

Kaokochloa nigrirostris De Winter. *Bothalia*, vii. 480 (1961).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

TYPE from Namibia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Namibia, Kaokoveld, Otju: de Winter & Leistner 5679 (K iso).

Illustrations (Books): G.E.Gibbs Russell et al, *Grasses of Southern Africa* (1990) (191, Fig 113).

Derivation (Clifford & Bostock 2007): *L. niger*, black; rostrum, beak. Fertile lemma has a dark tip.

Classification. Subfamily Chloridoideae. Tribe: Eragrostideae.

Habit, Vegetative Morphology. Annual. Culms decumbent, 20–60 cm long, rooting from lower nodes. Leaf-sheaths viscid, hirsute, with capitate hairs. Ligule a fringe of hairs. Leaf-blades linear or lanceolate, 5–12 cm long, 5–10 mm wide, viscid. Leaf-blade surface pilose, hairy on both sides, with simple hairs or capitate hairs. Leaf-blade apex acuminate.

Inflorescence. Inflorescence a panicle. Panicle contracted, lanceolate. Panicle branches viscid, villous, with simple hairs or capitate hairs. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, filiform or linear, ciliate.

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 orbicular, laterally compressed, compressed slightly, 7 mm long, breaking up at maturity, disarticulating above glumes but not between florets. Floret callus bearded. Floret callus hairs 0.3 length of lemma.

Glumes. Glumes persistent, similar, reaching apex of florets, thinner than fertile lemma. Lower glume ovate, 1 length of upper glume, 1 length of spikelet, membranous, without keels, 9–11 -veined. Lower glume surface villous, with simple hairs or capitate hairs. Lower glume apex acute. Upper glume ovate, 0.75 length of adjacent fertile lemma, membranous, without keels, 9–11 -veined. Upper glume surface villous, with simple hairs or capitate hairs. Upper glume apex acute.

Florets. Fertile lemma oblong, 5 mm long, coriaceous, pallid or black, tipped with last colour, without keel, 9 -veined, more than 3-veined. Lemma lateral veins ribbed. Lemma surface villous, hairy below, hairy between veins. Lemma hairs 2 mm long. Lemma apex emarginate, cucullate (incurved), awned, 2–3 -awned. Principal lemma awn when present apical, 0–3 mm long overall. Lateral lemma awns present, arising on margin of lemma, 4–6 mm long, longer than principal (flat below). Palea 1 length of lemma. Palea keels ciliate. Palea surface villous, hairy on flanks. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, cuneate, fleshy. Anthers 3, 3–4 mm long. Caryopsis with adherent pericarp, obovoid, glabrous. Embryo 0.8 length of caryopsis.

Distribution (TDWG). Continent. Africa.

Country /Province /State. South tropical Africa, Southern Africa. Angola. Namibia.

Kengyilia alatavica (Drobov) J.L. Yang, C. Yen & B.R. Baum. *Canad. J. Bot.*, 71(2): 343 (1993).

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

TYPE from Kazakhstan. **Basionym or Replaced Name:** *Agropyron alatavicum* Drobov, *Repert. Spec. Nov. Regni Veg.* 21(581–587): 43 (1925). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Kazakhstan: Alma-Ata, 1915, *Abolin* 2867 (LT: TAK).

Recent Synonyms: *Elymus alatavicus* (Drobov) A. Love, *Feddes Repert.* 95: 473 (1984). *Elytrigia alatavica* (Drobov) Nevski, *Acta Univ. As. Med. Ser. VIII b, Bot. Fasc.* 17, 60 (1934).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 612 as *Kengyilia alatavica* var. *longiglumis*).

Derivation (Clifford & Bostock 2007): *L. -icum*, belonging to. From Alatau, Pamir district, former Soviet Union.

Classification. Subfamily Pooideae. Tribe: Triticeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped densely. Culms erect or geniculately ascending, 35–75 cm long. Culm-nodes glabrous or pubescent. Ligule an eciliate membrane. Leaf-blades involute, 2–4 mm wide, glaucous. Leaf-blade surface scabrous, rough adaxially. Leaf-blade margins scabrous.

Inflorescence. Inflorescence composed of racemes. Racemes 1, single, bilateral, 9 cm long. Rhachis flattened, scabrous on margins. Spikelet packing broadside to rhachis. Rhachis internodes linear. Spikelets solitary. Fertile spikelets sessile.

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 to 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, 6–7 mm long, 1 length of upper glume, coriaceous, much thinner on margins, without keels, 5 -veined. Lower glume surface scabrous, rough above or on veins. Lower glume apex acuminate, awned, 1 -awned, awn 1 mm long. Upper glume lanceolate, 6–7 mm long, 0.75 length of adjacent fertile lemma, coriaceous, with scarious margins, without keels, 5 -veined. Upper glume surface scabrous, rough above or on veins. Upper glume apex acuminate, awned, 1 -awned, awn 1 mm long.

Florets. Fertile lemma lanceolate, 7.5–9 mm long, coriaceous, 5 -veined, more than 3-veined. Lemma surface pubescent, hairy all along. Lemma apex acute, awned, 1 -awned. Principal lemma awn straight or curved, 2–3 mm long overall. Palea 7.5–8 mm long. Palea keels ciliate. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, membranous. Anthers 3, 4 mm long. Stigmas 2. Ovary pubescent on apex. Caryopsis with adherent pericarp.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. Middle Asia, China, Mongolia, Russia. China North-Central, Tibet, Xinjiang. TDWG4. Gansu.

Kengyilia batalinii (Krasn.) S.L. Chen. *Bull. Nanjing Bot. Gard. Mem. Sun Yat Sen*, 1991: 3 (1992).

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

TYPE from Russia. **Basionym or Replaced Name:** *Triticum batalinii* Krassn., *Script. Hort. Univ. Petrop.* 2: I. 21 (1887). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Russia, Tien Shan: Krassnow.

Recent Synonyms: *Elymus batalinii* (Krassn.) A. Love, *Feddes Repert.* 95: 473 (1984). *Elytrigia batalinii* (Krassn.) Nevski, *Acta Univ. As. Med. Ser. VIII b, Bot. Fasc.* 17, 61 (1934).

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

Derivation (Clifford & Bostock 2007): in honor of Alexander Feodorowicz Batalin (1847–1896) Russian botanist.

Classification. Subfamily Pooideae. Tribe: Triticeae.

Habit, Vegetative Morphology. Perennial. Culms erect or geniculately ascending, 20–40 cm long. Culm-internodes smooth. Ligule an eciliate membrane. Leaf-blades 7–15 cm long, 3–4 mm wide, glaucous. Leaf-blade surface pubescent, hairy on both sides. Leaf-blade margins scabrous. Leaf-blade apex acuminate.

Inflorescence. Inflorescence composed of racemes. Racemes 1, single, bilateral, 3.5–6.5 cm long, 7–10 mm wide. Rhachis flattened. Spikelet packing broadside to rhachis, crowded. Rhachis internodes linear. Rhachis internode tip flat. Spikelets solitary. Fertile spikelets sessile.

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 to oblong, laterally compressed, 9–13 mm long, breaking up at maturity, disarticulating below each fertile floret.

Glumes. Glumes collateral, persistent, similar, shorter than spikelet. Lower glume elliptic, 5–7 mm long, 1 length of upper glume, coriaceous, much thinner on margins, without keels, 5 -veined. Lower glume surface pilose, hairy on veins. Lower glume apex acute. Upper glume elliptic, 5–7 mm long, 0.75 length of adjacent fertile lemma, coriaceous, with membranous margins, without keels, 5 -veined. Upper glume surface pilose, hairy on veins. Upper glume apex acute.

Florets. Fertile lemma elliptic or oblong, 8 mm long, coriaceous, 5 -veined, more than 3-veined. Lemma surface villous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 10–12 mm long overall. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, membranous. Anthers 3. Stigmas 2. Ovary pubescent on apex. Caryopsis with adherent pericarp.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. Middle Asia, Western Asia, China, Mongolia, Russia. Iran. Tibet, Xinjiang. Mongolia.

TDWG4.

Kengyilia eremopyroides Nevski ex C. Yen, J.L. Yang & B.R. Baum. *Novon*, 8(1): 96 (1998).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online (as *Elymus*), 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, Lake Orin-Nor: Przewalski 339 (LE holo).

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

Derivation (Clifford & Bostock 2007): Gk *-oides*, indicating resemblance. Inflorescences resemble those of *Eremopyrum*.

Classification. Subfamily Pooideae. Tribe: Triticeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped densely. Rhizomes short. Culms erect, 31–37 cm long, 1.5–2 mm diam., 2-noded. Culm-internodes distally glabrous. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.5 mm long, truncate. Leaf-blades (1.5–)2.5–5.5 cm long, 2.5–3 mm wide. Leaf-blade surface pilose, hairy on both sides.

