. Leaf-sheaths open for most of their length, with 0 of their length closed, with flat margins, pubescent. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 0.6–1.1 mm wide, without exudate or pruinose. Leaf-blade venation comprising 7 vascular bundles, with 5–7 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation or with sclerenchyma strands widened to form a discontinuous subepidermal layer or with unevenly thickened subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, glabrous or pubescent, hairy on both sides.

**Inflorescence.** Inflorescence a panicle. Panicle open, interrupted, 4.5–13 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–7.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.5–4.5 mm long, 0.8–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4.2–4.9 mm long, chartaceous, glaucous, without keel, 5 -veined, more than 3-veined. Lemma surface glabrous or pubescent. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2–2.5 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 14$  (1 ref TROPICOS), or 28 (1 ref TROPICOS), or 42 (2 refs TROPICOS).

**Distribution (TDWG). Continent.** Europe, North America.

**Region.** Northern Europe, Middle Europe, Southwestern Europe, Eastern Europe.

**Country /Province /State.** : Denmark, Finland, Great Britain, Norway, Sweden. : Austria, Belgium, Czechoslovakia, Germany, Netherlands, Switzerland. Belarus, Estonia, Latvia, Lithuania, Baltic States, Central European Russia, Northwest European Russia, Ukraine. **Subarctic America, Western Canada, Eastern Canada, Northwest USA, Northeast USA, Southwestern USA, South-central USA.** Yukon, Northwest Territories. British Columbia, Manitoba. Nova Scotia, Ontario, Quebec. Colorado, Oregon, Washington. New Jersey, New York, Pennsylvania. California. New Mexico.

**TDWG4.**

### ***Festuca transcaucasica*** (St.- Yves) Tsvetlev. *Bot. Zhurn.*, 56 (9): 1254 (1971).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, N.Tsvetlev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. **Basionym or Replaced Name:** *Festuca ovina* subvar. *transcaucasica* St.-Yves, *Candollea* 5:115 (1932). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Russia, Lenkoran: Prilipko (BAK lecto).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -icum, belonging to. From beyond the Transcaucasus as viewed from Western Russia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 25–40 cm long. Leaf-sheaths open for most of their length, with 0.24–0.33 of their length closed, with flat margins, glabrous on surface. Ligule an eciliate membrane, 0.3–0.5 mm long. Leaf-blades filiform, conduplicate, elliptic in section, 7–15 cm long, 0.95–1 mm wide, glaucous, pruinose. Leaf-blade venation comprising 7 vascular bundles, with 3 inner ridges, with 3 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, oblong, 5–7 cm long. Primary panicle branches ascending. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 7–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or oblong, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 4–5 mm long, chartaceous, light green, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1–1.5 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear, 1 length of caryopsis.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Caucasus. Transcaucasus.

**TDWG4.**

### ***Festuca trichophylla*** (Ducros, ex Gaud.) Richt. *Pl. Eur.* 1:100 (1890).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from France. **Basionym or Replaced Name:** *Festuca rubra* var. *trichophylla* Ducros, *Fl. Helv.* 1: 288 (1828)

T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: France, Mont Reculet: Ducros.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. thrix, hair; phyllon, leaf. Leaf-blades hair-like.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Rhizomes elongated. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations extravaginal. Culms 30–68 cm long, 0.7–1 mm diam. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 0.3–0.5 mm wide. Leaf-blade venation comprising 5 vascular bundles, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma free from veins. Leaf-blade surface scabrous, rough adaxially, pubescent. Leaf-blade apex abruptly acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, 6–10 cm long. Panicle branches capillary. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–8.6 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume oblong, 3.4–4.3 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 4.9–5.4 mm long, chartaceous, mid-green, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.5–1 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Dissemiuule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe, Southwestern Europe, Southeastern Europe.

**Country /Province /State.** : Austria.

**Festuca triflora** (L.) Sm., non Desf. (1798). *Engl. Bot.* t. 1918 (1808).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Germany. **Basionym or Replaced Name:** *Bromus triflorus* L., *Sp. Pl.* ed. 2. 115 (1762). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Europe: Scheuchzer, *Agrostographia* t.5, f.19(1719) (Icon lecto) ; Germany, Between Bad Oldesloe and Ratzeburg: Jeppesen & Larsen (BM epi).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. tria, three; flos, flower. Spikelets with three florets.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths thickened and forming a bulb. Basal innovations intravaginal. Culms 60–130 cm long. Culm-internodes smooth. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 1.5–4.6 mm long, truncate or obtuse. Leaf-blades linear, flat, 8–41 cm long, 2–7 mm wide. Leaf-blade venation comprising 12–26 vascular bundles. Leaf-blade surface scabrous, glabrous. Leaf-blade margins scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, elliptic or ovate, loose, 10–30 cm long. Panicle axis smooth. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 10–13 mm long, 2–3 mm wide, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4.5–5.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume oblong, 5.5–6.5 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 7.5–8.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex attenuate. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3.5–4 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Hilum linear.

**Distribution (TDWG). Continent.** Europe, Africa.

**Region.** Southwestern Europe.

**Country /Province /State. :** Spain. Northern Africa. Algeria, Morocco.

**Festuca tristis** Krylov & Ivanitzk. *Animadvers. Syst. Herb. Univ. Tomsk.* 1928, No. 1, p. 1. (1928).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Russia, Katon-Karagai: Vereshchagin 235 (TK lecto, LE).

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig.322).

**Derivation** (Clifford & Bostock 2007): L. dull-coloured. Leaf-blades greyish, often as a result of being invested with short hairs.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms slender, 20–50 cm long. Culm-internodes smooth. Leaf-sheaths glabrous on surface. Ligule absent. Leaf-blades filiform, conduplicate, angular in section, 5–25 cm long, 0.6–1.5 mm wide. Leaf-blade venation comprising 5 vascular bundles, with 7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface ribbed, scabrous, rough abaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 5–7 cm long, bearing few spikelets. Primary panicle branches 2–4 cm long. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–3 fertile florets, with a barren rhachilla extension. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4.5–5 mm long, 0.9 length of upper glume, membranous, pallid, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute, mucronate. Upper glume lanceolate, 5–6 mm long, 0.7–0.8 length of adjacent fertile lemma, membranous, pallid, without keels, 3 -veined. Upper glume apex acute, mucronate.

**Florets.** Fertile lemma oblong, 6–6.5 mm long, chartaceous, purple, keeled, lightly keeled, 5 -veined, more than 3-veined. Lemma lateral veins obscure. Lemma surface smooth. Lemma apex acute, mucronate or awned, 1 -awned. Principal lemma awn 0.5–2.2 mm long overall. Palea 2 -veined.

**Flower and Fruit.** Anthers 3, 1.5–4 mm long. Ovary with a few apical hairs. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Siberia, Middle Asia, China, Mongolia. Altay, Irkutsk, Tuva. Kazakhstan. Xinjiang. Mongolia.

**TDWG4.**

**Festuca trollii** E.B. Alekseev. *Bot. Zhurn.*, 70(9): 1245 (1985).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Bolivia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *Troll 1083*, 01 Feb. 1928, Bolivia; Cochabamba: 2600 m (B).

**Illustrations (Books):** S.A.Renvoize, *Gramineas de Bolivia* (1998) (108, Fig 24).

**Derivation** (Clifford & Bostock 2007): in honor of Carl Troll (1899–1975) German botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms 50–100 cm long. Ligule an eciliate membrane. Leaf-blades involute, 30 cm long, 1 mm wide. Leaf-blade surface scaberulous, rough abaxially, hirsute, hairy adaxially. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, 15–30 cm long. Primary panicle branches appressed, 5–7 cm long. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–9 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile.

Spikelets lanceolate, laterally compressed, 9.5–17 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4–7 mm long, 0.66–0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous, rough above. Lower glume apex acute. Upper glume lanceolate, 6–8.5 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface scabrous, rough above. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6.7–9 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface pubescent, hairy above. Lemma apex acute, mucronate. Palea 1 length of lemma, 2 -veined. Palea surface pubescent, hairy above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3.5 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Bolivia.

**Festuca tschatkalica** E. B. Alekseev. *Novosti Sist. Vyssh. Rast.*, 13: 27 (1976).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: IT: *E. Alexeev s.n.*, (US-2942419).

IT: *E. Alexeev* 5818, 19 Jul 1974, USSR: Uzbek Ssr (US-3129784).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Chatkal'skiy Khrebet mountains, Kirgizskaya, former Soviet Union.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms 7–20 cm long. Leaf-sheaths tubular for much of their length, with 0.5–0.6 of their length closed, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 4–8 cm long, 0.6–0.8 mm wide. Leaf-blade venation comprising 7(–9) vascular bundles, with 7(–9) secondary veins, with 3 inner ridges, with 3 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth, puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 1.5–3 cm long. Panicle axis smooth. Panicle branches smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–3 fertile florets, with a barren rhachilla extension. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5–6 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 3.8–4.4 mm long, chartaceous, light green, dull, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–1.5 mm long overall. Palea 2 -veined. Palea keels scabrous, adorned above, with 0.15 of their length adorned.

**Flower and Fruit.** Anthers 3, 1–1.3 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Middle Asia. Kirgizistan.

**TDWG4.**

**Festuca tschujensis** Reverd. *Sist. Zam. Gerb. Tomsk. Univ.* 3:1 (1936).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Russia, Tarkhatta R.: Plotnikov (TK holo).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm. Basal innovations intravaginal. Culms 5–25 cm long, 0.3–0.5 mm diam. Culm-

internodes smooth. Leaf-sheaths tubular for much of their length, with 0.4–0.5 of their length closed, glabrous on surface. Leaf-sheath auricles erect. Ligule an eciliate membrane. Leaf-blades straight or curled, filiform, conduplicate, elliptic in section, 4–10 cm long, 0.3–0.5 mm wide. Leaf-blade venation comprising 7 vascular bundles, with 1(–3) inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma strands enlarged at midrib, with subepidermal sclerenchyma free from veins. Leaf-blade surface scabrous, rough abaxially, pubescent, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 2–3 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 0.8–1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4–5.2 mm long, chartaceous, light green, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.8–2 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

$2n = 28$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Siberia. Altay, Irkutsk, Tuva.

**TDWG4.**

**Festuca tucumanica** E.B. Alekseev. *Bot. Zhurn.*, 69(3): 349 (1984).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Argentina. **Basionym or Replaced Name:** *Festuca lilloi* var. *breviaristata* Turpe, *Darwiniana* 15:231 (1969). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: : Based on *F. lilloi* var. *breviaristata*; Argentina, Anfama: Lillo 3992 (LIL holo, CORD).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Tucuman, Argentina.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect or geniculately ascending, 10–60 cm long, 2–3 -noded. Culm-internodes antrorsely scabrous. Leaf-sheaths open for most of their length, 15–20 cm long, scaberulous or antrorsely scabrous, glabrous on surface. Ligule an eciliate membrane, 1.5–3 mm long, acute. Leaf-blades filiform, convolute, 20–30 cm long, 0.4–0.6 mm wide. Leaf-blade venation with subepidermal sclerenchyma attached to veins below, without layer of subepidermal sclerenchyma masking vein striation.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear or oblong, 12–15 cm long. Primary panicle branches 2 -nate. Panicle axis scabrous. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10–12 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4–4.5 mm long, 0.8–0.9 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5 mm long, 0.66 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 7–8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, mucicous or awned, 1 -awned. Principal lemma awn 1–1.5 mm long overall, deciduous. Palea 2 -veined. Palea keels ciliolate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Southern South America.** Argentina Northwest, Argentina Northeast.

**TDWG4.** Salta, Tucuman.



**Festuca tunicata** E. Desv. *C. Gay. Fl. Chil.* vi. 434. (1853).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Chile. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *Bertero* 995, Oct 1829, Chile: in pascuis et fruticetis asperis collium et montium Quillota (P(photo, CONC); IT: LE-TRIN-2848.02, W).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. thin, separable covering; -ata, possessing. Leaf-sheaths loose about culm.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 50–100 cm long, 2–4 -noded. Culm-nodes glabrous. Leaf-sheaths scaberulous, glabrous on surface. Ligule a ciliolate membrane, 0.5–1.5 mm long. Leaf-blades flat or convolute, circular in section, 20–50 cm long, 1–3 mm wide. Leaf-blade venation with subepidermal sclerenchyma attached to veins above. Leaf-blade surface smooth or scaberulous, rough abaxially, pubescent, hairy adaxially.

**Inflorescence.** Inflorescence a panicle, comprising 30–100 fertile spikelets. Panicle open, dense, equilateral, 7–25 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10–14 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 0.6–1.2 mm long, smooth.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4.5–6.9 mm long, 0.75–0.9 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface scabrous. Lower glume apex acute. Upper glume lanceolate, 6.2–7.8 mm long, 0.75–1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface scabrous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6–9 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acute, muticous or mucronate. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, 1 mm long. Anthers 3, 3.5 mm long. Caryopsis with adherent pericarp, 1 mm long. Hilum linear, 0.75 length of caryopsis.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Southern South America.** Chile North, Chile Central.

Rest of Chile- Biobio, La Auracania, Maule, O'Higgins, Santado, Valpariso. Antofagasta. Coquimbo, Valparaiso, Santiago.

**Festuca turimiquirensis** Stancik & P.M. Peterson. *Contrib. U.S.Nat. Herbarium* 56: 141 (2007).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 142, fig 70 (2007)).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Caespitose, clumped moderately. Cataphylls inconspicuous. Rhizomes absent. Basal innovations intravaginal. Culms of moderate stature, straight, without nodal roots. Culm-internodes terete. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves mostly basal, 0–1 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined. Ligule a ciliolate membrane, membranous, white, entire, truncate. Leaf-blade base symmetrical. Leaf-blades straight, elliptic in section, indurate, firm, dark green. Leaf-blade midrib indistinct. Leaf-blade venation indistinct, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma attached to veins below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface puberulous, moderately hairy, hairy adaxially. Leaf-blade margins smooth, glabrous. Leaf-blade apex obtuse or attenuate.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle terete, eglandular, glabrous. Panicle open or contracted, lanceolate or elliptic, continuous, dense or loose, straight, 15–17 cm long, 6–7 cm wide. Primary panicle branches ascending or spreading, sparsely divided or moderately divided, bearing spikelets almost to the base. Panicle branches straight or arcuate.