Inflorescence. Inflorescence composed of racemes. Peduncle pubescent above. Racemes 1, single, erect, oblong, bilateral, (3.5–)4–4.5 cm long, 8–10 mm wide. Rhachis pilose on surface. Spikelet packing broadside to rhachis. Rhachis internodes linear, 1.5–7 mm long. Spikelets solitary. Fertile spikelets sessile.

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, 10–11 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 0.8–1.2 mm long, pubescent.

Glumes. Glumes persistent, similar, shorter than spikelet. Lower glume ovate, 4–4.5 mm long, 0.9 length of upper glume, coriaceous, without keels, 3–5 -veined. Lower glume surface glabrous. Lower glume apex acute, mucronate. Upper glume ovate, 4.5–5 mm long, 0.66 length of adjacent fertile lemma, coriaceous, without keels, 3–5 -veined. Upper glume surface glabrous. Upper glume apex acute, mucronate.

Florets. Fertile lemma ovate, 7–8 mm long, coriaceous, 5 -veined, more than 3-veined. Lemma surface hirsute. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 3–4 mm long overall. Palea 6.5 mm long. Palea keels ciliolate, adorned above. Palea apex emarginate. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, membranous. Anthers 3, 2 mm long, purple. Stigmas 2. Caryopsis with adherent pericarp.

Distribution (TDWG), Continent. Temperate Asia.

Country /Province /State. China. Qinghai.

Kengyilia geminata (Keng & S.L. Chen) S.L. Chen. *Bull. Bot. Res. North-East. Forest. Univ.*, 14(2): 141 (1994).

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

TYPE from China. **Basionym or Replaced Name:** *Roegneria geminata* Keng & S.L. Chen, *Acta Univ. Nankin. Sci. Nat.* 1963(1): 80, f. 6 (1963)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Qinghai: Menyuan, river banks, ca. 3000 m, 16 Aug. 1957, *P.C. Keng et al.* 109 (HT: NJU).

Recent Synonyms: *Elymus geminatus* (Keng & S.L. Chen) S.L. Chen, *Bull. Nanjing Bot. Gard.* 1987: 9. (1987) [1988].

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

Classification. Subfamily Pooideae. Tribe: Triticeae.

Habit, Vegetative Morphology. Perennial, caespitose. Culms erect or geniculately ascending, 75–100 cm long, 2–3 mm diam., 2–5 -noded, with 0.2–0.5 of their length below uppermost node. Culm-internodes smooth, distally glabrous. Leaf-sheaths smooth, glabrous on surface. Ligule an eciliate membrane, 1 mm long, scarious, truncate. Leaf-blades 7.5–27 cm long, 3–5 mm wide. Leaf-blade surface puberulous, hairy adaxially. Leaf-blade margins ciliate.

Inflorescence. Inflorescence composed of racemes. Peduncle pubescent above. Racemes 1, single, drooping, arcuate, bilateral, 8–15 cm long, bearing 15–24 fertile spikelets on each, simple or with branchlets at base of longer racemes. Rhachis flattened, puberulous on surface. Spikelet packing broadside to rhachis, regular, 2 -rowed. Rhachis internodes 2–5 mm long. Spikelets solitary or in pairs. Fertile spikelets sessile or sessile and pedicelled, 1–2 in the cluster. Pedicels absent or present, 0.5–1 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 laterally compressed, 16–20 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1.5 mm long, pubescent. Floret callus pubescent.

Glumes. Glumes persistent, similar, subequal in width, shorter than spikelet. Lower glume lanceolate, 5–8 mm long, coriaceous, purple, without keels, 3 -veined. Lower glume surface pubescent. Lower glume apex acuminate, muticous or mucronate. Upper glume lanceolate, 6–8 mm long, coriaceous, purple, without keels, 3–5 -veined. Upper glume surface pubescent. Upper glume apex acuminate, muticous or mucronate.

Florets. Fertile lemma lanceolate or oblong, 9.5–10.5 mm long, coriaceous, purple, without keel, 5 -veined, more than 3-veined. Lemma apex awned, 1 -awned. Principal lemma awn straight or curved, 5–11 mm long overall. Palea 1 length of lemma, 2 -veined. Palea keels ciliate, with hairs 0.6–1.2 mm long. Palea surface puberulous, hairy on back. Palea apex truncate. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, oblong, 2 mm long, membranous, ciliate. Anthers 3, 2 mm long, brown or purple. Stigmas 2. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex, apex unappendaged. Hilum linear.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. Qinghai.

Kengyilia gobicola C.Yen & J.L.Yang. *Canad. J. Bot.*, 68(9): 1897 (1990).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online (as *Elymus*), 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: Xinjiang: Taxkorgan, Muztagala Mt. in petrosis gobe, 3200 m, 5 Sept. 1987, C. Yen et al. 870497 (HT: SAUT)

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

Derivation (Clifford & Bostock 2007): Mandarin *gobi*, a stony desert; *-cola*, dweller. Growing in cold stony deserts at the base of Mt. Muztagata, south-west China.

Classification. Subfamily Pooideae. Tribe: Triticeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped densely. Roots woolly. Butt sheaths persistent and investing base of culm, with compacted dead sheaths. Culms erect, 60 cm long, 1.5–2 mm diam., 2–3 -noded. Culm-internodes distally pubescent. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.5 mm long, truncate. Leaf-blades conduplicate or involute, 6–8 cm long, 3 mm wide. Leaf-blade surface ribbed, grooved adaxially, pubescent or pilose.

Inflorescence. Inflorescence composed of racemes. Racemes 1, single, straight, bilateral, 8–12 cm long, 4–6 mm wide. Rhachis pubescent on surface. Spikelet packing broadside to rhachis, 2 -rowed. Rhachis internodes 5–10 mm long. Spikelets solitary. Fertile spikelets sessile.

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 ovate, laterally compressed, 15–20 mm long, breaking up at maturity, disarticulating above glumes but not between florets. Spikelet callus base truncate. Rhachilla internodes 1–1.8 mm long, pubescent. Floret callus pilose.

Glumes. Glumes similar, shorter than spikelet. Lower glume oblong, symmetrical or asymmetrical, 6.7–7.5 mm long, 1 length of upper glume, herbaceous, without keels, 3–5 -veined. Lower glume surface glabrous or pubescent, hairy on veins. Lower glume apex entire or with a unilateral tooth, acute. Upper glume oblong, symmetrical or asymmetrical, 6.7–7.5 mm long, 0.8–0.9 length of adjacent fertile lemma, herbaceous, without keels, 3–5 -veined. Upper glume surface glabrous or puberulous, hairy on veins. Upper glume apex entire or with a unilateral tooth, acute.

Florets. Fertile lemma lanceolate to oblong, 7–9 mm long, coriaceous, 5 -veined, more than 3-veined. Lemma surface pilose. Lemma hairs 1 mm long. Lemma apex obtuse, awned, 1 -awned. Principal lemma awn 1–4 mm long overall. Palea 1 length of lemma. Palea keels ciliolate, adorned all along. Palea surface pubescent, hairy on back. Palea apex truncate. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, membranous. Anthers 3, 2–3 mm long, yellow or purple. Stigmas 2. Ovary pubescent on apex. Caryopsis with adherent pericarp, 7 mm long, dark brown. Hilum linear.

$2n = 42$ (1 ref TROPICOS).

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. Xinjiang.

Kengyilia grandiglumis (Keng & Chen) J.L. Yang, C. Yen & B.R. Baum. *Hereditas*, 116: 28 (1992).

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

TYPE from China. **Basionym or Replaced Name:** *Roegneria grandiglumis* Keng ex Keng & S.L. Chen, *Acta Univ. Nankin. Sci. Nat.* 1963 (1): 82 (1963)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Qinghai: Henan, NW Agric. Coll. s.n. (HT: NAS).

Recent Synonyms: *Elymus grandiglumis* (Keng) Á. Löve, *Feddes Repert.* 95 (7–8): 455 (1984)

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 613).

Derivation (Clifford & Bostock 2007): *L. grandis*, large; *gluma*, husk. Glumes and/or lemmas large.

Classification. Subfamily Pooideae. Tribe: Triticeae.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. Qinghai.

Kengyilia guidenensis C. Yen, J.L. Yang & B.R. Baum. *Novon*, 5(4): 395 (1995).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online (as *Elymus guidensis*), 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: Qinghai: Gui-de Xian, Gui-de to Guomaying highway between markers 150 and 151km, 3100 m, 11 Sept. 1993, C. Yen et al. 93001 (HT: SAUT; IT: DAO).

Illustrations (Journals): *Novon* (5:396, Fig.1 (1995)).

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

Classification. Subfamily Pooideae. Tribe: Triticeae.

Flower and Fruit. $2n = 42$ (1 ref TROPICOS).

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. Qinghai.

Kengyilia habahenensis B.R. Baum, C. Yen & J.L. Yang. *Pl. Syst. Evol.*, 174:103, 106 (1991).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online (as *Elymus*), 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, Habahe: Yen, Yang & Baum 890939 (SAUTI holo, DAO).