**Fertile Spikelets.** Spikelets comprising 4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10–11 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes scaberulous. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume lanceolate, 3–4 mm long, 0.7–0.8 length of upper glume, chartaceous or herbaceous, mid-green, without keels, 1 -veined. Lower glume apex acute. Upper glume lanceolate, 4–5.5 mm long, 0.8 length of adjacent fertile lemma, chartaceous, dark green, without keels, 3 -veined. Upper glume apex obtuse or acute.

**Florets.** Fertile lemma lanceolate, symmetrical, 7–8.5 mm long, chartaceous or herbaceous, pallid or mid-green. Lemma surface scabrous. Lemma apex awned, 1 -awned. Principal lemma awn stiff, 0.7–2.5 mm long overall.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Southern South America.** Argentina Northwest, Argentina Northeast.

**Festuca tzveleviana** Lazkov. *Novosti Sist. Vyssh. Rast.* 36: 28 (-30; fig. 1) (2004).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Russia, Kirgistan, Almalu: Lazkov & Kenzhebaeva (LE holo, FRU, MW).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Rhizomes short. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms 40–60 cm long. Culm-internodes distally glabrous. Leaf-sheath auricles erect. Ligule an eciliate membrane, 2.5–3 mm long, pubescent on abaxial surface, lacerate. Leaf-blades 1–2.5 mm wide, grey-green. Leaf-blade surface glabrous. Leaf-blade margins scaberulous. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle, comprising 3–5 fertile spikelets. Panicle contracted, linear, bearing few spikelets. Primary panicle branches indistinct the panicle almost racemose, 0.3–1 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 15–20 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes pubescent.

**Glumes.** Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture. Lower glume lanceolate, 4 mm long, 0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume oblong or ovate, 6 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 8–9 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins obscure. Lemma margins ciliate, hairy below. Lemma apex acute. Palea lanceolate or oblong, 8 mm long, 2 -veined. Palea keels ciliolate. Palea surface pilose, hairy on margins. Palea apex dentate, 2 -fid, pubescent. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. Middle Asia.** Kirgizistan.

**Festuca tzvelevii** Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 77(6): 115 (1972).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: 2 IT: *E. Alexeev s. n.*, 18 Jul 1971, Caucasus: Karachaevo-Cherkessiya: Mt. Malaya Azgara: elev. 2000 m (LE).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of N.N. Tsvelev (1925-) Russian agrostologist.

**Classification.** Subfamily Pooideae. Tribe: Poae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms 8–15 cm long. Leaf-sheaths tubular for much of their length, with 0.5–0.75 of their length closed, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 2–8(–12) cm long, 0.3–0.5 mm wide, glaucous, pruinose. Leaf-blade venation comprising 5(–7) vascular bundles, with 5–7 secondary veins, with 1–3 inner ridges, with 5–7 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation or with sclerenchyma strands widened to form a discontinuous subepidermal layer. Leaf-blade surface smooth, puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, 1.5–3.5 cm long. Panicle axis smooth. Panicle branches smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 5–6 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 3.8–4 mm long, chartaceous, purple, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2.5–5 mm long overall. Palea 2 -veined. Palea keels scabrous, adorned above, with 0.33 of their length adorned. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.7–2.2 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State. Caucasus.** North Caucasus.

**TDWG4.**

### **Festuca ulochaeta** Steud. *Syn. Pl. Gram.* 305. (1854).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Brazil. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *F. Sellow s.n.*, Brazil (B).

**Illustrations (Books):** L.B. Smith, D.C. Wasshausen, R.M. Klein *Flora Illustrada Catarinensis Gramineas* (1981–1982) (216 & 217, Fig. 47 & 48), H.M. Longhi-Wagner, *Flora Ilustrada do Rio Grande do Sul, Gramineae, Poeae* (1987).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 34, fig 10 (2007)), *Ruizia* (13:97, Fig10a-b (1993)).

**Derivation** (Clifford & Bostock 2007): Gk. ulos, wooly; chaete, bristle. The lemma awn shortly hairy.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Basal innovations extravaginal. Culms 90–100 cm long, 2–3 -noded. Leaf-sheaths antrorsely scabrous, glabrous on surface. Ligule a ciliate membrane, 1 mm long. Leaf-blades 5–10 mm wide. Leaf-blade venation with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous, rough on both sides. Leaf-blade apex acuminate.

**Inflorescence.** Inflorescence a panicle. Panicle open, elliptic, nodding, 5–10 cm long. Primary panicle branches 1–2 -nate. Panicle axis scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10–12 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3–4 mm long, 0.66–0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5–5.5 mm long, 0.66 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 7.5–8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn flexuous, 15–20 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Hilum linear, 0.66 length of caryopsis.

$2n = 42$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Northern South America, Western South America, Brazil, Southern South America.** Venezuela. Colombia. Brazil Southeast, Brazil South. Argentina Northwest.

**TDWG4.** Minas Gerais, Rio de Janeiro, Espirito Santo, Sao Paulo Parana, Catarina, Rio Grande do Sul. Jujuy, Salta. Misiones.

**Festuca ultramafica** Connor. *N. Z. J. Bot.* 36:363 (1998).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), E.Edgar, & H.Connor, *Flora of New Zealand Gramineae* 5 (2000).

**TYPE** from New Zealand. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: New Zealand: Dun Mt. Nelson, 4000 ft [1878], *T.F. Cheesemna s.n.* [1493] (HT: AK-1993. IT: CHR-3704, W).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Latinized form of ultramafic. Growing on soils derived from ultramafic rocks.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Rhizomes short. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations extravaginal. Culms 20–50 cm long. Culm-internodes smooth. Leaf-sheaths 3–4 cm long, ribbed, smooth or scaberulous, glabrous on surface. Leaf-sheath oral hairs ciliate. Leaf-sheath auricles erect, 0.5–1 mm long. Ligule a ciliolate membrane, 0.5–1 mm long, erose. Leaf-blades straight or curved, filiform, conduplicate, 8–12 cm long, 0.6–1.2 mm wide, stiff. Leaf-blade venation comprising 5 vascular bundles, with 7 subepidermal sclerenchyma strands. Leaf-blade surface ribbed, puberulous, hairy adaxially. Leaf-blade margins pubescent. Leaf-blade apex pungent.

**Inflorescence.** Inflorescence a panicle, comprising 15–25 fertile spikelets. Panicle open, linear, 6–12 cm long. Primary panicle branches ascending, 1–2 -nate, 3–8 cm long, bearing 3–5 fertile spikelets on each lower branch. Panicle axis 4–6 noded, smooth or scaberulous. Panicle branches smooth or scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, smooth or scaberulous.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 8–12 mm long, 3–4 mm wide, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1–1.6 mm long, pubescent. Floret callus 0.2–0.5 mm long, pilose, disarticulating transversely or disarticulating obliquely.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.5–4.5 mm long, 0.7–0.8 length of upper glume, membranous, purple, 1-keeled, 1 -veined. Lower glume primary vein scaberulous. Lower glume lateral veins absent. Lower glume margins ciliate. Lower glume apex acute, mucicous or awned, 1 -awned, awn 0.4–0.8 mm long. Upper glume oblong, 3.5–5.3 mm long, 0.75 length of adjacent fertile lemma, membranous, purple, 1-keeled, 3 -veined. Upper glume primary vein scaberulous. Upper glume margins ciliate. Upper glume apex acute, mucicous or awned, 1 -awned, awn 0.5–3 mm long.

**Florets.** Fertile lemma lanceolate, 5–7 mm long, membranous, glaucous, without keel, 5 -veined, more than 3-veined. Lemma margins ciliate. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.5–4.2 mm long overall. Palea 5.5–6 mm long, 2 -veined. Palea keels scaberulous. Palea surface puberulous, hairy on back or on margins. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, 1–1.2 mm long, membranous, glabrous or ciliate, 2-toothed. Anthers 3, 2–3 mm long, yellow. Ovary glabrous or pubescent on apex. Caryopsis with adherent pericarp, 3.5 mm long, glabrous or hairy at apex. Embryo 0.15 length of caryopsis. Hilum linear, 1 length of caryopsis.

**Distribution (TDWG). Continent.** Australasia.

**Country /Province /State.** New Zealand. New Zealand South I.

**Festuca undata** Stapf. *Hook. f. Fl. Brit. Ind.* vii. 350. (1896).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N.L.Bor, *Grasses of Burma, Ceylon, India and Pakistan* (1960).

**TYPE** from India. **Basionym or Replaced Name:** *Festuca stapfii*. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Sikkim: 12,000 ft, *J.D. Hooker* (HT: ?) *Bromus* no. 16, *Herb. Ind. Or., H.f. & T.*

**Illustrations (Books):** H.J.Noltie, *The Grasses of Bhutan* (2000) (537, Fig.12), S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 317).

**Derivation** (Clifford & Bostock 2007): L. wavy. Surface of leaf-blade undulate.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths light brown, pubescent. Basal innovations intravaginal. Culms erect or geniculately ascending, 30–60 cm long, 2–3 -noded, with 0.5 of their length below uppermost node. Lateral branches lacking. Leaf-sheaths tubular for much of their length, glabrous on surface. Ligule an eciliate membrane. Leaf-blades flat or conduplicate, 4–8 cm long, 1–2 mm wide. Leaf-blade venation with 7–9 secondary veins. Leaf-blade surface glabrous or puberulous, hairy adaxially. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate or ovate, 10–15 cm long. Primary panicle branches 1–2 -nate, indistinct the panicle almost racemose or sparsely divided, 3–7 cm long. Panicle axis

smooth or scaberulous. Panicle branches flexuous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 7–9 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2 mm long, 0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3 mm long, 0.66 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 5 mm long, chartaceous, shiny, without keel, 5 -veined, more than 3-veined. Lemma apex acute, muticous or mucronate or awned, 1 -awned. Principal lemma awn 0–1.5 mm long overall. Palea 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.5–2 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia, Tropical Asia.

**Country /Province /State. China.** China South Central, Tibet. **Indian Subcontinent.** Eastern Himalaya, Nepal.

**TDWG4.** Sichuan, Yunnan, Sikkim, Uttah Pradesh.

### **Festuca uninodis** Hackel ex Stuckert. *Anal. Mus. Buenos Aires, Ser. III. vi. 524* (1906).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Argentina. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *Lillo 3025 bis*, Argentina: Tucuman: Dpto. Tafi: Cerro Munoz, 4150 m (LIL).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. unus, one; nodus, knot. Flowering culms with a single node.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths grey. Basal innovations intravaginal. Culms erect, 35–40 cm long, 1 -noded. Culm-internodes terete, antrorsely scabrous. Leaf-sheaths inflated, open for most of their length, antrorsely scabrous, glabrous on surface. Leaf-sheath auricles erect. Ligule a ciliolate membrane, 1 mm long, truncate. Leaf-blades erect, filiform, convolute, 15–20 cm long, 0.6–0.7 mm wide, stiff. Leaf-blade venation comprising 11 vascular bundles, with 5 inner ridges, with 16 subepidermal sclerenchyma strands, with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous. Leaf-blade apex pungent.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear or oblong, dense, 8–10 cm long. Primary panicle branches appressed, 2 -nate. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate or elliptic, laterally compressed, 9–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 9–10 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acute.

**Florets.** Fertile lemma linear or lanceolate, 6.5–7.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma midvein scabrous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–1.5 mm long overall, deciduous. Palea 1 length of lemma, 2 -veined. Palea keels ciliolate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp, sulcate on hilar side, glabrous. Hilum linear, 0.75 length of caryopsis.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Southern South America.** Argentina Northwest.

**TDWG4.** Catamarca, Jujuy, Tucuman.

**Festuca uralensis** (Tsvelev) Alekseev. *B.yull. Mosk. Obshch. Ispyt. Prir., Biol.*, 78(5): 143 (1973).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. **Basionym or Replaced Name:** *Festuca callieri* subsp. *uralensis* Tzvelev, *Bot. Zurn. (Kiev)* 56(9): 1255 (1971)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: (LE).

HT: *R.Pohle s.n.*, 12 Jul 1905, Europ. Russia: [N Urals]: village Uldar-Kyrta: Chugor rv. (LE). Orig. label: "Fl. Tschugor, Uldar-Kyrta, in rupibus calcareis,...".

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ense, denoting origin. From Ural Mountains, former Soviet Union.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms erect, 15–58 cm long. Leaf-sheaths open for most of their length, with 0.15 of their length closed, with flat margins, glabrous on surface. Ligule an eciliate membrane. Leaf-blades deciduous at the ligule, filiform, conduplicate, angular in section, 0.4–0.6 mm wide, stiff, glaucous. Leaf-blade venation comprising 7 vascular bundles, with 3–5 inner ridges, with sclerenchyma strands absent, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, dense, 3–7.5 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 7–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume linear or lanceolate, 3.7–4.6 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, with scarious margins, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma linear or lanceolate, 4.6–6.1 mm long, chartaceous, glaucous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2–3 mm long overall, 0.33–0.6 length of lemma. Palea 1 length of lemma, 2 -veined. Palea keels scabrous, adorned above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Europe.

**Region.** Eastern Europe.

**Country /Province /State.** Central European Russia, North European Russia.

**TDWG4.**

**Festuca urubambana** Stancik. *Novon* 17(1): 103, f. 2 (2007)

**Basionym or Replaced Name:** Peru: Cuzco: Urubamba, a deep side valley of Río Urubamba, ca. 2–4 km NW of Urubamba, 31 Dec 1962, *H. H. Iltis et al.* 853 (HT: K) endemic.

**Illustrations (Journals):** *Novon* (17:102, Fig.2 (2007)).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Peru.

**Festuca ustulata** (Hack. ex St. Yves) I.Markgraf-Dannenberg. *Veroff. Geobot. Inst. Rubel*, 56: 11 (1976).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Turkey. **Basionym or Replaced Name:** *Festuca ovina* f. *ustulata* Hack. ex St.-Yves, *Bull. Soc. Bot. Fr.* 72:1008 (1925). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Turkey, Mt. Ida: Sintenis 1883:832b (W holotype).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. ustulo, crisp the hair. Hairs on lemma apex curled.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with soft dead sheaths. Basal innovations intravaginal. Culms slender, 12–20 cm long. Leaf-sheaths tubular for much of their length, with 0.5 of their length closed. Leaf-sheath auricles erect, obtuse. Ligule a ciliolate membrane, 0.3–0.6 mm long. Leaf-blades curved, filiform, conduplicate, 0.35–0.65 mm wide, glaucous, without exudate. Leaf-blade venation comprising 5 vascular bundles, with 1–3 inner ridges, with subepidermal sclerenchyma free from veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth, glabrous. Leaf-blade apex acuminate, pungent.

**Inflorescence.** Inflorescence a panicle. Peduncle smooth. Panicle open, lanceolate, 1–2.5 cm long, bearing few spikelets. Primary panicle branches bearing 1 fertile spikelets on each lower branch. Panicle branches hispid. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, pubescent, tip rectangular or widened.

**Fertile Spikelets.** Spikelets comprising 3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 8.4 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or ovate, 4–4.6 mm long, 0.66 length of adjacent fertile lemma, chartaceous, with scarious margins, without keels, 3 -veined. Upper glume margins ciliolate. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4.8–5.3 mm long, 2.1 mm wide, chartaceous, mid-green or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma surface puberulous. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2.5–3 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–2.7 mm long. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Western Asia. Turkey.

**Festuca vaginalis** (Benth.) S. Laegaard. *Novon*, 8(1): 30 (1998).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Ecuador. **Basionym or Replaced Name:** *Poa vaginalis* Benth., *Pl. Hartw.* 261 (1846)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *K.T. Hartweg 1450*, Ecuador: Pichincha (K!; IT: US-88715 (fragm.)).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 144, fig 71 (2007) as subsp. *vaginalis*).

**Derivation** (Clifford & Bostock 2007): *L. vaginalis*, sheath; *-alis*, pertaining to. Leaf-sheath densely hirsute.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 30–50 cm long. Ligule an eciliate membrane. Leaf-blades curved, filiform, conduplicate, 3–6 cm long, 0.5–1 mm wide.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 7–12 cm long. Primary panicle branches bearing spikelets almost to the base. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 7 mm long, 0.8–0.9 length of upper glume, membranous, 1-keeled, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 8 mm long, 1 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume apex obtuse.

**Florets.** Fertile lemma ovate, 7–8 mm long, membranous, pallid, keeled, 5 -veined, more than 3-veined. Lemma surface scaberulous. Lemma apex acuminate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, membranous. Anthers 3. Caryopsis with adherent pericarp. Hilum punctiform.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Colombia, Ecuador.

**Festuca vaginata** Waldst. & Kit. ex Willd. *Enum. Hort. Berol.* 116 (1809).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Hungary. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Hungary: Coll?.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. vagina*, sheath; -ata, possessing. Leaf-sheaths conspicuous.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths purple, persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 25–60 cm long. Culm-internodes smooth. Leaf-sheaths open for most of their length, with 0 of their length closed, with flat margins, glabrous on surface or pubescent. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 0.6–1.2 mm wide. Leaf-blade venation comprising 9–11 vascular bundles, with 3–5 inner ridges, with subepidermal sclerenchyma free from veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, 9–15 cm long. Primary panicle branches ascending or spreading. Panicle branches glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 4.3–6.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 2.4–3.7 mm long, 0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex obtuse or acute.

**Florets.** Fertile lemma ovate, 3–4.5 mm long, chartaceous, glaucous, without keel, 5 -veined, more than 3-veined. Lemma apex obtuse, mucicous or mucronate or awned, 1 -awned. Principal lemma awn 0–1 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Dissemínule comprising a caryopsis and palea.

$2n = 14$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe, Southeastern Europe, Eastern Europe.

**Country /Province /State.** : Austria, Czechoslovakia, Hungary. : Bulgaria, Romania, Yugoslavia. Northwest European Russia, Ukraine.

**Festuca valdesii** M. Gonzalez-Ledesma & S.D. Koch. *Novon*, 8(2): 149 (1998).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Mexico. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Mexico: Coahuila: Mun. de Artaga: Sierra de Zapalinami, alt. 3015 m, 19 May 1990, *J. Hinton et al.* 20278 (HT: CHAPA; IT: CHAP, IEB).

**Illustrations (Journals):** *Novon* (8: 150 Fig.2 (1998)).

**Derivation** (Clifford & Bostock 2007): In honor of Jesus Valdes Reyna.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations extravaginal and intravaginal. Culms geniculately ascending, 80–130 cm long, 1.5–3 mm diam. Leaf-sheaths smooth or scaberulous. Leaf-sheath auricles absent. Ligule a ciliolate membrane, 0.5–1 mm long, truncate. Leaf-blades flat or involute or convolute, 25–35 cm long, 2.4–4 mm wide. Leaf-blade surface ribbed, scaberulous, rough on both sides. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 17–25 cm long. Primary panicle branches 1–2 -nate, bearing 6–12 fertile spikelets on each lower branch. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–14.3 mm long, breaking up at maturity, disarticulating below each fertile floret.



**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4–8.3 mm long, 0.8–0.9 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume surface scabrous, rough at apex. Lower glume apex acute. Upper glume lanceolate, 4.6–10.1 mm long, 0.8–1.1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume primary vein scabrous. Upper glume surface scabrous, rough at apex. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6.2–9.9 mm long, chartaceous, without keel, 3–5 -veined, 0–3 -veined or more than 3-veined. Lemma lateral veins prominent. Lemma surface scaberulous or scabrous. Lemma apex acute, muticous. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, entire. Anthers 3, 2.8–3.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, 4 mm long. Hilum linear.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** Mexico. Northeast Mexico.

**TDWG4.** Coahuila, Neuvo Leon, Tamaulipas.

**Festuca valentina** (St-Yves) I. Markgraf-Dannenberg. *Bot. J. Linn. Soc.*, 76(4): 328 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Spain. **Basionym or Replaced Name:** *Festuca ovina* var. *valentina* St.-Yves, *Candollea* 10:120 (1915). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Spain, Sierra Mariola: Gros.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): from Valentina, now Valencia, Spain.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 32–43 cm long. Culm-internodes smooth. Leaf-sheaths open for most of their length, with 0.25–0.5 of their length closed, with flat margins, smooth or scaberulous, glabrous on surface. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, circular in section, 0.4–0.8 mm wide, mid-green, pruinose. Leaf-blade venation comprising 5–7 vascular bundles, with 3 inner ridges, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth or scaberulous, rough adaxially. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, loose, 5–9.5 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8.1–8.4 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4–4.6 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume margins ciliolate. Upper glume apex acuminate.

**Florets.** Fertile lemma oblong, 5.2–5.8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acuminate, muticous or mucronate or awned, 1 -awned. Principal lemma awn 0–0.7 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : France, Spain.

**Festuca valesiaca** Schleich. ex Gaud. *Agrost. Helv.* i. 242. (1811).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N.L.Bor, *Grasses of Burma, Ceylon, India and Pakistan* (1960), T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Switzerland. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT?: *hb. Schrader s.n.*, Switzerland: In *Valesia prope Branson in apricis* (LE).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (423), S-L Chen et al, *Flora of China*, Illustrations, *Poaceae* (2007) (Fig 317 as ssp *valesiaca* & ssp *sulcata* & ssp *pseudovina*, Fig.337 as ssp *pseudovina*).

**Derivation** (Clifford & Bostock 2007): from *Valesiacus*, now Valois, France.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 25–40 cm long. Leaf-sheaths open for most of their length, with flat margins, glabrous on surface. Ligule an eciliate membrane, 0.3–0.5 mm long. Leaf-blades deciduous at the ligule, filiform, conduplicate, elliptic in section, 7–15 cm long, 0.5 mm wide, glaucous, pruinose. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 3 subepidermal sclerenchyma strands, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous, glabrous.

**Inflorescence.** Inflorescence a panicle. Peduncle scaberulous above. Panicle contracted, oblong, 3–7 cm long. Primary panicle branches ascending. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 5.8–6.9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 2–3.5 mm long, 0.7–0.8 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or oblong, 2.6–3.6 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 3.6–4.9 mm long, chartaceous, glaucous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above, glabrous or pubescent. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1.5–2 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–3 mm long. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear, 1 length of caryopsis.

$2n = 12$  (2 refs TROPICOS).

**Distribution (TDWG). Continent.** Europe, Temperate Asia, Tropical Asia, North America.

**Region.** Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe.

**Country /Province /State.** : Austria, Czechoslovakia, Germany, Hungary, Poland, Switzerland. : France. : Bulgaria, Greece, Italy, Romania, Yugoslavia. Krym, Central European Russia, East European Russia, South European Russia, Northwest European Russia, Ukraine. Siberia, **Middle Asia, Caucasus, Western Asia, China, Mongolia.** Buryatiya, Chita, Irkutsk, Tuva. Kazakhstan, Kirgizistan, Turkmenistan, Tadjikistan. China South Central, Inner Mongolia, Manchuria, China North-Central, Qinghai, Tibet, Xinjiang. Mongolia. **Indian Subcontinent.** Assam, Pakistan. **Northwest USA.** Oregon.

**TDWG4.** Shaanxi, Shanxi. Guizhou, Sichuan, Yunnan.

**Festuca valida** (Uechtr.) Penzes. *Borbasia*, iii. Nos. 1–3, 7 (1941).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Bulgaria. **Basionym or Replaced Name:** *Festuca varia* var. *valida* Uechtr. ex St.-Yves, *Rev. Bretonne Bot. Pure Appl.* 2: 101 (1927)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Europa: Bulgaria, Carniolia,.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L. robust.* Culms erect, stout.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms 65–106 cm long, 1.3–4 mm diam. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 1–1.8 mm long, truncate. Leaf-blades filiform, 0.45–1.5 mm wide. Leaf-blade venation comprising 9–11 vascular bundles, with 7–9 inner ridges, with sclerenchyma strands below veins or above all veins, with subepidermal sclerenchyma attached to veins above and below, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface ribbed.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, interrupted, nodding, 9–13 cm long. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10–12 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 6–7 mm long, 0.75–0.85 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex obtuse.

**Florets.** Fertile lemma oblong, 7.1–9.1 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1–1.8 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3.5–4 mm long. Caryopsis with adherent pericarp, obovoid. Hilum linear. Disseminule comprising a caryopsis.

$2n = 28$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region. Southeastern Europe.**

**Country /Province /State.** : Bulgaria, Greece.

**Festuca vandovii** Velchev. *Phytologia Balcan.* 8(1): 9 . (2002).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Bulgaria. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Bulgaria, Momina Klisoura: Velchev (SOM holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of Vandov.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms erect, 40–85 cm long. Culm-internodes scaberulous. Leaf-sheaths open for most of their length, with 0.25 of their length closed. Leaf-sheath auricles erect. Ligule a ciliolate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 0.4–0.8 mm wide. Leaf-blade venation comprising 7–11 vascular bundles, with 3–7 inner ridges, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with unevenly thickened subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 5–12 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–9 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–14 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.5–6 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume margins ciliolate. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 4.5–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma midvein scabrous. Lemma surface glabrous. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 2.3–3.5 mm long overall, 0.5 length of lemma. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Vegetative proliferation absent, or occurs.

**Distribution (TDWG). Continent.** Europe.

**Region. Southeastern Europe.**

**Country /Province /State.** : Bulgaria.

**Festuca varia** Haenke. *Jacq. Coll.* ii. 94. (1788).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Austria. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Austria, Judenburg: Coll?.

**Illustrations (Books):** G.Hegi, *Flora von Mitteleuropa* 1 (1909).

**Derivation** (Clifford & Bostock 2007): *L. varia*. Species polymorphic and usually with many varieties.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm. Culms 20–35 cm long, 2-noded. Lateral branches lacking. Leaf-sheaths tubular for much of their length, with 0.5 of their length closed, smooth, glabrous on surface. Ligule an eciliate membrane, 0.5–1 mm long, truncate. Leaf-blades curved, deciduous at the ligule, filiform, 0.5 mm wide. Leaf-blade venation with 5–11 secondary veins. Leaf-blade surface glabrous. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate or ovate, dense, 3.5–7 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 6–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 9–12 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 0.5 length of upper glume, scarious, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 0.7–0.8 length of adjacent fertile lemma, scarious, without keels, 3-veined. Upper glume apex obtuse.

**Florets.** Fertile lemma lanceolate, 6–7 mm long, scarious, without keel, 5-veined, more than 3-veined. Lemma apex acute, mucronate or awned, 1-awned. Principal lemma awn 0.5–1 mm long overall. Palea 2-veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex. Hilum linear, 0.66 length of caryopsis.

$2n = 28$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe, Africa, Temperate Asia.

**Region.** Middle Europe, Southeastern Europe, Eastern Europe.

**Country /Province /State.** : Austria. : Italy, Yugoslavia. Ukraine. **Northern Africa.** Morocco. **Caucasus, Western Asia.** North Caucasus, Transcaucasus. Turkey.

**TDWG4.**

**Festuca vasconensis** (I. Markgraf-Dannenberg) P. Auguier & M. Kerguelen. *Bull. Soc. Bot. France*, 123(5–6): 320 (1976).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online, U. Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G. Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from France. **Basionym or Replaced Name:** *Festuca ovina* subsp. *vasconensis* Markgr.-Dann., *Bull. Centr. Etudes Rech. Sci.* 10(2): 321 (1974)

. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: T: *J. Jallu* 1153, 8 Jun 1950, France: Aquitaine: Anglet (L).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Vascon, Spain.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Rhizomes absent or elongated. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 24–50 cm long. Culm-internodes distally pubescent. Leaf-sheaths open for most of their length, with 0.25–0.33 of their length closed, with flat margins, glabrous on surface or puberulous. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades curved, filiform, conduplicate, circular in section, 0.5–0.9 mm wide, without exudate. Leaf-blade venation comprising 7 vascular bundles, with 1 inner ridges, with subepidermal sclerenchyma free from veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, continuous or interrupted, 5.5–10.5 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.9–8.1 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.3–4.6 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 4.6–5.5 mm long, chartaceous, mid-green or glaucous, without keel, 5-veined, more than 3-veined. Lemma margins eciliate or ciliate. Lemma apex acuminate, mucronate or awned, 1

-awned. Principal lemma awn 0.1–0.8 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : France, Spain.