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

Derivation (Clifford & Bostock 2007): *L. -ensis*, denoting origin. From Habahe, Xinjiang Uyghur Autonomous Region, China.

Classification. Subfamily Pooideae. Tribe: Triticeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped loosely. Rhizomes short. Culms erect, 80–120 cm long. Leaf-sheaths pilose. Ligule an eciliate membrane, lacerate. Leaf-blade margins ciliate.

Inflorescence. Inflorescence composed of racemes. Racemes 1, single, bilateral, 3–8 cm long, 5–10 mm wide. Rhachis flattened, pubescent on surface. Spikelet packing broadside to rhachis, crowded. Spikelets pectinate, solitary. Fertile spikelets sessile.

Fertile Spikelets. Spikelets comprising 3–11 fertile florets, with diminished florets at the apex. Spikelets 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, 2 mm wide, breaking up at maturity, disarticulating below each fertile floret.

Glumes. Glumes persistent, similar. Lower glume lanceolate, asymmetrical, 3–7 mm long, coriaceous, 1-keeled, 3–5 -veined. Lower glume primary vein ciliate. Lower glume apex acute or acuminate. Upper glume lanceolate, asymmetrical, 3–7 mm long, coriaceous, 1-keeled, 3–5 -veined. Upper glume primary vein ciliate. Upper glume apex acute or acuminate.

Florets. Fertile lemma lanceolate, 7 mm long, coriaceous, 5 -veined, more than 3-veined. Lemma surface pubescent. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 3 mm long overall. Palea 1 length of lemma, 2 -veined. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, ciliate. Anthers 3, 2 mm long. Caryopsis with adherent pericarp. $2n = 42$ (1 ref TROPICOS).

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. Xinjiang.

Kengyilia hejingensis L.B.Cai & D.F.Cui. *Bull. Bot. Res. North-East. Forest. Univ.* 15(4): 426 (1995).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online (as *Elymus*), 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: Xinjiang: Hejing Xian, in clivis pratensibus, 2600 m, 19 Sept. 1986, *H.Y. Liu* 305 (HT: NWBI).

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

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

Classification. Subfamily Pooideae. Tribe: Triticeae.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. Xinjiang.

Kengyilia hirsuta (Keng & Chen) J.L. Yang, C. Yen & B.R. Baum. *Hereditas*, 116: 28 (1992).

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

TYPE from China. **Basionym or Replaced Name:** *Roegneria hirsuta* Keng, *Acta Univ. Nankin. Sci. Nat.* 1963(1): 84–85 (1963)

. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Qinghai: Huangyuan, 8 Aug. 1944, *Y.L. Keng et P.C. Keng* 5257 (HT: NJU).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 610).

Derivation (Clifford & Bostock 2007): L. hairy. Plant hairy in respect to all or some parts.

Classification. Subfamily Pooideae. Tribe: Triticeae.

Flower and Fruit. $2n = 42$ (4 refs TROPICOS).

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. China North-Central, Qinghai, Xinjiang.

TDWG4. Gansu.

Kengyilia kaschgarica (D.F. Cui) L.B. Cai. *Novon*, 6(2): 142 (1996).

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

TYPE from China. **Basionym or Replaced Name:** *Elymus kaschgaricus* D.F. Cui, *Bull. Bot. Res. North-East. Forest. Inst.* 10(3): 27 (1990). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Xinjiang: Tashikurgan & Aheqi Xian, ad pratum alpinum frigidum, 2800–3800 m, 4 Dec. 1978, *Exped. Xinjiang Northwest Inst. Bot.* 922 (HT: XJBI)

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 609).

Classification. Subfamily Pooideae. Tribe: Triticeae.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. Xinjiang.

Kengyilia kokonorica (Keng ex Keng & S.L. Chen) J.L. Yang, C. Yen & B.R. Baum. *Hereditas*, 116: 27 (1992).

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

TYPE from China. **Basionym or Replaced Name:** *Roegneria kokonorica* Keng ex Keng & S.L. Chen, *Acta Univ. Nankin. Sci. Nat.* 1: 88 (1963)

. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Qinghai: Huangyuan, 12 Aug. 1944, *Y.L. Keng et P.C. Keng* 5364 (HT: NJU).

Recent Synonyms: *Elymus kokonoricus* (Keng ex Keng & S.L. Chen) D.F. Cui.

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 614).

Derivation (Clifford & Bostock 2007): L. *-ica*, belonging to. From Koko Nor, now Ching Hai Su, China.

Classification. Subfamily Pooideae. Tribe: Triticeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped loosely. Rhizomes short. Culms 40–100 cm long. Leaf-sheaths smooth, glabrous on surface. Ligule an eciliate membrane. Leaf-blades conduplicate, 1.5–3 mm wide.

Inflorescence. Inflorescence composed of racemes. Racemes 1, single, linear or oblong, bilateral, 4–7 cm long. Rhachis ciliate on margins. Spikelet packing broadside to rhachis, crowded, 2 -rowed. Rhachis internodes 2–3(–8) mm long. Spikelets ascending or spreading, solitary. Fertile spikelets sessile.

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 to oblong, laterally compressed, 6–11 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus base truncate.

Glumes. Glumes similar, subequal in width, shorter than spikelet. Lower glume lanceolate, 3.5–5 mm long, 1 length of upper glume, coriaceous, 1-keeled, keeled above, 1–3 -veined. Lower glume lateral veins absent or obscure. Lower glume surface pilose. Lower glume apex acute, awned, 1 -awned, awn 3–4 mm long. Upper glume lanceolate, 3.5–5 mm long, 0.75–0.85 length of adjacent fertile lemma, coriaceous, 1-keeled, keeled above, 3–5 -veined. Upper glume surface pilose. Upper glume apex acute, awned, 1 -awned, awn 3–4 mm long.

Florets. Fertile lemma lanceolate to oblong, 4.5–6 mm long, coriaceous, 5 -veined, more than 3-veined. Lemma surface pilose. Lemma apex acute, awned, 1 -awned. Principal lemma awn 4–6 mm long overall. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, membranous. Anthers 3. Stigmas 2. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

$2n = 42$ (2 refs TROPICOS).

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. Siberia, Russian far east, **Middle Asia, China, Mongolia.** Inner Mongolia, China North-Central, Qinghai, Tibet, Xinjiang.

TDWG4. Gansu.

Kengyilia laxiflora (Keng) J.L. Yang, C. Yen & B.R. Baum. *Hereditas* 116 (1–2): 27. 1992.

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

TYPE from China. **Basionym or Replaced Name:** *Roegneria laxiflora* Keng *Acta Univ. Nankin. Sci. Nat.* 1963 (3): 75 (1963). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Sichuan: Ganzi, 11 July 1951, Y.W. Tsui 4338 (HT: NAS).

Recent Synonyms: *Elymus laxiflorus* (Keng) Á.Löve, *Feddes Repert.* 95: 455 (1984).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 582 & Fig. 608).

Derivation (Clifford & Bostock 2007): *L. laxus*, loose; *flos*, flower. Inflorescence an open panicle.

Classification. Subfamily Pooideae. Tribe: Triticeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped densely. Culms erect or geniculately ascending, 50–70 cm long, 1.5 mm diam., 4–5 -noded. Leaf-sheaths mostly shorter than adjacent culm internode, smooth, glabrous on surface. Ligule an eciliate membrane, 0.5 mm long. Leaf-blades flat or involute, 10 cm long, 3 mm wide.

Inflorescence. Inflorescence composed of racemes. Racemes 1, single, bilateral, 10–16 cm long, 6–8 mm wide. Rhachis flattened, glabrous on surface or puberulous on surface, scabrous on margins. Spikelet packing broadside to rhachis, lax, regular, 2 -rowed. Rhachis internodes 8–15(–20) mm long. Spikelets solitary. Fertile spikelets sessile.

Fertile Spikelets. Spikelets comprising 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 laterally compressed, 16–22 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, subequal in width, shorter than spikelet. Lower glume lanceolate or oblong, 4 mm long, coriaceous, much thinner on margins, without keels, 3 -veined. Lower glume surface glabrous. Lower glume apex acuminate, muticous. Upper glume lanceolate or oblong, 6–7 mm long, coriaceous, with membranous margins, without keels, 5 -veined. Upper glume surface glabrous. Upper glume apex acuminate, muticous.

Florets. Fertile lemma lanceolate, 5–10 mm long, coriaceous, without keel, 5 -veined, more than 3-veined. Lemma surface pubescent. Lemma apex acute or acuminate, muticous or awned, 1 -awned. Principal lemma awn 1–2 mm long overall. Palea 1.1 length of lemma, 2 -veined. Palea keels ciliolate. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, membranous. Anthers 3, 3–4 mm long, yellow. Stigmas 2. Ovary pubescent on apex. Caryopsis with adherent pericarp, hairy at apex, apex unappendaged. 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.