**Festuca venezuelana** Stancmk. *Darwiniana* 41(1–4): 111 (-112; fig. 15b-l) (2003).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Venezuela. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Venezuela: Tachira. Munic. La Grita, Paramo La Negra, cross of the roads to La Grita and Pogonero, 08:13'22"N 71:52'51"W, shrubby margin of the road with Asteraceae, Melastomataceae, *Cordia* sp. etc., 2800 m, 11 Nov 2000, *Staančik 4262* (HT: PRC; IT: AAU, COL, US).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 49, fig 19 (2007)).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating location. From Venezuela.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, culms solitary or caespitose, clumped loosely. Cataphylls inconspicuous. Rhizomes short, fleshy, not obviously scaly. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations extravaginal or intravaginal. Culms robust or of moderate stature, straight, 130–180 cm long, 3 -noded, without nodal roots. Culm-internodes terete. Culm-nodes without exudate, glabrous. Lateral branches lacking. Leaves basal and cauline, 3–5 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined, antrorsely scabrous. Leaf-sheath auricles absent. Ligule an eciliate membrane, 3–5 mm long, membranous, white or brown, lacerate, acute. Leaf-blade base symmetrical. Leaf-blades straight or flexuous, linear in section, 25–40 cm long, 5–11 mm wide, firm or flaccid, mid-green. Leaf-blade midrib evident. Leaf-blade venation distinct, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous, glabrous. Leaf-blade margins scabrous, glabrous. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle straight or flexuous, terete, eglandular, glabrous. Panicle open, ovate, continuous, loose, equilateral or nodding, straight, 20–25 cm long, 10–15 cm wide. Primary panicle branches ascending or spreading, moderately divided, naked below. Panicle branches flexible, straight or arcuate, scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate or ovate, laterally compressed, 14–16 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes 1–1.2 mm long, scaberulous, glabrous. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume lanceolate, 3–4.5 mm long, 0.4–0.5 length of upper glume, chartaceous, pallid or mid-green, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute or acuminate. Upper glume lanceolate, 7–9 mm long, 0.75 length of adjacent fertile lemma, chartaceous, pallid or mid-green, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, symmetrical, 10–11 mm long, chartaceous, pallid or mid-green, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex dentate, 2 -fid, awned, 1 -awned. Principal lemma awn from a sinus, stiff, 2–8 mm long overall. Palea 2 length of lemma, 2 -veined. Palea keels scabrous. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 3–3.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp, lanceolate or ovoid. Hilum linear, 0.75 length of caryopsis.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Northern South America, Western South America. Venezuela. Colombia.

**Festuca ventanica** Speg. *Contr. Fl. Vent.* 72. (1896).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Argentina. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: IT: *Spegazzini 12540*, Nov 1885, Argentina: Buenos Aires: Partida de Saavedra, Sierra de (Herb. Parodi). Cura Malal.

**Illustrations (Books):** A.L.Cabrera, *Flora de la Provincia de Buenos Aires, IV Pt 2 Gramineas* (1970) (126, Fig. 33).

**Derivation** (Clifford & Bostock 2007): L. -cola, dweller. From Sierra de la Ventana, Argentina.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 18–40 cm long, 2 -noded. Leaf-sheaths open for most of their length, with 0.33 of their length closed, glabrous on surface. Ligule a ciliolate membrane. Leaf-blades filiform, conduplicate, 3–10 cm long, 0.7–0.8 mm wide, stiff, glaucous. Leaf-blade venation comprising 5 vascular bundles, with subepidermal sclerenchyma free from veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface glabrous. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate or elliptic, 12–16 cm long. Primary panicle branches appressed, 1 -nate. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 12–15 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1.5–2 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, 5–5.5 mm long, 0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 8–9 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 9–10 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma midvein scabrous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–1.5 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–4.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp, linear, glabrous. Hilum linear, 0.75 length of caryopsis.

$2n = 42$  (2 refs TROPICOS).

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Southern South America.** Argentina Northeast.

**TDWG4.** Buenos Aires.

**Festuca venusta** St.- Yves. *Bull. Jard. Bot. Princ. URSS*, xxviii. 383 (1929).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Russia, Zain-Gegen: Pavlov 252 (LE holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. beautiful, graceful. Mostly a reference to habit.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Rhizomes elongated. Basal innovations extravaginal or intravaginal. Culms slender, 20–50 cm long. Culm-internodes smooth. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, convolute, 0.3–0.8 mm wide. Leaf-blade venation with 5–9 subepidermal sclerenchyma strands. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, nodding, 5–7 cm long. Panicle branches flexuous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6–7 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2 mm long, 0.66 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex obtuse. Upper glume lanceolate, 3 mm long, 0.66 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex obtuse.

**Florets.** Fertile lemma oblong, 4.5–5 mm long, chartaceous, purple, without keel, 5 -veined, more than 3-veined. Lemma lateral veins obscure. Lemma surface scabrous. Lemma apex acute, mucicous. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 0.4–0.8 mm long. Ovary with a few apical hairs. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Siberia, **Mongolia.** Buryatiya, Chita, Irkutsk, Tuva.

**TDWG4.**

**Festuca versicolor** Tausch. *Flora*, 4: 559 (1821).

Regarded by K as a synonym (*F. nigrescens*).

**Accepted by:** T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Czechoslovakia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Czechoslovakia: Coll?.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): *L.* variously colored. Spikelets variously colored as with glumes being green in the lower third, purple in the middle and brown in the upper third.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Flower and Fruit.**  $2n = 14$  (3 refs TROPICOS), or 28 (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe.

**Country /Province /State.** : Czechoslovakia.

**Festuca versuta** Beal. *Grasses N. Amer.* ii. 589 (1896).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from USA. **Basionym or Replaced Name:** *Festuca texana* Vasey, non Steud.(1854), *Bull. Torrey Bot. Club.* 13: 119 (1886). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: : Based on *F. texana* Vasey ; USA, Texas: Reverchon 1618 (K iso, LE, US).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (401), F.W.Gould, *The Grasses of Texas* (1975) (104, Fig. 49).

**Derivation** (Clifford & Bostock 2007): *L.* *versuta*, deceitful. A replacement name to eliminate a homonym.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms 50–100 cm long. Culm-internodes distally glabrous. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.5–1 mm long. Leaf-blades flat or conduplicate, 2–5 mm wide. Leaf-blade surface glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 8–30 cm long, with spikelets clustered towards branch tips. Primary panicle branches drooping. Panicle branches flexuous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 2–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet, gaping. Lower glume lanceolate, 4–7 mm long, 0.75–1 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 5.5–7 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5–7 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma lateral veins obscure. Lemma apex acute or acuminate, muticous or mucronate. Palea 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** North-central USA, South-central USA. Kansas, Oklahoma. Texas.

**Festuca vettonica** V. de la Fuente, E. Ortunez & L.M. Ferrero. *Lazaroa*, 20: 5 (1999).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, slender, 13–26 cm long. Culm-internodes distally glabrous. Leaf-sheaths tubular for much of their

length, with 0.66–0.75 of their length closed, glabrous on surface. Leaf-sheath auricles erect, 0.2–0.6 mm long, obtuse. Ligule a ciliolate membrane, truncate. Leaf-blades curved, conduplicate, elliptic in section or circular in section, 3.2–7.5 cm long, 0.6–0.8 mm wide, pruinose. Leaf-blade venation comprising 7 vascular bundles, with 5 inner ridges, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle, comprising 9–25 fertile spikelets. Panicle open, lanceolate or oblong, 2.4–4.6 cm long. Primary panicle branches 1–5 in number. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 4.8–6 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 1.8–2.4 mm long, 0.75 length of upper glume, chartaceous, much thinner on margins, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 2.5–3.5 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, with scarios margins, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma ovate, 3.5–5.5 mm long, chartaceous, much thinner on margins, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acute, mucronate or awned, 1 -awned. Principal lemma awn 0.8–1.2 mm long overall. Palea 2.4–4.5 mm long. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous.

$2n = 14$  (2 refs TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Southwestern Europe.

**Country /Province /State.** : Spain.

**Festuca vierhapperi** Hand.-Mazz. *Anz. Akad. Wiss. Wien*, lvii. 176. (1920).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China, Yunnan, Dschungdien: Handel-Mazzetti.

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 330).

**Derivation** (Clifford & Bostock 2007): in honor of Fritz Vierhapper (1876–1902) Austrian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial. Basal innovations extravaginal. Culms geniculately ascending, 60–90 cm long. Lateral branches lacking. Leaf-sheaths open for most of their length, pubescent. Ligule an eciliate membrane. Leaf-blades conduplicate, 13–17 cm long, 3.5–5.5 mm wide. Leaf-blade venation with 13 secondary veins. Leaf-blade surface pubescent, hairy adaxially. Leaf-blade margins scabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 13–17 cm long. Primary panicle branches 3–6 cm long, bearing 5–10 fertile spikelets on each lower branch. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets obovate, laterally compressed, 9–13 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3.5–4 mm long, 0.5–0.66 length of upper glume, membranous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 7–8 mm long, 1 length of adjacent fertile lemma, membranous, without keels, 3–5 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6.5–8 mm long, membranous, without keel, 3–5 -veined, 0–3 -veined or more than 3-veined. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 3.5–7.5 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central, Tibet.

**TDWG4.** Sichuan, Yunnan.



**Festuca villipalea** (St.-Yves) E.B.Alekseev. *Bot. Zhurn.*, 70(9): 1244 (1985).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Bolivia. **Basionym or Replaced Name:** *Festuca dissitiflora* var. *villipalea* St.-Yves, *Candollea* 3:250 (1927). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Bolivia, Palca: Pflanz 289 (B holo).

**Illustrations (Books):** S.A.Rennoize, *Gramineas de Bolivia* (1998) (110, Fig 25).

**Derivation** (Clifford & Bostock 2007): L. villi, long weak hairs; palea, chaff. Palea densely hairy.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 50–70 cm long, 1-noded, with 0.5 of their length below uppermost node. Culm-internodes terete, smooth or scaberulous. Leaf-sheaths inflated, tubular for much of their length, with 1 of their length closed, mostly shorter than adjacent culm internode, smooth or scaberulous, glabrous on surface. Ligule a ciliate membrane, 1 mm long, pubescent on abaxial surface, truncate. Leaf-blades filiform, conduplicate, 1–1.5 mm wide, stiff. Leaf-blade venation with subepidermal sclerenchyma attached to veins above and below, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous, rough abaxially, puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, lanceolate, dense, 10–15 cm long. Primary panicle branches ascending, 2-nate. Panicle axis scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 9–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes zig-zag, 1–2.5 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3–5.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1-veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4–5 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3-veined. Upper glume primary vein scabrous. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6.5–7 mm long, chartaceous, purple, without keel, 5-veined, more than 3-veined. Lemma apex acute, awned, 1-awned. Principal lemma awn 1–1.5 mm long overall. Palea 1 length of lemma, 2-veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America, Southern South America. Bolivia, Peru. Argentina Northwest.

**TDWG4.** Catamarca, Jujuy, La Rioja, Mendoza, Salta, San Juan, Tucuman.

**Festuca violacea** Ser. ex Gaud. *Alpina*, 3: 57 (1808).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from France. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: Diese Art hat Herr v. Haller lange im Garten gehabt. Sie ist darinnen unverdudert geblieben (LAU-Schleicher (specimen on the bottom left)). LT designated by Signorini & Foggi, *Candollea* 52: 411 (1997).

**Illustrations (Books):** G.Hegi, *Flora von Mitteleuropa* 1 (1909) (& as var. *norica*).

**Derivation** (Clifford & Bostock 2007): L. violet. Spikelets, stigmas or anthers violet-colored.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms erect, 20–45 cm long. Culm-internodes smooth, distally glabrous. Lateral branches lacking. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, 10–20 cm long, 0.3–0.5 mm wide. Leaf-blade surface ungrooved, pubescent, sparsely hairy, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, nodding, 3–11 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 8–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume oblong, 2.5–2.75 mm long, 0.75 length of upper glume, chartaceous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume

apex acute. Upper glume lanceolate, 3.5–3.75 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 4.75–6 mm long, chartaceous, much thinner above, much thinner on margins, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–2 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Europe, Temperate Asia.

**Region.** Middle Europe, Southwestern Europe, Southeastern Europe.

**Country /Province /State.** : Switzerland. : France. : Greece, Italy, Yugoslavia. **Western Asia.** Iraq.

### **Festuca viridula** Vasey. *Illustr. N. Am. Grass.* ii. t. 93 (1893).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from USA. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: USA: California: [prob. Summit Station], *Bolander*Originally, only specimen cited was Bolander's California spec. equals *F. gracilima*. Vasey published the name again in *Ctrib. U.S. Nat. Herb* 1: 279. later in 1893, where he cited the second specimen (Suksdorf's collection from Mt. Adams, Washington) as the type.

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (441).

**Derivation** (Clifford & Bostock 2007): *L. viridis*, green; -ula, diminutive. Plant in whole or in part pale-green, often glaucous.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms erect, 40–80 cm long. Leaf-sheaths striately veined, glabrous on surface or pubescent. Ligule an eciliate membrane, 0.5 mm long. Leaf-blades flat or involute, 5–10 cm long, 1.5–2.5 mm wide. Leaf-blade surface puberulous, hairy adaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 6–15 cm long. Primary panicle branches ascending or spreading, 2 -nate. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 10–12 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1–1.5 mm long, eventually visible between lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.5–5 mm long, 0.5–0.75 length of upper glume, membranous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4.5–7 mm long, 0.75 length of adjacent fertile lemma, membranous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 6–8.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous. Lemma apex acute, muticous or mucronate. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–4 mm long. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** **Western Canada, Northwest USA, Southwestern USA.** British Columbia. Idaho, Montana, Oregon, Washington. California, Nevada.

### **Festuca vivipara** (L.) Sm. *Brit. Fl.* i. 114 (1800).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Sweden. **Basionym or Replaced Name:** *Festuca ovina* var. *vivipara* L., *Fl. Suec. (ed. 2)* 31 (1755)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *Anon.*, 1B, Lappo (LINN-92.5). LT designated by Jarvis et al., *Watsonia* 16: 301 (1987).