Kengyilia laxistachya L.B.Cai & D.F.Cui. *Bull. Bot. Res. North-East. Forest. Univ.* 15(4): 424 (1995).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online (as *Elymus*), 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: Xinjiang: Shache Xian, ad ripas fluviorum, 2700 m, 16 July 1959, A.R. Li & J.N. Zhu 9907 (HT: XJBI).

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

Classification. Subfamily Pooideae. Tribe: Triticeae.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. Xinjiang.

Kengyilia melanthera (Keng & Chen) J.L. Yang, C. Yen & B.R. Baum. *Hereditas*, 116: 28 (1992).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online (as *Elymus*), 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:** *Agropyron melantherum* Keng, *Sunyatsenia* 6(1): 62–63 (1941)

. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Qinghai: Maduo, C.W. Yao 832 (HT: PE)

Recent Synonyms: *Elymus melantherus* (Keng & Chen) A. Love, *Feddes Repert.* 95: 455 (1984).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 605 as *Kengyilia melanthera* var. *melanthera*).

Derivation (Clifford & Bostock 2007): Gk. melas, black; anthera, of flowers. Anthers dark.

Classification. Subfamily Pooideae. Tribe: Triticeae.

Habit, Vegetative Morphology. Perennial, culms solitary. Culms 20–30 cm long, 1–2 mm diam., 2–3 -noded. Culm-nodes constricted, brown. Leaf-sheaths loose, 8–10 cm long. Leaf-sheath auricles falcate, 3 mm long. Ligule an eciliate membrane, 1 mm long, brown, truncate. Leaf-blades flat or involute, 2.5–8 cm long, 2–4 mm wide. Leaf-blade surface puberulous, hairy abaxially.

Inflorescence. Inflorescence composed of racemes, exserted or embraced at base by subtending leaf. Racemes 1, single, bilateral, 4–7 cm long, 10–15 mm wide. Rhachis glabrous on surface to pubescent on surface, glabrous on margins or ciliate on margins. Spikelet packing broadside to rhachis. Rhachis internodes linear, 1.5–3 mm long. Spikelets solitary. Fertile spikelets sessile.

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 to oblong, laterally compressed, 10–12 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, 4–6 mm long, 0.8 length of upper glume, coriaceous, without keels, 3–5 -veined. Lower glume surface glabrous or pilose. Lower glume apex acute, awned, 1 -awned, awn 1–2 mm long. Upper glume lanceolate, 5–7 mm long, 0.9 length of adjacent fertile lemma, coriaceous, without keels, 3–5 -veined. Upper glume surface glabrous or pilose. Upper glume apex acute, awned, 1 -awned, awn 1–2 mm long.

Florets. Fertile lemma lanceolate, 8 mm long, coriaceous, 5 -veined, more than 3-veined. Lemma surface pilose. Lemma apex acute, awned, 1 -awned. Principal lemma awn straight or curved, 2–4 mm long overall. Palea 1 length of lemma. Palea keels ciliate. Palea surface pubescent. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, 1.5 mm long, membranous. Anthers 3, 1.5–2 mm long. Stigmas 2. Ovary pubescent on apex. Caryopsis with adherent pericarp.

$2n = 42$ (2 refs TROPICOS).

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. Qinghai.

Kengyilia mutica (Keng & Chen) J.L. Yang, C. Yen & B.R. Baum. *Hereditas*, 116: 28 (1992).

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

TYPE from China. **Basionym or Replaced Name:** *Roegneria mutica* Keng ex Keng & S.L. Chen, *Acta Univ. Nankin. Sci. Nat.* 1963 (1): 87 (1963)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Qinghai: Gui'de Xian, Military Horse Farm, grasslands, April 1944, *C.M. Chang s.n.?* (HT: N, now lost; LT: N).

Recent Synonyms: *Elymus retusus* Á.Löve, *Feddes Repert.*, 95:455 (1984).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 611).

Illustrations (Journals): *Novon* (5:299, Fig.3 (1995)).

Derivation (Clifford & Bostock 2007): L. blunt. Lacking awns or lemmas and/or glumes truncate.

Classification. Subfamily Pooideae. Tribe: Triticeae.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. Qinghai.

Kengyilia pamirica Yang & Yen. *J. Sichuan Agric. Univ.* 10: 566 (1992).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online (as *Elymus*), 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: Xinjiang: Wuqia, steppes, 2870 m, *C. Yen et al. 870536* (HT: SAUT).

Recent Synonyms: *Elymus pamiricus* Tzvelev, *Not. Syst. Herb. Inst. Bot. Acad. Sci. URSS*, 20: 425 (1960).

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

Derivation (Clifford & Bostock 2007): L. -ica, belonging to. From the Pamir Mountains, Tadzhikistan, former Soviet Union.

Classification. Subfamily Pooideae. Tribe: Triticeae.

Habit, Vegetative Morphology. Perennial, caespitose. Culms erect, 70 cm long, 2–3 -noded. Culm-internodes smooth, distally glabrous. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.5 mm long, lacerate, truncate. Leaf-blades flat or convolute, 14–17 cm long, 2–2.5 mm wide, glaucous. Leaf-blade surface ribbed, puberulous. Leaf-blade margins scabrous. Leaf-blade apex acuminate.

Inflorescence. Inflorescence composed of racemes. Racemes 1, single, erect, bilateral, 13.5 cm long. Rhachis flattened, glabrous on surface, scabrous on margins, ciliate on margins. Spikelet packing broadside to rhachis, lax. Spikelets solitary. Fertile spikelets sessile.

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, 20 mm long, falling entire. Spikelet callus base truncate. Rhachilla internodes pubescent.

Glumes. Glumes similar, shorter than spikelet. Lower glume lanceolate, 5.5–6 mm long, 0.75 length of upper glume, coriaceous, much thinner on margins, without keels, 3–5 -veined. Lower glume primary vein scabrous. Lower glume apex acuminate, mucronate or awned, 1 -awned, awn 0.5–0.8 mm long. Upper glume lanceolate, 7–8 mm long, 0.8–0.9 length of adjacent fertile lemma, coriaceous, with scarious margins, without keels, 3–5 -veined. Upper glume primary vein scabrous. Upper glume apex acuminate, mucronate or awned, 1 -awned, awn 0.5–0.8 mm long.

Florets. Fertile lemma lanceolate, 8.5–9 mm long, coriaceous, keeled, keeled above, 5 -veined, more than 3-veined. Lemma lateral veins prominent. Lemma surface puberulous, hairy at base. Lemma margins pubescent. Lemma apex emarginate, mucicous or mucronate. Palea 1 length of lemma, 2 -veined. Palea keels ciliate, adorned above. Palea surface glabrous. Palea apex truncate. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, membranous. Anthers 3, 4 mm long, yellow. Stigmas 2. Caryopsis with adherent pericarp.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. Middle Asia, China. Xinjiang.

Kengyilia pendula L.B. Cai. *Acta Phytotax. Sin.*, 37(5): 460 (1999).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online (as *Elymus*), 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: Qinghai: Baima, Makehelinqu, Banqian, on sunny hillside, 3600 m, 4 Aug. 1962, *Z.D. Wei* 388 (HT: WUK).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 607).

Derivation (Clifford & Bostock 2007): L. *pendulus*, hanging down. Spikelets or inflorescence branches pendant.

Classification. Subfamily Pooideae. Tribe: Triticeae.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. Qinghai.

Kengyilia rigidula (Keng) S.L. Chen. *Bull. Bot. Res. North-East. Forest. Univ.*, 14(2): 140 (1992).

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

TYPE from China. **Basionym or Replaced Name:** *Roegneria rigidula* Keng, {Univ. Nankin. Sci. Nat. 1963 (3): 77 (1963)}

. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Gansu: Labrang, Xiahe, dry mountain slopes, ca. 3300 m, 19 July 1937, *K.T. Fu 1248* (HT: PE).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 606).

Derivation (Clifford & Bostock 2007): *L. rigidus*, stiff; *-ula*, diminutive. Plant with stiffly erect inflorescence branches or leaf-blades.

Classification. Subfamily Pooideae. Tribe: Triticeae.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. China North-Central, Qinghai, Tibet.

TDWG4. Gansu.

Kengyilia shawanensis L.B. Cai. *Guihaia*, 16(3): 202 (1996).

Accepted by: W.D. Clayton & K. Harman, *GrassBase* (2008) and online (as *Elymus*), 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: Xinjiang: Shawan, in clivis aridis, 2700 m, 27 June 1962, *Exped. Xinjiang Inst. Biol. Ped. 3544* (HT: XJBI).

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

Derivation (Clifford & Bostock 2007): *L. -ensis*, denoting origin. From Shawan, Xinjiang Uyghur Autonomous Region, China.

Classification. Subfamily Pooideae. Tribe: Triticeae.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. Xinjiang.

Kengyilia stenachyra (Keng ex Keng & S.L. Chen) J.L. Yang, C. Yen & B.R. Baum. *Hereditas* 116(1–2): 27. 1992.