**Illustrations (Books):** No illustration found (BKS).

**Images:** R.Darke, *The Encyclopaedia of Grasses for Liveable Landscapes* (2007);

**Derivation** (Clifford & Bostock 2007): *L. vivus*, living; *pario*, bring forth. With bulbils replacing spikelets.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Rhizomes absent or short. Culms 8–20 cm long. Lateral branches lacking. Leaves mostly basal. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, involute, 2–7 cm long, 0.5 mm wide. Leaf-blade surface glabrous.

**Inflorescence.** Inflorescence a panicle. Panicle open, oblong or ovate, 2–10 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–9 fertile florets (but usually proliferating), with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate or cuneate, laterally compressed, 10–15 mm long (as bulbils), falling entire.

**Glumes.** Glumes similar, shorter than spikelet. Lower glume lanceolate, 2–4 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume lanceolate, 3–5 mm long, 0.66–0.8 length of adjacent fertile lemma, chartaceous, without keels, 1 -veined. Upper glume lateral veins absent. Upper glume apex acuminate.

**Florets.** Fertile lemma when unaltered lanceolate, 4–6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, mucicous. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

Vegetative proliferation occurs.

$2n = 28$  (3 refs TROPICOS), or 42 (1 ref TROPICOS), or 52 (1 ref TROPICOS), or 56 (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe, Temperate Asia, North America.

**Region. Northern Europe, Eastern Europe.**

**Country /Province /State.** : Finland, Foroyar, Great Britain, Iceland, Ireland, Norway, Svarlbad, Sweden. East European Russia, North European Russia. Siberia, Russian far east. Irkutsk, Krasnoyarsk, Tuva. Kamchatka. **Subarctic America.** Greenland.

**TDWG4.**

**Festuca viviparoidea** Krajina ex L.E. Pavlick. *Canad. J. Bot.*, 62(11): 2454 (1984).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Greenland. **Basionym or Replaced Name:** *Festuca vivipara* subsp. *glabra* S. Frederiksen, *Nordic J. Bot.*, 1(3): 288 (1981). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: : Based on *F. vivipara* subsp. *glabra* ; Greenland, Jameson Land: Holmen 807 (C holo).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (435, as subspecies *viviparoidea* & *krajinae*).

**Derivation** (Clifford & Bostock 2007): *L. vivus*, living; *parturo*, bring forth young; *-oidea*, indicating resemblance. Lemmas replaced by bracts that subtend pseudoviviparous shoots.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped moderately or densely. Rhizomes absent or elongated. Butt sheaths green or purple, persistent and investing base of culm, with fibrous dead sheaths. Basal innovations extravaginal or intravaginal. Culms erect, 11–28 cm long, 1 -noded. Culm-internodes distally glabrous or pubescent. Lateral branches lacking. Leaf-sheaths open for most of their length or tubular for much of their length, without keel, glabrous on surface or puberulous. Leaf-sheath auricles erect. Ligule a ciliate membrane, 0.1–0.5 mm long. Collar glabrous. Leaf-blades conduplicate, 3–16 cm long, 0.35–0.6 mm wide, glaucous. Leaf-blade venation comprising 5–7 vascular bundles, with 1 inner ridges, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface puberulous, hairy on both sides.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, dense, 1–3 cm long, with spikelets clustered towards branch tips. Primary panicle branches appressed, 1 -nate, 0.2–1 cm long, bearing 1–2 fertile spikelets on each lower branch. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 1–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets laterally compressed, 7–25 mm long, 1.5–3 mm wide, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar. Lower glume 3–4.2 mm long, 1 -veined. Lower glume lateral veins absent. Lower glume surface glabrous or puberulous, hairy generally or at apex. Lower glume margins eciliate or ciliate. Upper glume 3.6–6 mm long, 3 -veined. Upper glume surface glabrous or puberulous, hairy generally or at apex. Upper glume margins eciliate or ciliate.

**Florets.** Fertile lemma 3.6–6.9 mm long, without keel, 5 -veined, more than 3-veined. Lemma lateral veins obscure. Lemma surface puberulous, hairy all along or above. Lemma apex mucicous or awned, 1 -awned.

Principal lemma awn 0–0.8 mm long overall. Palea 4.8–5.2 mm long. Palea surface pubescent, hairy on back. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2 mm long. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Vegetative proliferation occurs.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State. Subarctic America, Western Canada, and Northwest USA.** Alaska, Yukon, Greenland. British Columbia.

**Festuca vizzavonae** Ronniger. *Verh. Zool.-Bot. Ges. Wien*, lxxviii. p. 226. (1918).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Corsica. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *Ronniger s.n.*, 25 Jun 1914, Corsica: Col de Vizzavona, 1200 m (W-22344 [herb. Ronniger]). LT designated by Foggi & Signorini, *Parlatore* 2: 130 (1997).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): from Col de Vizzavona, Corsica.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms 6–20 cm long. Leaf-sheaths tubular for much of their length, with 1 of their length closed, with flat margins, glabrous on surface. Ligule an eciliate membrane, acuminate. Leaf-blades filiform, conduplicate, 0.3–0.63 mm wide. Leaf-blade venation comprising 5 vascular bundles, with 1–3 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, 2.5–3 cm long. Primary panicle branches sparsely divided. Panicle branches glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8.4–9.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume linear, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume linear, 4.2–5.6 mm long, 0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acuminate.

**Florets.** Fertile lemma linear or lanceolate, 4.9–6.5 mm long, 1.4–2 mm wide, chartaceous, mid-green, without keel, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 3–4.9 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 1.5–2 mm long. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region. Southwestern Europe, Southeastern Europe.**

**Country /Province /State.** : Corsica, Sardinia. : Greece, Italy.

**Festuca vojtkoi** Penksza. *Acta Bot. Hung.* 47(1–2): 140 (-142; fig. 1) (2005).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Hungary. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Hungary, Bukk Mts.: Penksza BP667521 (BP holo).

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Stolons absent. Culms 20–35 cm long. Culm-internodes distally glabrous. Lateral branches lacking. Leaf-sheaths open for most of their length, striately veined, pilose. Ligule a ciliolate membrane. Leaf-blades filiform, conduplicate, 0.3–0.7 mm wide. Leaf-blade venation with 7 secondary veins, 3 subepidermal sclerenchyma strands. Leaf-blade surface pilose, hairy abaxially.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 4–6.5 cm long. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6.2–8 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume oblong, 3.2–3.8 mm long, 0.75–0.85 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.9–4.5 mm long, 0.85–0.9 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 4.6–5.1 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface pilose, hairy above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2.8–4.8 mm long overall. Palea 4.4–5.2 mm long, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, ellipsoid, 2.8–3 mm long. Hilum linear.

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe.

**Country /Province /State.** : Hungary.

### **Festuca vulpoides** Steud. *Syn. Pl. Gram.* 305. (1854).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from South Africa. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: South Africa: Drege (K iso).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. -oides, resembling. With inflorescences similar to those of *Vulpia*.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 50–100 cm long. Leaves cauline. Leaf-sheaths open for most of their length, with flat margins. Ligule an eciliate membrane, 0.5 mm long. Leaf-blades 10–25 cm long, 3–7 mm wide.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, 15–30 cm long. Primary panicle branches appressed or ascending, bearing 1–5 fertile spikelets on each lower branch. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 15–20 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4–8 mm long, 0.5–0.9 length of upper glume, chartaceous, without keels, 3 -veined. Lower glume lateral veins ribbed. Lower glume apex acute. Upper glume lanceolate, 8–9 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume lateral veins ribbed. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 8–10 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex acuminate, mucicous or mucronate or awned, 1 -awned. Principal lemma awn 0–4 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State.** Southern Africa. Eastern Cape.

### **Festuca wagneri** (Degen, Thaisz & Flatt) Krajina. *Acta Bot. Bohem.* 8:61 (1929).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Hungary. **Basionym or Replaced Name:** *Festuca sulcata* subvar. *wagneri* Degen, Thaisz & Flatt, *Magyar Bot. Lapok* 4: 30 (1905)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Hungary, Temes: Wagner (K iso).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of Janos (Joannes) Wagner (1870–1955) Hungarian botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 30–42 cm long. Culm-internodes distally pubescent. Leaf-sheaths open for most of their length, with 0.1 of their length closed, with flat margins,

pubescent. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 0.4–0.6 mm wide, glaucous. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins. Leaf-blade surface scabrous, pilose, hairy on both sides.

**Inflorescence.** Inflorescence a panicle. Panicle open, continuous, 4–7.5 cm long. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5.5–7.8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3–4 mm long, 0.66–0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface glabrous or puberulous. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 4.6–5.2 mm long, chartaceous, glaucous, without keel, 5 -veined, more than 3-veined. Lemma surface glabrous or pubescent. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–1.7 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe.

**Region.** Middle Europe, Southeastern Europe.

**Country /Province /State.** : Czechoslovakia, Hungary. : Romania, Yugoslavia.

**Festuca wallichiana** E.B. Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 83(4): 120 (1978).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Xizang: steppe, dry slopes, 3300 m.

**Illustrations (Books):** H.J. Noltie, *The Grasses of Bhutan* (2000) (539, Fig. 13).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating connection. In honor of Nathaniel Wallich (1786–1854) Danish-born physician and sometime superintendent Calcutta Botanic Gardens.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 7–35 cm long. Culm-internodes smooth or scaberulous. Lateral branches lacking. Leaf-sheaths open for most of their length, with 0.33–0.5 of their length closed, glabrous on surface or pubescent. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 0.3–0.55 cm long, glaucous, pruinose. Leaf-blade venation comprising 5(–7) vascular bundles, with (3–)5 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface scabrous. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 1.5–4 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 5–5.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 3.2–3.8 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.6–1.8 mm long overall. Palea 2 -veined. Palea keels scabrous, adorned above, with 0.33 of their length adorned. Palea apex emarginate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 1.1–1.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia, Tropical Asia.

**Country /Province /State.** China. Tibet. Indian Subcontinent. Eastern Himalaya, India, Nepal.

**TDWG4.** Bhutan, Sikkim.

**Festuca washingtonica** E.B. Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 87(2): 115 (1982).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from USA. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: USA, Washington, Chelan: Smith (LE holo).

**Illustrations (Books):** M.E.Barkworth et al, *Flora of North America north of Mexico Vol 24 Poaceae*, part 1 (2007) (442).

**Derivation** (Clifford & Bostock 2007): L. -ica, belonging to. From Washington State, USA.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Rhizomes absent. Basal innovations extravaginal or intravaginal. Culms erect, 60–100 cm long, 1–2 -noded. Leaf-sheaths tubular for much of their length, mostly shorter than adjacent culm internode, glabrous on surface. Leaf-sheath auricles absent. Ligule a ciliolate membrane, 0.2–0.5 mm long. Collar glabrous or pilose. Leaf-blades flat or conduplicate, 13–35 cm long, 2–3 mm wide, 8.5–17 cm long at summit of culm, stiff, glaucous. Leaf-blade venation comprising 7–9 vascular bundles, with 7 inner ridges, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface puberulous, hairy adaxially or on both sides.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, dense, 10–15 cm long, with spikelets clustered towards branch tips. Primary panicle branches appressed, 1–2 -nate, 0.5–6 cm long, bearing 2–8 fertile spikelets on each lower branch. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–10 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets laterally compressed, 9.5–10 mm long, 1.5–2.5 mm wide, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 0.9–1.5 mm long, scaberulous.

**Glumes.** Glumes persistent, dissimilar. Lower glume 3.5–5.5 mm long, 1 -veined. Lower glume lateral veins absent. Lower glume surface puberulous, hairy at apex. Lower glume margins ciliate. Upper glume 5.5–7 mm long, 3 -veined. Upper glume surface puberulous, hairy at apex. Upper glume margins ciliate.

**Florets.** Fertile lemma 6.5–11 mm long, 5 -veined, more than 3-veined. Lemma lateral veins obscure. Lemma apex awned, 1 -awned. Principal lemma awn 1.5–3.5 mm long overall. Palea 6–7 mm long. Palea surface pubescent, hairy on back.

**Flower and Fruit.** Lodicules 1, 1–1.5 mm long, glabrous. Anthers 3, 3–4 mm long. Ovary pubescent on apex.

Vegetative proliferation absent.

**Distribution (TDWG). Continent.** North America.

**Country /Province /State.** Northwest USA. Washington.

**Festuca weberbaueri** Pilger. *Engl. Jahrb.* vii. 512 (1906).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Peru. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: A. *Weberbauer 473*, 3 Feb 1902, Peru: Puno: ad Azangaro in clacareis, 4000 m (B; IT: BAA-1357 (fragm. ex B), US-81610).

**Illustrations (Books):** M.N.Correa, *Flora Patagonica* Parte III, Gramineae (1978) (107, Fig 62).

**Derivation** (Clifford & Bostock 2007): in honor of August Weberbauer (1871–1948) German botanist resident in Peru.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms 30–40 cm long. Lateral branches lacking. Leaf-sheaths open for most of their length, glabrous on surface. Ligule a ciliolate membrane, 0.3–0.5 mm long. Leaf-blades filiform, conduplicate, 6–20 cm long, 0.5–0.7 mm wide, stiff. Leaf-blade surface smooth or scaberulous, rough abaxially, pubescent, hairy adaxially. Leaf-blade apex acute, hardened.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 4–10 cm long. Primary panicle branches appressed, 2 -nate. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1–1.5 mm long, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface

scabrous, rough above. Lower glume apex acute. Upper glume lanceolate, 5–5.5 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface scabrous, rough above. Upper glume apex acute.

**Florets.** Fertile lemma elliptic, 5–6.5 mm long, chartaceous, much thinner on margins, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acute, mucicous or mucronate. Palea 1 length of lemma, 2 -veined. Palea keels ciliolate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2–2.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America, Southern South America. Peru. Argentina South, Argentina Northwest.