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

TYPE from China. **Basionym or Replaced Name:** *Roegneria stenachyra* Keng ex Keng & S.L. Chen, *Acta Univ. Nankin. Sci. Nat.* 1963 (3): 79 (1963)

. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Gansu: Jiuquan, Qilian Shan, mountain slopes, ca. 3200 m, 8 Aug. 1941, *J. Hoo et al. 12443* (HT: N)

Recent Synonyms: *Elymus stenachyrus* (Keng & Chen) A. Love, *Feddes Repert.* 95: 456 (1984).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 613).

Derivation (Clifford & Bostock 2007): *Gk. stenos*, narrow; *achyron*, chaff. Spikelets with narrow glumes and lemmas.

Classification. Subfamily Pooideae. Tribe: Triticeae.

Habit, Vegetative Morphology. Perennial. Culms 30–100 cm long. Ligule an eciliate membrane. Leaf-blades 1.5–3 mm wide.

Inflorescence. Inflorescence composed of racemes. Racemes 1, single, flexuous, bilateral, 6–10 cm long. Spikelet packing broadside to rachis, lax, 2 -rowed. Spikelets solitary. Fertile spikelets sessile.

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 to oblong, laterally compressed, 10–15 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus base truncate.

Glumes. Glumes similar, subequal in width, shorter than spikelet. Lower glume lanceolate, 3–5.5 mm long, 1 length of upper glume, coriaceous, without keels, 3 -veined. Lower glume surface scabrous, rough on veins. Lower glume apex acute. Upper glume lanceolate, 3–5.5 mm long, 0.33–0.5 length of adjacent fertile lemma, coriaceous, without keels, 3 -veined. Upper glume surface scabrous, rough on veins. Upper glume apex acute.

Florets. Fertile lemma lanceolate to oblong, 8–10 mm long, coriaceous, 5 -veined, more than 3-veined. Lemma surface pubescent. Lemma apex acute, awned, 1 -awned. Principal lemma awn 7–11 mm long overall. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, membranous. Anthers 3. Stigmas 2. Ovary pubescent on apex. Caryopsis with adherent pericarp. Hilum linear.

$2n = 42$ (2 refs TROPICOS).

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Gansu.

Kengyilia tahelacana J.L. Yang, C. Yen & B.R. Baum. *Canad. J. Bot.*, 71(2): 339 (1993).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online (as *Elymus*), 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: Xinjiang: Wensu, Tahelak (Aksu Kona Shahr), in petrosis montium, inter Caraganas, 2450 m, 37.47N 75.14E, 2 Sept. 1987, C. Yen et al. 870473 (HT: SAUT)

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

Classification. Subfamily Pooideae. Tribe: Triticeae.

Flower and Fruit. $2n = 42$ (1 ref TROPICOS).

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. Xinjiang.

Kengyilia thoroldiana (Oliv.) J.L. Yang, C. Yen & B.R. Baum. *Hereditas*, 116: 27 (1992).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online (as *Elymus*), 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 *Agropyron*).

TYPE from China. **Basionym or Replaced Name:** *Agropyron thoroldianum* Oliv., *Hooker's Icon. Pl.* 23 (3): pl. 2262 (1893). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Xizang: 16,500 feet, *Thorold 108* (HT: ?).

Recent Synonyms: *Elymus thoroldianus* (Oliver) G. Singh, *Taxon* 32(4): 640 (1983).

Illustrations (Books): H.J.Noltie, *The Grasses of Bhutan* (2000) (637, Fig. 30 as *Elymus thoroldianus*), S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 613 as *Kengyilia thoroldiana* var. *thoroldiana*).

Illustrations (Journals): *Hooker's Icones Plantarum* (t.2262 (1893) as *Agropyron*).

Derivation (Clifford & Bostock 2007): L. -ana, indicating connection. In honor of William Grant Thorold (fl. 1890) British surgeon-naturalist who collected in Tibet, China and Ghana.

Classification. Subfamily Pooideae. Tribe: Triticeae.

Habit, Vegetative Morphology. Annual, caespitose, clumped loosely. Culms 15–40 cm long. Ligule an eciliate membrane. Leaf-blades flat or involute, 4–10 cm long, 1–2 mm wide. Leaf-blade surface scabrous. Leaf-blade margins scabrous, glabrous or ciliate, hairy at base.

Inflorescence. Inflorescence composed of racemes. Racemes 1, single, oblong or ovate, bilateral, 1–2.5 cm long. Spikelet packing broadside to rachis, crowded. Rachis internodes linear. Spikelets pectinate, solitary. Fertile spikelets sessile.

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, 10 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, coriaceous, without keels, 3 -veined. Lower glume surface villous. Lower glume apex acute, mucronate. Upper glume lanceolate, 6 mm long, 0.75 length of adjacent fertile lemma, coriaceous, without keels, 3 -veined. Upper glume surface villous. Upper glume apex acute, mucronate.

Florets. Fertile lemma lanceolate, 6–7 mm long, coriaceous, 5 -veined, more than 3-veined. Lemma surface villous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–3 mm long overall. Palea keels ciliate. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, membranous. Anthers 3. Stigmas 2. Ovary pubescent on apex. Caryopsis with adherent pericarp.

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

Country /Province /State. China. China North-Central, Qinghai, Tibet, Xinjiang. **Indian Subcontinent.** Eastern Himalaya.

TDWG4. Gansu. Sikkim.

Kengyilia zadoiensis S.L.Lu & Y.H.Wu. *Novon* 19:263 (2009).

Illustrations (Journals): *Novon* (19: 264, Fig.1 (2009)).

Classification. Subfamily Pooideae. Tribe: Triticeae.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. Qinghai.

Kengyilia zhaosuensis J.L. Yang, C. Yen & B.R. Baum. *Canad. J. Bot.*, 71(2): 341 (1993).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online (as *Elymus*), 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: Xinjiang: Zhaosu, rocky ravine behind the Horse Breeding Farm, in petrosis montium, 1860 m, 43.07N 81.05E, 16 Sept. 1987, J.L. Yang et al. 870608 (HT: SAUT).

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

Classification. Subfamily Pooideae. Tribe: Triticeae.

Flower and Fruit. $2n = 42$ (1 ref TROPICOS).

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. Xinjiang.

Keratochlaena rigidifolia (Filg., Morrone & Zuloaga) Morrone & Zuloaga. *Darwiniana* 47: 231 (2009).

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. **Basionym or Replaced Name:** *Streptostachys rigidifolia* Filg, Morrone & Zuloaga, *Novon*, 3(3): 252 (1993). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Brazil: Maranhão: Loreto, BR-230, estrada para São Raimundo das Mangabeiras, ca. 22 km de São Raimundo, 6.56 45.19W, cerrado baixo com estrato gramíneos aberto, 13 May 1988 F.R. Ferreira & J.N. Silveira 634, *L.B. Bianchetti, F.R. Ferreira & J.N. Silveira 634* (HT: CEN; IT: B, BM, IBGE, K, MO, R, RB, SI, SP, UB, US).

Recent Synonyms: *Sclerochlamys rigidifolia* (Filg., Morrone & Zuloaga) Morrone & Zuloaga, *Taxon* 58: 373 (2009).

Illustrations (Books): N.Feinbrun-Dothan, *Flora Palaestina* 4 (1986) (3:253, Fig.1 (1993)).

Derivation (Clifford & Bostock 2007): *L. rigidus*, stiff; folium, leaf. Leaf-blades rigid.

Classification. Subfamily Panicoideae. Tribe: Paspaleae. Subtribe ARTHROPOGONINE.

Habit, Vegetative Morphology. Perennial, caespitose. Rhizomes short. Culms erect, robust, 68–95 cm long. Culm-internodes terete, thin-walled, distally glabrous. Culm-nodes swollen, pubescent. Lateral branches lacking. Leaves basal and cauline. Leaf-sheaths striately veined, glabrous on surface or pilose, outer margin hairy. Ligule a ciliate membrane, 1 mm long, pilose on abaxial surface. Leaf-blades lanceolate, 25–50 cm long, 5–8 mm wide, stiff. Leaf-blade surface glabrous or pilose, sparsely hairy. Leaf-blade margins ciliate. Leaf-blade apex acuminate, pungent.

Inflorescence. Inflorescence composed of racemes. Peduncle 15–30 cm long, antrorsely scabrous above. Racemes 2–6, digitate, 9–11 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, with the longest adnate below to rachis, oblong, 1–3 mm long.

Fertile Spikelets. Spikelets comprising 1 basal sterile florets, 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets two-flowered - the lower floret male or barren, the upper fertile. Spikelets elliptic, dorsally compressed, 5–8 mm long, falling entire. Spikelet callus incorporating lowest rhachilla internode with adnate lower glume, 0.5 mm long. Rhachilla internodes elongated between glumes and elongated below basal sterile floret. Rhachilla elongation stout.