**TDWG4.** Jujuy, La Rioja. Neuquén.

### ***Festuca werdermannii* St.- Yves. *Candollea*, iii. 301 (1927).**

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Chile. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: LT: *E. Werdermann* 209, Dec 1923, Chile: Coquimbo: Baños del Toro, ca. 3600 m (G; ILT: B, S, SI, US-1498126). LT designated by Alexeev, Bot. Zhurn. (Moscow & Lenigrad): 69: 349 (1984).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Erich Werdermann (1892–1959) German botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms erect, 25–40 cm long, 1–2 -noded. Leaf-sheaths glabrous on surface or puberulous. Ligule a ciliolate membrane, 1–2 mm long, pubescent on abaxial surface. Leaf-blades filiform, convolute, angular in section, 3–7 cm long, 0.9–1.1 mm wide. Leaf-blade venation comprising 3–5 vascular bundles, with subepidermal sclerenchyma free from veins. Leaf-blade surface pubescent, hairy adaxially. Leaf-blade apex acuminate.

**Inflorescence.** Inflorescence a panicle. Panicle open, linear, 5–10 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–9 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1–1.5 mm long, smooth.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2.3–3 mm long, 0.75–0.9 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 2.5–4 mm long, 0.66 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4–6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma apex obtuse or acute, mucicous. Palea 2 -veined. Palea keels smooth. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2, 0.7 mm long. Anthers 3, 2.3 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, obovoid, 4.5 mm long, hairy at apex. Hilum linear, 0.5 length of caryopsis.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Southern South America. Chile North, Chile Central.

Tarapaca, Antofagasta, Atacama, Coquimbo. Antofagasta, Atacama. Coquimbo.

### ***Festuca willdenowiana* Schult. *Mant.* ii. 650. (1824).**

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Mexico. **Basionym or Replaced Name:** *Festuca mexicana* Willd. ex. Spreng., non Roem. & Schult., *Syst.* 1: 356 (1825). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: : Based on *F. mexicana* Willd. ; Mexico: Coll?.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating connection. In honor of Carl Ludwig Willdenow (1765–1812) German botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.



**Habit, Vegetative Morphology.** Perennial, caespitose. Culms 30–60 cm long. Lateral branches lacking. Ligule an eciliate membrane. Leaf-blades flat or conduplicate, 5–12 cm long, 1 mm wide. Leaf-blade surface smooth.

**Inflorescence.** Inflorescence a panicle. Panicle open, elliptic, 5–10 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 8–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes eventually visible between lemmas, scaberulous.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3 mm long, 0.75 length of upper glume, membranous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4 mm long, 0.66 length of adjacent fertile lemma, membranous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 6 mm long, membranous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1–2 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** North America, South America.

**Country /Province /State. Mexico.** Central Mexico, Gulf (Mexico), Southwest Mexico, Southeast Mexico. Mesoamerica. Guatemala.

Distrito Federal, Mexico State, Puebla. Veracruz. Guerrero, Jalisco, Oaxaca. Chiapas.

**Festuca wolgensis** P. Smirn. *Bull. Soc. Nat. Mosc., Biol., n. s., l. Livr.* 1–2, 100 (1945).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983).

**TYPE** from Russia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Russia, Vasselaja Poljana: Smirnov (MW holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Volga River, Russia.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms 30–58 cm long. Culm-internodes antrorsely scabrous, distally glabrous or pubescent. Leaf-sheaths open for most of their length, with 0 of their length closed, with flat margins, pubescent. Leaf-sheath auricles erect, obtuse. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, elliptic in section, 0.5–0.75 mm wide, glaucous. Leaf-blade venation comprising 5–7 vascular bundles, with 3–5 inner ridges, with sclerenchyma strands widened to form a discontinuous subepidermal layer or with unevenly thickened subepidermal sclerenchyma layer on the underside. Leaf-blade surface pubescent, densely hairy, hairy on both sides.

**Inflorescence.** Inflorescence a panicle. Panicle open, interrupted, 7.5–12 cm long. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes obscured by lemmas.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.7–4.1 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface scabrous, rough above. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 5.2–5.8 mm long, chartaceous, mid-green, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, rough above. Lemma margins ciliate. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–1.5 mm long overall. Palea 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Caryopsis with adherent pericarp, ellipsoid. Hilum linear. Disseminule comprising a caryopsis and palea.

**Distribution (TDWG). Continent.** Europe, Temperate Asia.

**Region. Eastern Europe.**

**Country /Province /State.** Central European Russia, East European Russia, South European Russia, Northwest European Russia. Siberia. West Siberia.

**TDWG4.**

**Festuca woodii** Stancmk. *Darwiniana* 41(1–4): 107 (figs. 2g-1, 18c) (2003).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Colombia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *J.R.I. wood 5254*, 29 Oct 1985, Colombia: Boyaca: Sierra Nevada del Cocuy, Hda. La Esperanza, 3700 m, In crevices of limestone pavement on a steep, open dip slope. Vigorously tufted perennial more than 1 m. Inflorescence purple brown. (COL; IT: FMB, MO).

**Illustrations (Journals):** *Contrib. U.S.Nat. Herbarium* (56: 41, fig 15 (2007)).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, culms solitary or caespitose, clumped loosely. Cataphylls inconspicuous. Rhizomes short, fleshy, not obviously scaly. Basal innovations extravaginal or intravaginal. Culms erect, of moderate stature, straight, 50–150 cm long, 2–4 -noded, without nodal roots. Culm-internodes terete. Culm-nodes glabrous. Lateral branches lacking. Leaves basal and cauline, 3–5 per branch. Leaf-sheaths tight, unthickened at base, open for most of their length, without keel, striately veined, pilose. Leaf-sheath auricles absent. Ligule a ciliolate membrane, 0.5–1.1 mm long, membranous, translucent or white, entire, truncate. Leaf-blade base symmetrical. Leaf-blades straight or flexuous, linear in section, 15–20 cm long, 4–7 mm wide, firm or flaccid, dark green. Leaf-blade midrib evident. Leaf-blade venation distinct, with subepidermal sclerenchyma strands similar in size, with subepidermal sclerenchyma attached to veins above and below, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface glabrous. Leaf-blade margins scabrous, glabrous. Leaf-blade apex obtuse or attenuate.

**Inflorescence.** Inflorescence a panicle, with 1 peduncles per sheath. Peduncle terete, eglandular, glabrous. Panicle open, ovate or pyramidal, continuous, loose or effuse, equilateral, straight, 15–20 cm long, 1–2 cm wide. Primary panicle branches spreading, moderately divided, naked below. Panicle branches flexible, straight or arcuate, scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 12–14 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus glabrous. Rhachilla internodes scaberulous, pilose. Floret callus glabrous.

**Glumes.** Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume lanceolate, 4.5–5.5 mm long, 0.8 length of upper glume, hyaline or chartaceous, pallid or mid-green or purple, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 2.2–3.5 mm long, 0.5 length of adjacent fertile lemma, chartaceous, pallid or mid-green or purple, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, symmetrical, 5–6.5 mm long, chartaceous, pallid or dark green or purple, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous. Lemma apex acuminate, mucous. Palea 2 length of lemma, 2 -veined. Palea keels smooth or scaberulous. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 0.8–1.2 mm long. Ovary glabrous. Caryopsis with adherent pericarp, lanceolate or oblong. Hilum linear, 0.75 length of caryopsis.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Western South America. Colombia, Ecuador.

**Festuca x miscella** S.J. Darbyshire. *Journ. Bot. Instit. Texas* 835 (2007).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Festuca x gonzalez-ledesmae** S.J. Darbyshire. *Journ. Bot. Instit. Texas* 1: 832 (2007).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Festuca x villosa-vivipara** (Rosenvinge) E.B.Alekseev. *Novosti Sist. Vyssh. Rast.*, 22: 23 (1985).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Greenland. **Basionym or Replaced Name:** *Festuca ovina* var. *villosavivipara* Rosen, *Medd. Groenl.* 3:282 (1892). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Greenland, Julianehaab: Coll? ; Greenland, Ilua: Fru Ldhlm. ; Greenland, Sarkak: Hartz.

**Illustrations (Books):** No illustration found (BKS).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Festuca xanthina** Roem. & Schult. *Syst. ii.* 721 (1817).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Austria. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Austria, Mahadia: Coll?.

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk. xanthos, yellow; -ina, resembling. Spikelets yellowish.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Basal innovations intravaginal. Culms 25–54 cm long. Culm-internodes retrorsely scabrous. Leaf-sheaths open for most of their length, with 0.1–0.25 of their length closed, glabrous on surface. Ligule an eciliate membrane, 0.4–2 mm long. Leaf-blades filiform, conduplicate, 0.3–0.7 mm wide. Leaf-blade venation comprising 7 vascular bundles, with 3–5 inner ridges, with sclerenchyma strands above some veins or above all veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface smooth. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, 4–9.5 cm long. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–14 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume elliptic, 5.6 mm long, 0.75–1 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume apex obtuse.

**Florets.** Fertile lemma ovate, 4.6–8.5 mm long, chartaceous, much thinner on margins, yellow, without keel, 5 -veined, more than 3-veined. Lemma apex acute, mucicous. Palea 2 -veined. Palea surface puberulous, hairy above. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 3–5 mm long. Caryopsis with adherent pericarp, obovoid. Hilum linear. Disseminule comprising a caryopsis and palea.

$2n = 14$  (1 ref TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region. Southeastern Europe.**

**Country /Province /State.** : Romania, Yugoslavia.

**Festuca xenophontis** I. Markgraf-Dannenberg. *Willdenowia*, 11(2): 204 (1981).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Turkey. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Turkey, Zigana Dag: Markgraf (Z holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor Xenophon (431-C. 350 B.C.E) Greek historian who, as a soldier, passed through the area where the species was collected.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with soft dead sheaths. Basal innovations intravaginal. Culms 27–54 cm long. Culm-internodes smooth, distally glabrous. Leaf-sheaths open for most of their length, with 0.25–0.5 of their length closed, glabrous on surface or puberulous. Leaf-sheath auricles erect. Ligule an eciliate membrane, 0.2 mm long. Leaf-blades filiform, conduplicate, elliptic in section, 9–15 cm long, 0.7–0.9 mm wide, pruinose. Leaf-blade venation comprising 5 vascular bundles, with 3–5 inner ridges, with 3 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation or with sclerenchyma strands widened to form a discontinuous subepidermal layer. Leaf-blade surface smooth, glabrous. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Peduncle antrorsely scabrous above. Panicle open, lanceolate, dense, 3.5–8.5 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, tip rectangular.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic or oblong, laterally compressed, 7–9.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate or ovate, 3.5–5.2 mm long, chartaceous, with scarious margins, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 4.6–6.6 mm long, 2.1–2.5 mm wide, chartaceous, glaucous or light brown, suffused with last colour, pruinose, without keel, 5 -veined, more than 3-veined. Lemma surface puberulous, hairy above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 1.5–4 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Western Asia. Turkey.

### **Festuca yalaensis** Joch.Mull & Catalan. *Darwiniana* 48: 88 (2010).

**TYPE** from Argentina. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Jujuy, Dept. Belgrano, Lagunas de Yala, small valley W of Laguna Rodeo, c. 2200 m, 24.11.2008, *Muller & Catalan 10522* (holo: JE; iso: LPB, M, MCNS, RB, SI, W).

**Illustrations (Journals):** *Darwiniana* (48: 89, Fig.1 (2010)).

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Southern South America. Argentina Northwest.

Jujuy.

### **Festuca yemenensis** E.B. Alekseev. *Byull. Mosk. Obshch. Ispyt. Prir., Biol.*, 91(3): 118 (1986).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

**TYPE** from Yemen. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Yemen, Bait Yareesh: Wood 2406 (K holo).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Yemen.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Culms 25–50 cm long, 1–1.5 mm diam., 3–4 -noded, with 0.5 of their length below uppermost node. Leaf-sheaths tubular for much of their length, with 0.5 of their length closed, ribbed, scaberulous, glabrous on surface. Ligule an eciliate membrane, 0.5 mm long, truncate. Leaf-blades filiform, conduplicate, 40–55 cm long, 0.8 mm wide, glaucous. Leaf-blade venation with 7 secondary veins, 5 inner ridges, 9 subepidermal sclerenchyma strands, subepidermal sclerenchyma free from veins. Leaf-blade surface smooth, puberulous, hairy adaxially. Leaf-blade apex obtuse.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 10–13 cm long. Primary panicle branches appressed, 1–3 cm long. Panicle branches scaberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 8–9 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3–3.5 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface asperulous, rough at apex. Lower glume apex acute. Upper glume lanceolate, 4–5 mm long, 0.7–0.8 length of adjacent fertile lemma, chartaceous, without keels, 3 -veined. Upper glume surface asperulous, rough at apex. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 5.5–6.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scaberulous, rough above. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2.5–3.5 mm long overall. Palea 2 -veined. Palea keels smooth. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.2–2.4 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Arabian Peninsula. Yemen.

**Festuca yulungschanica** E.B.Alekseev. *Bull. Mosk. Obshch. Ispyt. Prir., Biol.*, 83(4): 116 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: subalpine grassy places, mountain slopes, 3300–3700 m.,

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. *-ica*, belonging to. From Yulong Shan, Yunnan Province, China.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Basal innovations intravaginal. Culms erect, 18–26 cm long. Culm-internodes distally glabrous. Lateral branches lacking. Leaf-sheaths open for most of their length, with 0.3–0.4 of their length closed, glabrous on surface. Ligule an eciliate membrane. Leaf-blades filiform, conduplicate, angular in section, 0.4–0.6 cm long. Leaf-blade venation comprising 5 vascular bundles, with 3 inner ridges, with 7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface smooth. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Panicle contracted, linear, 4.5–6 cm long. Panicle axis scabrous. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 8–10 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, chartaceous, without keels, 3 -veined. Upper glume apex acute.

**Florets.** Fertile lemma lanceolate, 5–5.5 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface glabrous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1.5–5.5 mm long overall. Palea 2 -veined. Palea keels scabrous, adorned all along. Palea apex emarginate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 2. Anthers 3, 2.3–2.8 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Yunnan.