Glumes. Glumes dissimilar, shorter than spikelet, thinner than fertile lemma or similar to fertile lemma in texture. Lower glume ovate, 3–6 mm long, 0.33–0.66 length of spikelet, membranous, without keels, 3(–5) -veined. Lower glume apex acute. Upper glume ovate, 5–6 mm long, 0.9–1 length of spikelet, coriaceous, without keels, 5 -veined. Upper glume lateral veins transversely connected at apex. Upper glume surface pubescent. Upper glume apex acute.

Florets. Basal sterile florets 1, male, with palea. Lemma of lower sterile floret similar to upper glume, ovate, 5–6.5 mm long, 1 length of spikelet, coriaceous, 5 -veined, pilose, hairy above, acute. Palea of lower sterile floret hyaline, 4.5 mm long. Fertile lemma ovate, 4.5 mm long, 1.6 mm wide, indurate, pallid, shiny, without keel, 5 -veined, more than 3-veined. Lemma surface papillose. Lemma margins involute. Palea 1 length of lemma, indurate, without keels. Palea surface papillose.

Flower and Fruit. Lodicules 2, cuneate, 0.5–0.8 mm long, fleshy, truncate. Anthers 3, 3 mm long, purple. Caryopsis with adherent pericarp, ellipsoid, dorsally compressed, plano-convex, 3–3.5 mm long. Hilum linear, 1 length of caryopsis.

Distribution (TDWG). Continent. South America.
Country /Province /State. Brazil. Brazil Northeast.

Kerriochloa siamensis C.E.Hubb. *Hook. Ic. Pl.* 35: t. 3494 (1951).

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 Thailand. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Thailand, Kao Knap: Kerr 17718 (K holo).

Illustrations (Journals): *Hooker's Icones Plantarum* (t.3494 (1950)).

Derivation (Clifford & Bostock 2007): *L. -ense*, denoting origin. From Siam, now Thailand.

Classification. Subfamily Panicoideae. Tribe: Andropogoneae. Subtribe ISCHAEMINAE.

Habit, Vegetative Morphology. Perennial. Culms decumbent, 20–25 cm long. Ligule an eciliate membrane, 1 mm long. Leaf-blades lanceolate, 1.5–4 cm long, 2.5–4 mm wide.

Inflorescence. Inflorescence composed of racemes, subtended by a spatheole, enclosed. Spatheole linear, 5–10 cm long, herbaceous. Racemes 1, single, 2.5–4 cm long. Rhachis fragile at the nodes, flattened, villous on margins. Rhachis hairs 2.5 mm long. Rhachis internodes cuneate, 3.5–4 mm long. Rhachis internode tip cupuliform. Spikelets in pairs. Fertile spikelets sessile, 1 in the cluster. Companion sterile spikelets pedicelled, 1 in the cluster. Pedicels present, foliaceous, ciliate.

Sterile Spikelets. Companion sterile spikelets represented by single glumes, lanceolate, 0.5–2 mm long, persistent.

Fertile Spikelets. Spikelets comprising 1 basal sterile florets, 1 fertile florets, without rachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets two-flowered - the lower floret male or barren, the upper fertile. Spikelets lanceolate, laterally compressed, 5–6 mm long, falling entire, deciduous with accessory branch structures. Spikelet callus pubescent, base obtuse, inserted.

Glumes. Glumes dissimilar, exceeding apex of florets, firmer than fertile lemma. Lower glume lanceolate, 1 length of spikelet, chartaceous, without keels, 5 -veined. Lower glume lateral veins ribbed. Lower glume surface villous, hairy below. Lower glume apex entire or dentate, 2 -fid, obtuse. Upper glume ovate, chartaceous, 1-keeled, 3 -veined. Upper glume margins ciliate. Upper glume apex dentate, 2 -fid, awned, 1 -awned, awn 4.5–6.5 mm long.

Florets. Basal sterile florets 1, male, with palea. Lemma of lower sterile floret elliptic, 4.5–5.5 mm long, membranous, 3 -veined, ciliolate on margins, obtuse. Fertile lemma oblong, 3–3.8 mm long, hyaline, without keel, 3 -veined, 0–3 -veined. Lemma margins ciliolate, hairy above. Lemma apex lobed, 2 -fid, incised 0.3 of lemma length, awned. Principal lemma awn from a sinus, geniculate, 10–16 mm long overall, with twisted column. Column of lemma awn glabrous. Palea 0.8 length of lemma, hyaline, 2 -veined, without keels.

Flower and Fruit. Anthers 3, 0.8–2.5 mm long. Caryopsis with adherent pericarp, oblong, isodiametric, 2–2.3 mm long. Embryo 0.3 length of caryopsis. Hilum elliptic.

Distribution (TDWG). Continent. Tropical Asia.

Country /Province /State. Indo-China. Laos, Thailand, Vietnam.

Kinabaluchloa nebulosa K.M. Wong. *Kew Bull.*, 48(3): 526 (1993).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

TYPE from Indonesia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Mikil SAN-38475*, Borneo: Sabah: Ranau, above Mosilau Camp, ca. 6200 ft (1940 m) (K; IT: SAN).

Illustrations (Journals): *Kew Bulletin* (48 (3): 527, Fig. 5 (1993)).

Derivation (Clifford & Bostock 2007): *L. nebula*, mist; *-osa*, abundance. Growing in high mountains.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms leaning, drooping at the tip, 700–800 cm long, 15–25 mm diam., woody, without nodal roots. Culm-internodes terete, thin-walled, 40–105 cm long, mid-green, scaberulous. Culm-nodes bearded. Lateral branches dendroid. Bud complement 1. Branch complement several, in a clump, with subequal branches. Culm-sheaths present, green, hispid, with black hairs, setose on shoulders. Culm-sheath ligule ciliate. Culm-sheath blade linear, reflexed. Ligule a ciliate membrane, 10–15 mm long. Leaf-blade base with a brief petiole-like connection to sheath, petiole 0.2–0.4 cm long. Leaf-blades lanceolate, 13–25 cm long, 20–30 mm wide. Leaf-blade surface glabrous, hairless except near base.

Inflorescence. Synflorescence bractiferous, clustered at the nodes, in untidy tufts, lax, with spathaceous subtending bracts, with axillary buds at base of spikelet, prophyllate below lateral spikelets, leafy between clusters.

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, 12–25 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes flattened, 5–8 mm long.

Glumes. Glumes several, comprising 1–2 gemmiferous bracts, 1 empty glumes. Lower glume ovate, 10–18 mm long. Lower glume apex cuspidate.

Florets. Fertile lemma ovate, 10–18 mm long, without keel, 14 -veined, more than 3-veined. Lemma inner surface pubescent (at apex). Lemma margins ciliolate. Lemma apex cuspidate. Palea 1 length of lemma, 10 -veined. Palea keels approximate, ciliolate. Rhachilla extension 2–3 mm long. Apical sterile florets 1 in number.

Flower and Fruit. Lodicules 3, 3 mm long, veined. Anthers 6, 4 mm long, yellow. Stigmas 3.

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

Country /Province /State. **Malesia.** Borneo.

Kinabaluchloa wrayi (Stapf) K.M. Wong. *Kew Bull.*, 48(3): 524: (1993).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006).

TYPE from Malaysia. **Basionym or Replaced Name:** *Bambusa wrayi* Stapf, *Kew Bull.* 1893: 114 (1893). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *L. Wray 4166*, 1892, Malaysia: Malay Peninsula, Perak State: Gunong Inas (K; IT: SING, US-1064656, US-516147).

Illustrations (Journals): *Kew Bulletin* (48 (3): 525, Fig. 4 (1993)).

Derivation (Clifford & Bostock 2007): In honor of Leonard Wray (1853–1942) British Colonial gardens superintendent.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms drooping at the tip, 1200–1800 cm long, 25 mm diam., woody, without nodal roots. Culm-internodes terete, thin-walled, 100–200 cm long, yellow. Lateral branches dendroid. Culm-sheaths present. Leaf-sheath oral hairs setose, 6–10 mm long. Ligule an eciliate membrane. Collar with external ligule. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 15–25 cm long, 20–30 mm wide. Leaf-blade surface glabrous.

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, leafy between clusters.

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, laterally compressed, 10–11 mm long, breaking up at maturity, disarticulating below each fertile floret.

Glumes. Glumes several, comprising 3–4 gemmiferous bracts, 1 empty glumes. Upper glume 10 mm long.

Florets. Fertile lemma lanceolate, 10–11 mm long, without keel, 9 -veined, more than 3-veined. Lemma apex acute. Palea 1 length of lemma, 10 -veined. Palea keels ciliolate. Rhachilla extension 6 mm long. Apical sterile florets 1 in number.

Flower and Fruit. Lodicules 3, 3.5 mm long, ciliate. Anthers 6, 4 mm long. Stigmas 3. Ovary umbonate.

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

Country /Province /State. **Malesia.** Malaya.

Koeleria altaica (Domin) Krylov. *Fl. Sibir. Occ.* ii. 261 (1928).

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:** *Koeleria eriostachya* var. *altaica* Domin, *Bibl. Bot.* 65:163 (1907). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Russia, Altai: Bunge (B hol).

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

Derivation (Clifford & Bostock 2007): *L. -ica*, belonging to. From the Altai Mts., Mongolia.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped densely. Butt sheaths pubescent, persistent and investing base of culm, with compacted dead sheaths. Culms erect, 10–30 cm long. Culm-internodes distally glabrous. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane. Leaf-blades convolute, 2–3 cm long,

0.5–2 mm wide, glaucous. Leaf-blade surface scabrous, rough adaxially, glabrous or pubescent, hairy adaxially. Leaf-blade margins cartilaginous.

Inflorescence. Inflorescence a panicle. Peduncle pubescent above. Panicle spiciform, linear, interrupted, 2.5–6 cm long. Panicle axis pubescent. Panicle branches pubescent. 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 obovate, laterally compressed, 4.5–5 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, shiny, gaping. Lower glume lanceolate, 0.9 length of upper glume, membranous, 1-keeled, 1 -veined. Lower glume primary vein ciliolate. Lower glume lateral veins absent. Lower glume surface glabrous or pubescent. Lower glume apex acute. Upper glume oblong, 0.9 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume primary vein ciliolate. Upper glume surface glabrous or pubescent. Upper glume apex acute.

Florets. Fertile lemma oblong, 4.5–5 mm long, membranous, shiny, keeled. Lemma surface puberulous. Lemma apex acute, mucronate or awned, 1 -awned. Principal lemma awn subapical, 0.5 mm long overall. Palea gaping.

Flower and Fruit. Lodicules 2, membranous. Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp. $2n = 28$ (2 refs TROPICOS).

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. Siberia, **Middle Asia, China, Mongolia.** Altay, Irkutsk, Tuva. Kazakhstan. Inner Mongolia, Xinjiang. Mongolia.

TDWG4.

Koeleria asiatica Domin. *Bull. Herb. Boiss. Ser. II. v. 947.* (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), 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, Tamyr R.: Exped. Siber. Acad. (LE iso).

Illustrations (Books): M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (755).

Derivation (Clifford & Bostock 2007): L. -ica, belonging to. From Asia.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped loosely. Rhizomes elongated. Culms erect, 14–30 cm long. Culm-internodes distally glabrous or pubescent. Leaf-sheaths glabrous on surface or puberulous. Ligule an eciliate membrane, 0.5–1 mm long. Leaf-blades conduplicate, 1–2.5 mm wide. Leaf-blade surface smooth or scaberulous, glabrous or puberulous.

Inflorescence. Inflorescence a panicle. Panicle spiciform, linear, 2–4 cm long. Panicle axis pubescent. Panicle branches pubescent. 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, 3.7–5.5 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, shiny. Lower glume lanceolate, 2.7–4.1 mm long, 0.75–0.85 length of upper glume, membranous, 1-keeled, 1 -veined. Lower glume lateral veins absent. Lower glume surface glabrous or pubescent. Lower glume apex attenuate. Upper glume lanceolate, 3.4–4.8 mm long, 0.9 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume surface glabrous or pubescent. Upper glume apex attenuate.

Florets. Fertile lemma oblong, 3.7–5.5 mm long, membranous, shiny, keeled, 5 -veined, more than 3-veined. Lemma surface pubescent. Lemma apex acute, mucicous or mucronate. Palea gaping, 1 length of lemma.

Flower and Fruit. Lodicules 2. Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp.

$2n = 14$ (1 ref TROPICOS).

Distribution (TDWG). Continent. Europe, Temperate Asia, North America.

Region. Eastern Europe.

Country /Province /State. Central European Russia, East European Russia, North European Russia. Siberia, Russian far east, **Middle Asia, China, Mongolia, Russia.** Altay, Buryatiya, Chita, Irkutsk, Tuva. Kamchatka, Magadan. Kazakhstan. Qinghai, Tibet. Mongolia. **Subarctic America.** Alaska, Yukon, Northwest Territories.

TDWG4.

Koeleria askoldensis Roschev. *Fedde Repert.* 13: 84 (1914).

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, Askold Is.: Shoshin (LE holo).

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

Derivation (Clifford & Bostock 2007): L. *-ensis*, denoting origin. From Askold Island, off the coast of the Russian Far East.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped loosely. Culms erect, 30–60 cm long, 2–3-noded. Leaf-sheaths glabrous on surface or puberulous. Ligule an eciliate membrane, 1.5–2 mm long, entire or lacerate, truncate. Leaf-blades convolute, 13–25 cm long, 2–3 mm wide. Leaf-blade surface glabrous.

Inflorescence. Inflorescence a panicle. Peduncle pubescent above. Panicle spiciform, lanceolate, interrupted, loose, 5–11 cm long, 1.5–4 cm wide. Panicle axis pubescent. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, pubescent.

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 lanceolate, laterally compressed, 4–5 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, shiny, gaping. Lower glume lanceolate, 2.5–3 mm long, 0.7–0.8 length of upper glume, membranous, 1-keeled, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume oblong, 3–3.5 mm long, 0.75–0.85 length of adjacent fertile lemma, membranous, 1-keeled, 3-veined. Upper glume apex acute.

Florets. Fertile lemma oblong, 3.5–4.5 mm long, membranous, shiny, keeled. Lemma midvein scabrous. Lemma apex acuminate. Palea gaping. Palea keels ciliate.

Flower and Fruit. Lodicules 2, membranous. Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp. $2n = 14$ (1 ref TROPICOS).

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. Russian far east. Primorye.

TDWG4.

Koeleria besseri Ujhelyi. *Ann. Hist.-Nat. Mus. Nation. Hung.*, 64: 120 (1972).

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: Besser.

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

Derivation (Clifford & Bostock 2007): In honor of Wilibald Swibert Joseph Gottlieb Besser (1784–1842) Austrain-born Russian botanist.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped loosely. Rhizomes short. Butt sheaths hirsute, persistent and investing base of culm, with compacted dead sheaths. Basal innovations extravaginal. Culms erect, 35–74 cm long, 1–2 mm diam. Lateral branches lacking. Leaves mostly basal. Leaf-sheath auricles erect. Ligule an eciliate membrane, 0.8–1 mm long, erose. Leaf-blades 10–20 cm long, 2–3 mm wide. Leaf-blade surface pilose.

Inflorescence. Inflorescence a panicle. Peduncle pubescent above. Panicle contracted or spiciform, linear, interrupted, 5–16 cm long, 1–1.8 cm wide. Panicle axis hirsute. Panicle branches hirsute. 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, 5–7 mm long, breaking up at maturity, disarticulating below each fertile floret.

Glumes. Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture, shiny, gaping. Lower glume lanceolate, 4.5 mm long, membranous, much thinner on margins, 1-keeled. Lower glume primary vein scabrous. Lower glume apex acute. Upper glume ovate, 6 mm long, 1.1 length of adjacent fertile lemma, membranous, with hyaline margins, 1-keeled. Upper glume primary vein scabrous. Upper glume apex acute.

Florets. Fertile lemma oblong, 5.5 mm long, membranous, much thinner on margins, shiny, keeled, 5 - veined, more than 3-veined. Lemma surface puberulous. Lemma apex acute. Palea gaping, 5.2 mm long, 1 length of lemma. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Anthers 3, 2 mm long.

Distribution (TDWG). Continent. Europe.

Region. Middle Europe.

Country /Province /State. : Hungary.

Koeleria biebersteinii M. Kalenichenko. *Zlaki Ukrainy*: 194 (1977).

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, Crimea, Jaila Babugana: Produkin (CWU holo).

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

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose. Butt sheaths thickened and forming a bulb. Culms geniculately ascending, 25–75 cm long. Culm-internodes distally pubescent. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane. Leaf-blades convolute, 1.5–2.5 mm wide, glaucous. Leaf-blade surface glabrous.

Inflorescence. Inflorescence a panicle. Panicle spiciform, oblong, 4–10 cm long. 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 obovate, laterally compressed, 5.5–7.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes pubescent.

Glumes. Glumes persistent, similar, shorter than spikelet or reaching apex of florets, similar to fertile lemma in texture, shiny, gaping. Lower glume lanceolate, 0.9 length of upper glume, membranous, 1-keeled, 1 - veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume oblong, 1 length of adjacent fertile lemma, membranous, 1-keeled. Upper glume apex acute.

Florets. Fertile lemma oblong, 4.5–6 mm long, membranous, shiny, keeled. Lemma surface glabrous. Lemma apex acute. Palea gaping.

Flower and Fruit. Anthers 3, yellow. Caryopsis 3–3.5 mm long.

Distribution (TDWG). Continent. Europe.

Region. Eastern Europe.

Country /Province /State. North European Russia.

TDWG4.

Koeleria boliviensis (Domin) A.M. Molina. *Parodiana*, 8(1): 61: (1993).

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:** *Koeleria gracilis* var. *boliviensis* Domin, Fedde. *Rep.* 2:93 (1906). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Bolivia, Tupiza: Fiebrig 2940 (B holo).