**Festuca yunnanensis** St.-Yves. *Rev. Bretonne Bot. Pure Appl.* 2: 72 ( 1927).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

**TYPE** from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Lijiang, subalpine meadows.,

**Illustrations (Books):** S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig.322 as var. *yunnanensis*).

**Derivation** (Clifford & Bostock 2007): L. *-ense*, denoting origin. From Yunnan Province, China.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped loosely. Basal innovations extravaginal. Culms 65–90 cm long. Culm-internodes distally glabrous or pilose. Leaf-sheaths glabrous on surface or pubescent. Leaf-sheath auricles absent or erect. Ligule an eciliate membrane. Leaf-blades flat or conduplicate, 25–35 cm long, 3–5 mm wide.

**Inflorescence.** Inflorescence a panicle. Panicle open, ovate, loose, equilateral, 12–15(–19) cm long. Primary panicle branches 2 -nate, 3–10 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong or ovate, laterally compressed, 9–10 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes glabrous or pubescent.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3.8–4.2 mm long, 0.75 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface glabrous or pubescent. Lower glume apex acute. Upper glume lanceolate, 5.3–5.7 mm long, 0.75 length of adjacent fertile lemma, chartaceous, without keels. Upper glume surface glabrous or pubescent. Upper glume apex acute.

**Florets.** Fertile lemma ovate, 6.8–7.2 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma surface scabrous, glabrous or pilose. Lemma apex acute, mucronate, 1 -awned. Principal lemma awn (0.5–)1–2(–5) mm long overall. Palea 2 -veined. Palea keels ciliolate or ciliate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3, 2.5–3.5 mm long. Ovary glabrous or with a few apical hairs. Caryopsis with adherent pericarp. Hilum linear.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** China. China South Central.

**TDWG4.** Sichuan, Yunnan.

**Festuca ziganensis** I. Markgraf-Dannenberg. *Willdenowia*, 11(2): 205 (1981).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Turkey. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Turkey, Bayburt: Markgraf (Z holotype).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. -ensis, denoting origin. From Mt. Zigana, Turkey.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths purple, persistent and investing base of culm, with soft dead sheaths or fibrous dead sheaths. Basal innovations extravaginal. Culms erect or geniculately ascending, 25–40 cm long, 2 -noded. Leaf-sheaths tubular for much of their length, with 0.75–1 of their length closed, with flat margins, without keel, puberulous. Ligule an eciliate membrane, 0.2 mm long. Leaf-blades straight or curved, filiform, conduplicate, angular in section, 0.4–0.7 mm wide, stiff, glaucous. Leaf-blade venation comprising 5 vascular bundles, with 3–5 inner ridges, with 7 subepidermal sclerenchyma strands, with subepidermal sclerenchyma strands unequal in size, with subepidermal sclerenchyma free from veins, without layer of subepidermal sclerenchyma masking vein striation. Leaf-blade surface scabrous, pilose, hairy adaxially. Leaf-blade apex acute.

**Inflorescence.** Inflorescence a panicle. Peduncle smooth. Panicle open, ovate, 4.5–7 cm long. Panicle branches smooth or scaberulous, glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 5–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate or elliptic, laterally compressed, 7.8–8.4 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes persistent, shorter than spikelet. Lower glume lanceolate, 0.9 length of upper glume, chartaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.9–4.6 mm long, chartaceous, with scarious margins, without keels, 3 -veined. Upper glume apex obtuse or acute.

**Florets.** Fertile lemma lanceolate, 5.2–5.7 mm long, chartaceous, mid-green or purple, suffused with last colour, without keel, 5 -veined, more than 3-veined. Lemma surface puberulous, hairy above. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 0.7–1.4 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear, 0.75 length of caryopsis.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Western Asia. Turkey.

**Festucopsis serpentini** (C.E. Hubb.) Melderis. *Journal of the Linnean Society, Botany* 76: 317 (1978).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online (as *Elymus*), U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

**TYPE** from Albania. **Basionym or Replaced Name:** *Brachypodium serpentini* C.E.Hubb., Hook. Ic. Pl. 33: t. 3280 (1935). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Albania, Voskopoj: Alston & Sandwith 2016 (K holotype).

**Illustrations (Journals):** *Hooker's Icones Plantarum* (t.3280 (1935) as *Brachypodium*).

**Derivation** (Clifford & Bostock 2007): L. of serpentine. Growing on serpentine soils.

**Classification.** Subfamily Pooideae. Tribe: Triticeae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Basal innovations intravaginal. Culms erect or geniculately ascending, 20–40 cm long, 2–3 -noded. Culm-nodes purple, glabrous or pubescent. Lateral branches lacking.

Leaves mostly basal. Leaf-sheaths smooth or scaberulous, glabrous on surface. Ligule an eciliate membrane. Leaf-blades curved, filiform, conduplicate or involute, 6–12 cm long, 0.5 mm wide, stiff, glaucous. Leaf-blade surface puberulous, hairy adaxially. Leaf-blade margins smooth or scaberulous. Leaf-blade apex acute.

**Inflorescence.** Inflorescence composed of racemes. Racemes 1, single, bilateral, 4.5–6.5 cm long, bearing 6–14 fertile spikelets on each. Rhachis flattened, smooth on margins. Spikelet packing broadside to rhachis. Rhachis internodes linear, 5–8 mm long. Spikelets solitary. Fertile spikelets sessile or pedicelled. Pedicels present, oblong, 1 mm long.

**Fertile Spikelets.** Spikelets comprising 5–8 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, compressed slightly, 16–24 mm long, 2–3 mm wide, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 2 mm long, sparsely hairy.

**Glumes.** Glumes persistent, similar, shorter than spikelet. Lower glume oblong, 7–8 mm long, 0.8–0.9 length of upper glume, coriaceous, without keels, 3 -veined. Lower glume apex acute. Upper glume oblong, 8–9 mm long, 0.75–0.9 length of adjacent fertile lemma, coriaceous, without keels, 5–7 -veined. Upper glume apex acute.

**Florets.** Fertile lemma oblong, 9–12 mm long, coriaceous, 5 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2.5–4.5 mm long overall. Palea keels ciliate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicles 2, 1.5 mm long, membranous. Anthers 3, 3–3.5 mm long. Stigmas 2. Ovary pubescent on apex. Caryopsis with adherent pericarp, oblong, 4–5 mm long.

$2n = 14$  (3 refs TROPICOS).

**Distribution (TDWG). Continent.** Europe.

**Region.** Southeastern Europe.

**Country /Province /State.** : Albania.

**xFestulolium braunii** (Richt.) A.Camus. *Bull. Mus. Hist. Nat. Paris*, 33: 538 (1927).

**Accepted by:** T.G.Tutin et al, *Flora Europaea* 5 (1980).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of Alexander Carl Heinrich Braun (1805–1877) German botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**xFestulolium frederici** Cugnac & Camus. *Bull. Soc. Bot. Fr.* 91:19 (1944).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): In honor of Friedrich Martin Josef Welwitsch (1806–1872) Austrian-born mainly Angolan botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**xFestulolium holmbergii** (Dorfl.) P. Fourn. *Quatre Fl. France*, 81 (1935).

**Basionym or Replaced Name:** x*Schedolium holmbergii* (Dorfl.) J. Holub, *Preslia*, 70(2): 112 (1998).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): in honor of Rudolf Holmberg (1874–1930) Swedish botanist.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**xFestulolium loliaceum** (Huds.) P. Fourn. *Quatre Fl. France*, 81 (1935).

**Accepted by:** T.G.Tutin et al, *Flora Europaea* 5 (1980).

**Illustrations (Books):** C.E.Hubbard, *Grasses* (1968) (148).

**Derivation** (Clifford & Bostock 2007): L. -acea, resembling. Inflorescence resembles that of *Lolium*.

**Classification.** Subfamily Pooideae. Tribe: Poeae.

**Distribution (TDWG). Continent.** Temperate Asia.

**Country /Province /State.** Western Asia. Iran.

**Filgueirasia arenicola** (McClure) Guala. *J. Amer. Bamboo Soc.* 17:3 (2003).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online (as *Apoclada*), W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Brazil. **Basionym or Replaced Name:** *Apoclada arenicola* McClure, *Smithsonian Contrib. Bot.*, 9: 9 (1973). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Matto Grosso: between Bonito and Rondonopolis, from a single flowering plant among scattered colonies of plants in the vegetative state growing in sandy soil, 8 Apr 1930, Agnes Chase 11886 (HT: US-1500498, US-1500499).

**Recent Synonyms:** *Apoclada arenicola* McClure, *Smithsonian Contrib. Bot.*, 9: 9 (1973).

**Illustrations (Journals):** *Smithsonian Contributions to Botany* (9: 10, Fig. 1 & 11, Fig. 2 (1973) as *Apoclada*), *Systematic Botany* (20: 218, fig.6 (1995), as *Apoclada*).

**Images:** E.J.Judziewicz, E.J., *American Bamboos* (1999); (as *Apoclada*).

**Derivation** (Clifford & Bostock 2007): L. arena, sandy place; -cola, dweller. Species of sandy habitats.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms 50–110 cm long, 2–3 mm diam., woody. Culm-internodes terete, thin-walled, distally glabrous. Culm-nodes glabrous. Lateral branches dendroid. Branch complement several, in a horizontal line, with subequal branches, thinner than stem. Culm-sheaths present, deciduous. Leaf-sheaths scaberulous, glabrous on surface, outer margin hairy. Leaf-sheath oral hairs setose. Ligule a ciliolate membrane. Leaf-blade base with a brief petiole-like connection to sheath, petiole 0.1 cm long, petiole pubescent. Leaf-blades linear, 5–9 cm long, 1 mm wide.

**Inflorescence.** Synflorescence simple.

Inflorescence composed of racemes, subtended by an unspecialized leaf-sheath, embraced at base by subtending leaf, with 1–3 peduncles per sheath. Racemes 1, single, bearing few fertile spikelets, bearing 1–4 fertile spikelets on each. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 30–40 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes elongated between glumes and elongated below proximal fertile floret, curved, 2–3 mm long, glabrous or pubescent.

**Glumes.** Glumes two or several, (1–)2(–3) empty glumes. Lower glume lanceolate, 10 mm long, 1-keeled, 9–11 -veined. Lower glume apex acute or acuminate, awned, 1 -awned, awn 1–1.5 mm long. Upper glume lanceolate, 12 mm long, 9–11 -veined. Upper glume apex acute or acuminate, awned, 1 -awned, awn 1–1.5 mm long.

**Florets.** Fertile lemma lanceolate, 12–13 mm long, chartaceous, keeled, 11–13 -veined, more than 3-veined. Lemma margins ciliate. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 0.5–1 mm long overall. Palea 9 -veined. Palea keels ciliolate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 3, membranous, veined. Anthers 3, 6 mm long. Stigmas 2. Caryopsis with adherent pericarp.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State. Brazil.** Brazil West Central, Brazil Northeast, Brazil Southeast. Mato Grosso.

**Filgueirasia cannaviera** (Alvaro da Silveira) Guala. *J. Amer. Bamboo Soc.* 17:3 (2003).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online (as *Apoclada*), W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Brazil. **Basionym or Replaced Name:** *Apoclada cannaviera* (Alvaro da Silveira) McClure, *Smithsonian Contrib. Bot.*, 9: 12 (1973). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: A.A. da Silveira 644, Nov 1918, Brazil: Minas Gerais: Serra do Caparas [Serra do Cabral] (R (6 sheets and ca. 6 unmounted sheets); IT: US-1255417 (fragm. ex R)).

**Recent Synonyms:** *Arundinaria cannaviera* Silveira, *Arch. Mus. Nac. Rio de Janeiro*, 22: 101 (1919). *Apoclada cannaviera* (Alvaro da Silveira) McClure, *Smithsonian Contrib. Bot.*, 9: 12 (1973).

**Illustrations (Books):** E.J.Judziewicz et al, *American Bamboos* (1999) (232, Fig. 125 as *Apoclada*).

**Illustrations (Journals):** *Smithsonian Contributions to Botany* (9: 13, Fig. 3 (1973) as *Apoclada*), *Systematic Botany* (20: 216, fig.5 (1995), as *Apoclada*).

**Derivation** (Clifford & Bostock 2007): the vernacular name of the species in Brazil.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.



**Habit, Vegetative Morphology.** Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms 50–110 cm long, 6–7 mm diam., woody. Culm-internodes terete, thin-walled, distally glabrous. Culm-nodes glabrous. Lateral branches dendroid. Branch complement several, in a horizontal line, with subequal branches, thinner than stem. Culm-sheaths present, deciduous. Ligule a ciliolate membrane. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 15–20 cm long, 8–10 mm wide.

**Inflorescence.** Synflorescence simple.

Inflorescence comprising only a few spikelets, comprising 1 fertile spikelets, subtended by an inflated leaf-sheath, embraced at base by subtending leaf. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

**Fertile Spikelets.** Spikelets comprising 10–14 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets linear, laterally compressed, 33–50 mm long, breaking up at maturity, disarticulating below each fertile floret.

**Glumes.** Glumes both absent or obscure.

**Florets.** Fertile lemma ovate, 15–17 mm long, chartaceous, keeled, 15–17 -veined, more than 3-veined. Lemma apex acute. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 3, 2.5 mm long, membranous, ciliate. Anthers 3, 7–8 mm long. Stigmas 2. Ovary pubescent on apex. Caryopsis with adherent pericarp.

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Brazil. Brazil West Central, Brazil Southeast.

**TDWG4.** Mato Grosso, Goias, Minas Gerais, Rio de Janeiro, Espirito Santo.

**Fimbribambusa horsfieldii** (Munro) Widjaja. *Reinwardtia* 11(2): 81 (1997).

**Accepted by:** U. Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Indonesia. **Basionym or Replaced Name:** *Bambusa horsfieldii* Munro, *Trans. Linn. Soc. London* 26(1): 115 (1868). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Hab. in Java, *Horsfield* 193 (BM).

**Recent Synonyms:** *Bambusa cornuta* Munro *Trans. Linn. Soc.* 26: 113 (1868).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): L. horned.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms leaning, 700–800 cm long, 8–10 mm diam., woody, without nodal roots. Culm-internodes terete, thin-walled. Culm-nodes swollen. Lateral branches dendroid. Culm-sheaths present. Leaves cauline. Leaf-sheaths striately veined, glabrous on surface. Leaf-sheath oral hairs scanty. Leaf-sheath auricles falcate, 7 mm long. Ligule an eciliate membrane, truncate. Collar with external ligule. Leaf-blade base cuneate or broadly rounded, asymmetrical, with a brief petiole-like connection to sheath. Leaf-blades lanceolate or oblong, 30–35 cm long, 50–90 mm wide. Leaf-blade venation with 18–23 secondary veins. Leaf-blade apex attenuate.

**Inflorescence.** Synflorescence bractiferous, clustered at the nodes, in untidy tufts, open, with glumaceous subtending bracts, with axillary buds at base of spikelet, prophyllate below lateral spikelets, leafless between clusters, on a separate leafless culm.

**Fertile Spikelets.** Spikelets comprising 5–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 12–16 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes definite, curved, 1–2 mm long, glabrous.

**Glumes.** Glumes two. Upper glume ovate, 3–5 mm long. Upper glume apex acuminate.

**Florets.** Fertile lemma lanceolate, 6–7 mm long, without keel, more than 3-veined. Lemma surface scabrous. Lemma apex acute, mucronate. Palea 1 length of lemma. Palea surface puberulous, hairy on back. Palea apex ciliate. Apical sterile florets resembling fertile though underdeveloped.

**Flower and Fruit.** Lodicules 3, membranous, glabrous. Anthers 6, 2–3 mm long. Stigmas 3. Ovary umbonate.

**Distribution (TDWG). Continent.** Tropical Asia.

**Country /Province /State.** Malesia. Java, Philippines.

**Fimbribambusa microcephala** (Pilg.) Widjaja. *Reinwardtia* 11(2): 82 (1997).

**Accepted by:** W.D. Clayton & K. Harman, *GrassBase* (2008) and online (as *Bambusa*), U. Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from New Guinea. **Basionym or Replaced Name:** *Dendrocalamus microcephalus* Pilger, *Engl. Jahrb.* 52: 175 (1914). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: ST: R.

*Schlechter 16403*, Aug 1907, New Guinea: Kaiser-Wilhelmsland, am Minjum bei Javer, ca. 100 m (B). Presumed destroyed. ST: *Schlechter 14212*, Feb 1902, New Guinea: auf dem weg von Ramu zur Kueste (B). Presumed destroyed. ST: *Lauterbach 2138*, New Guinea: Oertzen Gebirge, 300–900 m (B). Presumed destroyed. NT: *Schlechter 14212*, Indonesia: Morobe Prov., near Bulu (from Ramu to the coast), 700 m (INT: K). NT designated by Widjaja, *Reinwardtia* 11(2): 82 (1997).

**Recent Synonyms:** *Bambusa microcephala* (Pilger) Holttum, *Kew Bull.* 21: 276 (1967).

**Illustrations (Books):** No illustration found (BKS).

**Derivation** (Clifford & Bostock 2007): Gk *mikros*, small; *kephale*, head. Inflorescence a short spike or contracted panicle.

**Classification.** Subfamily Bambusoideae. Tribe: Bambuseae.

**Habit, Vegetative Morphology.** Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms leaning, pendulous at the tip, 1200–1400 cm long, woody, without nodal roots. Culm-internodes terete, thin-walled, 30–45 cm long, smooth, distally pruinose. Lateral branches dendroid. Branch complement several, with subequal branches. Culm-sheaths present, deciduous but leaving a persistent girdle, 15 cm long, glabrous, auriculate, with 4 mm high auricles. Culm-sheath ligule 1.5–3 mm high, entire. Culm-sheath blade ovate, spreading or reflexed. Leaves cauline. Leaf-sheath oral hairs scanty or ciliate, curly, 5 mm long. Leaf-sheath auricles falcate. Ligule an eciliate membrane. Collar with external ligule. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 17–21 cm long, 30–50 mm wide. Leaf-blade venation with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade apex acuminate.

**Inflorescence.** Synflorescence bractiferous, clustered at the nodes, in untidy tufts, with glumaceous subtending bracts, with axillary buds at base of spikelet, prophyllate below lateral spikelets.

**Fertile Spikelets.** Spikelets comprising 2–3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, subterete, 6–8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1 mm long.

**Glumes.** Glumes persistent, shorter than spikelet.

**Florets.** Fertile lemma ovate, 5.5–6.5 mm long, without keel, more than 3-veined. Lemma apex acute. Palea 8–10 -veined. Apical sterile florets 1 in number, male, rudimentary.

**Flower and Fruit.** Lodicules 2, 2 mm long, ciliate. Anthers 6. Stigmas 3. Ovary umbonate, pubescent on apex.

**Distribution (TDWG). Continent.** Tropical Asia.

**Country /Province /State.** Malesia, Papuasias. New Guinea PNG, or West Papua (Irian Jaya). New Guinea.

### **Fingerhuthia africana** Lehm. *Cat. Sem. Hort. Hamb.* (1834). (1834).

**Accepted by:** R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), N.L.Bor, *Grasses of Burma, Ceylon, India and Pakistan* (1960).

**TYPE** from South Africa. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: South Africa, Gauritz R.: Ecklon.

**Illustrations (Books):** G.V.Pope et al., *Flora Zambesiaca* 10 (2(1999):18, t. 8), L.K.A. Chippindall, *Grasses and Pastures of South Africa* (1955) (207, Fig 184), M.A.N.Muller, *Grasses of South West Africa/Namibia* (1984), G.E.Gibbs Russell et al, *Grasses of Southern Africa* (1990) (171, Fig 98), N.L.Bor, *The grasses of Burma, Ceylon, India and Pakistan* (1960) (543, Fig 59), E.Edgar. & H.E.Connor, *Flora of New Zealand* 5, *Gramineae* (2000), M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 25 *Poaceae*, part 2 (2003) (23).

**Images:** F.van Oudtshoorn, *Guide to Grasses of Southern Africa* (1999).

**Derivation** (Clifford & Bostock 2007): L. -ana, indicating location. From Africa.

**Classification.** Subfamily Chloridoideae. Tribe: Eragrostideae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Culms 12–80 cm long. Ligule a fringe of hairs. Leaf-blades convolute, 2.5–40 cm long, 1–5 mm wide, stiff, glaucous. Leaf-blade surface pubescent, hairy adaxially. Leaf-blade apex attenuate, hardened.

**Inflorescence.** Inflorescence a panicle. Panicle spiciform, oblong, 1.5–5 cm long. Primary panicle branches accrescent to a central axis, with lateral stumps on axis. Panicle axis with rounded ribs, pubescent. Spikelets appressed, solitary. Fertile spikelets sessile.

**Fertile Spikelets.** Spikelets comprising 1 fertile florets, with diminished florets at the apex. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets cuneate, laterally compressed, compressed strongly, 4–5.5 mm long, falling entire. Spikelet callus base obtuse.

**Glumes.** Glumes similar, shorter than spikelet, thinner than fertile lemma, gaping. Lower glume lanceolate, 1 length of upper glume, membranous, 1-keeled, 1 -veined. Lower glume primary vein ciliate. Lower glume lateral veins absent. Lower glume margins ciliate. Lower glume apex acuminate, awned, 1 -awned, awn 2–4 mm long. Upper glume lanceolate, 0.8 length of adjacent fertile lemma, membranous, 1-keeled, 1 -veined. Upper glume primary vein ciliate. Upper glume lateral veins absent. Upper glume margins ciliate. Upper glume apex acuminate, awned, 1 -awned, awn 2–4 mm long.

**Florets.** Fertile lemma oblong, 4.5–5 mm long, membranous, much thinner above, keeled, 5–7 -veined, more than 3-veined. Lemma midvein scaberulous. Lemma margins ciliate. Lemma hairs 1–1.5 mm long. Lemma apex obtuse, awned, 1 -awned. Principal lemma awn 0.5–1 mm long overall. Palea 1 length of lemma. Apical sterile florets 1–3 in number, male or barren, separate, oblong, 2–3.5 mm long. Apical sterile lemmas pilose, adorned on margins, mucronate.

**Distribution (TDWG). Continent.** Africa, Temperate Asia, Tropical Asia.

**Country /Province /State. South tropical Africa, Southern Africa.** Angola, Mozambique, Zimbabwe, Namibia, Botswana, Limpopo, North-West, Gauteng, Mpumalanga, Swaziland, Free State, Kwazulu-Natal, Northern Cape, Western Cape, Eastern Cape. **Western Asia, Arabian Peninsula.** Afghanistan, Iran, Oman, Saudi Arabia. **Indian Subcontinent.** Pakistan.

### **Fingerhuthia sesleriiformis** Nees. *Fl. Afr. Austr.* i. 136 (1841).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from South Africa. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: South Africa, Glenfilling: Drege (K iso) ; South Africa, Nieuwjaarsfontein: Drege sn.

**Illustrations (Books):** L.K.A. Chippindall, *Grasses and Pastures of South Africa* (1955) (206, Fig 183).

**Derivation** (Clifford & Bostock 2007): L. forma, appearance. Resembling *Sesleria*..

**Classification.** Subfamily Chloridoideae. Tribe: Eragrostideae.

**Habit, Vegetative Morphology.** Perennial, caespitose, clumped densely. Rhizomes elongated. Butt sheaths coriaceous, glossy. Culms 30–110 cm long. Ligule a fringe of hairs. Leaf-blades convolute, 12–24 cm long, 3–5 mm wide, stiff, glaucous. Leaf-blade surface scabrous, rough adaxially. Leaf-blade margins scabrous. Leaf-blade apex attenuate.

**Inflorescence.** Inflorescence a panicle. Panicle spiciform, linear or elliptic, 4–8 cm long, 1–1.2 cm wide. Primary panicle branches accrescent to a central axis, with lateral stumps on axis. Panicle axis with rounded ribs, pubescent. Spikelets appressed, solitary. Fertile spikelets sessile.

**Fertile Spikelets.** Spikelets comprising 1 fertile florets, with diminished florets at the apex. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets cuneate, laterally compressed, compressed strongly, 5–6 mm long, falling entire. Spikelet callus base obtuse.

**Glumes.** Glumes similar, shorter than spikelet, thinner than fertile lemma, gaping. Lower glume lanceolate, 3.5–4 mm long, 1 length of upper glume, membranous, 1-keeled, 1 -veined. Lower glume primary vein ciliate. Lower glume lateral veins absent. Lower glume apex acuminate, awned, 1 -awned, awn 2–4 mm long. Upper glume lanceolate, 3.5–4 mm long, 0.8–1 length of adjacent fertile lemma, membranous, 1-keeled, 1 -veined. Upper glume primary vein ciliate. Upper glume lateral veins absent. Upper glume apex acuminate, awned, 1 -awned, awn 2–4 mm long.

**Florets.** Fertile lemma lanceolate or oblong, 4–5 mm long, membranous, much thinner above, keeled, 5 -veined, more than 3-veined. Lemma lateral veins with distinct primaries but obscure intermediates. Lemma margins eciliate or pubescent, hairy below. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 0.5–1 mm long overall. Palea 1 length of lemma. Apical sterile florets 1–3 in number, male or barren, separate, oblong. Apical sterile lemmas mucronate.

**Flower and Fruit.** Lodicules 2, cuneate, 0.5 mm long, fleshy. Anthers 3, 2.5 mm long.

**Distribution (TDWG). Continent.** Africa.

**Country /Province /State. Southern Africa.** North-West, Gauteng, Mpumalanga, Free State, Kwazulu-Natal, Lesotho, Northern Cape, Western Cape, Eastern Cape.

### **Froesiochloa boutelouoides** G. A. Black. *Bol. Tecn. Inst. Agron. Norte, Para*, No. 20, 30 (1950).

**Accepted by:** W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

**TYPE** from Brazil. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Froes 25861*, Brazil: Amapa: Rio Oiapoque, Igarape Nataia (IAN - fragm., US)).

**Illustrations (Books):** E.J.Judziewicz et al, *American Bamboos* (1999) (279, Fig. 170), E.Judziewicz, *Flora of the Guianas*, 187. *Poaceae* (1990) (231, Fig. 38).

**Derivation** (Clifford & Bostock 2007): Gk. -oides, resembling. Similar to *Bouteloua*.

**Classification.** Subfamily Bambusoideae. Tribe: Olyreae.

**Habit, Vegetative Morphology.** Perennial, caespitose. Butt sheaths absent. Culms erect, 20–30 cm long. Leaves cauline. Leaf-sheaths pubescent. Ligule an eciliate membrane. Leaf-blade base broadly rounded, with a brief petiole-like connection to sheath. Leaf-blades ovate, 3–8 cm long, 10–20 mm wide. Leaf-blade venation with obscure cross veins. Leaf-blade apex acute. Monoecious, with male and female spikelets in the same inflorescence.

**Inflorescence.** Inflorescence composed of racemes. Racemes 2–4, borne along a central axis, lanceolate, unilateral, 1.2–1.8 cm long, bearing few fertile spikelets, bearing 1 fertile spikelets on each. Central inflorescence axis 2–3 cm long. Rhachis deciduous from axis, flattened. Sexes segregated, on bisexual branches, with male below. Spikelets ascending, solitary. Fertile spikelets pedicelled. Male spikelets sessile, 6–10 in a cluster. Pedicels present, cuneate.

**Fertile Spikelets.** Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, dorsally compressed, 15 mm long, falling entire, deciduous with accessory branch structures.

**Glumes.** Glumes similar, exceeding apex of florets, thinner than fertile lemma. Lower glume ovate, 15 mm long, 1 length of upper glume, herbaceous, without keels, 5–9 -veined. Lower glume lateral veins with cross-veins. Lower glume apex acuminate. Upper glume ovate, 15 mm long, 2.5 length of adjacent fertile lemma, herbaceous, without keels, 5–9 -veined. Upper glume lateral veins with cross-veins. Upper glume apex acuminate, awned, 1 -awned, awn 1 mm long.

**Florets.** Fertile florets female. Fertile lemma elliptic, 6 mm long, indurate, pallid, without keel. Lemma surface pubescent. Lemma margins involute. Lemma apex acute. Palea indurate, without keels.

**Flower and Fruit.** Anthers 3. Filaments united in a tube.

Male spikelets distinct from female, 1 flowered, lanceolate, 7–8 mm long, hairy (ciliate). Male spikelet glumes absent. Male spikelet lemma 5 -veined, awned (1 mm).

**Distribution (TDWG). Continent.** South America.

**Country /Province /State.** Northern South America, Brazil. French Guiana. Brazil Northeast, Brazil North.

Para, Amapa.