Illustrations (Books): S.A.Renvoize, *Gramineas de Bolivia* (1998) (163, Fig 39).

Derivation (Clifford & Bostock 2007): L. -ense, denoting origin. From Bolivia.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose. Culms erect, 20–25 cm long. Ligule an eciliate membrane. Leaf-blades 3–9 cm long, 1 mm wide. Leaf-blade apex acute.

Inflorescence. Inflorescence a panicle. Panicle spiciform, linear, interrupted, 3–3.5 cm long. Panicle axis pubescent. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

Fertile Spikelets. Spikelets comprising 2 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 obovate, laterally compressed, 3.5–4.5 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, shiny, gaping. Lower glume lanceolate, 2.5–3.5 mm long, 1 length of upper glume, membranous, 1-keeled, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume lanceolate, 2.5–3.5 mm long, 1 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume apex acuminate.

Florets. Fertile lemma lanceolate, 2.5–3.5 mm long, membranous, much thinner on margins, shiny, keeled. Lemma apex dentate, 2-fid, obtuse, mucicous. Palea gaping. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, membranous. Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp.

Distribution (TDWG). **Continent.** South America.

Country /Province /State. **Western South America.** Bolivia.

Koeleria brevis Stev. *Bull. Soc. Nat. Mosc.* . II. 110 (1857).

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, Sudak: Steven (H holo).

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

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped densely. Butt sheaths thickened and forming a bulb, glabrous. Culms erect, 20–32 cm long, 1-noded. Lateral branches lacking. Leaves mostly basal. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.5–1 mm long, erose, truncate. Leaf-blades convolute, 1.5–3 cm long, 0.4–1 mm wide. Leaf-blade margins ciliate. Leaf-blade apex acuminate.

Inflorescence. Inflorescence a panicle. Panicle spiciform, oblong or ovate, interrupted, 2–3 cm long, 0.7–1.7 cm wide. Panicle axis pubescent. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, pubescent.

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, 5–7.5 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, shiny, gaping. Lower glume lanceolate, 3–5.5 mm long, 0.75–1 length of upper glume, membranous, much thinner on margins, 1-keeled, 1-veined. Lower glume lateral veins absent. Lower glume apex acute or acuminate. Upper glume lanceolate, 4.5–6.8 mm long, 1 length of adjacent fertile lemma, membranous, with hyaline margins, 1-keeled, 3-veined. Upper glume apex acute or acuminate.

Florets. Fertile lemma oblong, 5–6.8 mm long, membranous, much thinner on margins, shiny, keeled, 5-veined, more than 3-veined. Lemma apex acute to setaceously acuminate, mucicous or mucronate or awned, 1-awned. Principal lemma awn 0–1 mm long overall. Palea gaping, 1 length of lemma. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, membranous. Anthers 3, 2–3 mm long. Ovary glabrous.

Distribution (TDWG). Europe, Temperate Asia.

Region. Southeastern Europe, Eastern Europe.

Country /Province /State. South European Russia, Ukraine. **Western Asia.** Turkey.

TDWG4.

Koeleria calderonii Molina. *Bol. Soc. Arg. Bot.* 26:223 (1990).

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, Quebrada Rincon de los Vallecitos: Valdes 3616 (BAA holo).

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

Derivation (Clifford & Bostock 2007): In honor of Cleofe Elsa Calderon (1929-) Argentinian-born United States botanist.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose. Rhizomes short. Culms geniculately ascending, 7–21 cm long, 1–2-noded. Culm-nodes glabrous. Lateral branches lacking. Leaf-sheaths pubescent. Ligule a ciliolate membrane, 1–1.5 mm long, truncate or acute. Leaf-blades 4–10 cm long, 1.5–2 mm wide. Leaf-blade surface pubescent, densely hairy.

Inflorescence. Inflorescence a panicle, exerted or embraced at base by subtending leaf. Peduncle pubescent above. Panicle spiciform, linear, interrupted, 3–5.5 cm long, 0.7–1 cm wide. Panicle axis pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, pubescent.

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, 4–6 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 0.8–1.5 mm long, pubescent. Floret callus sparsely hairy.

Glumes. Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture, shiny, gaping. Lower glume lanceolate, 4.5–5 mm long, 0.8–0.9 length of upper glume, membranous, 1-keeled, 3 -veined. Lower glume primary vein scabrous (above). Lower glume apex acuminate. Upper glume lanceolate, 4.5–5 mm long, 1.1 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume primary vein scabrous (above). Upper glume apex acute.

Florets. Fertile lemma elliptic, 4–5.5 mm long, membranous, shiny, keeled, 5 -veined, more than 3-veined. Lemma lateral veins obscure, stopping well short of apex. Lemma surface scabrous. Lemma apex acute, awned, 1 -awned. Principal lemma awn subapical, curved, 1–2 mm long overall. Palea gaping. Palea keels scabrous.

Flower and Fruit. Lodicules 2, 1 mm long, membranous. Anthers 3, 1–1.5 mm long, yellow or purple. Caryopsis with adherent pericarp, ellipsoid, laterally compressed, 2–2.5 mm long. Hilum elliptic. Endosperm liquid.

Distribution (TDWG). Continent. South America.

Country /Province /State. Southern South America. Argentina Northwest.

TDWG4. Mendoza.

Koeleria capensis Nees. *Linnaea*, vii. 321 (1832).

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:** *Aira capensis* Steud., non L.f.(1781), *Flora*, 12: 468 (1829). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: : Based on *Aira capensis* Steud. Non L.f. ; South Africa, Cape: Ecklon 945 (K iso).

Illustrations (Books): R.M.Pohill, F.T.E.A., *Gramineae* (1(1970):80, Fig.27), G.V.Pope et al., *Flora Zambesiaca* 10 (1(1971):70, t. 20), G.E.Gibbs Russell et al, *Grasses of Southern Africa* (1990) (194, Fig 115), S.Phillips, *Poaceae* (Gramineae) in I.Hedberg & S.Edwards, *Flora of Ethiopia and Eritrea* (1995) (39, Fig 18).

Images: F.van Oudtshoorn, *Guide to Grasses of Southern Africa* (1999).

Derivation (Clifford & Bostock 2007): L. -ense, denoting origin. From the Cape of Good Hope, South Africa.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose. Butt sheaths papery, not bulbous or thickened and forming a bulb, persistent and investing base of culm, with fibrous dead sheaths. Culms erect, 20–80 cm long. Leaves mostly basal. Ligule an eciliate membrane, 1–2 mm long. Leaf-blades convolute, 5–30 cm long, 0.5–2 mm wide, stiff. Leaf-blade surface glabrous or pubescent.

Inflorescence. Inflorescence a panicle. Panicle spiciform, linear or lanceolate, continuous or interrupted, 4–15 cm long. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, oblong.

Fertile Spikelets. Spikelets comprising 1–3 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 or cuneate, laterally compressed, 4–7 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes definite, pubescent.

Glumes. Glumes persistent, similar, reaching apex of florets or shorter than spikelet, similar to fertile lemma in texture, shiny, gaping. Lower glume lanceolate, 3.5–6 mm long, 0.8–1 length of upper glume, membranous, much thinner on margins, 1-keeled, 1 -veined. Lower glume lateral veins absent. Lower glume surface glabrous or puberulous. Lower glume apex acute. Upper glume lanceolate, 4.5–6 mm long, 0.8–1 length of adjacent fertile lemma, membranous, with hyaline margins, 1-keeled, 3 -veined. Upper glume surface glabrous or puberulous. Upper glume apex acuminate.

Florets. Fertile lemma elliptic, 3–6.5 mm long, membranous, much thinner on margins, shiny, keeled, keeled above, 3 -veined, 0–3 -veined. Lemma surface asperulous. Lemma apex acute or acuminate. Palea gaping. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, oblong, membranous, 2-toothed. Anthers 3, (1–)1.8–2.5 mm long. Ovary glabrous.

$N = 7$ (2 refs TROPICOS), or 14 (2 refs TROPICOS). $2n = 14$ (1 ref TROPICOS).

Distribution (TDWG). Continent. Africa.

Country /Province /State. West-central tropical Africa, Northeast tropical Africa, East tropical Africa, South tropical Africa, Southern Africa. Cameroon. Ethiopia (inc. Eritrea). Kenya, Tanzania, Uganda. Malawi, Mozambique, Zambia, Zimbabwe. Limpopo, Gauteng, Mpumalanga, Swaziland, Free State, Kwazulu-Natal, Lesotho, Western Cape, Eastern Cape.

Koeleria carolii Emberger. *Bull. Soc. Sc. Nat. Maroc*, xv. 192. (1935).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online.

TYPE from Morocco. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Morocco, Akka-n-Taggert: Emberger.

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

Derivation (Clifford & Bostock 2007): in honor of Jean Martin Francois Carolus (1808–63) Belgian botanist.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped densely. Butt sheaths thickened and forming a bulb, persistent and investing base of culm, with reticulate dead sheaths. Culms erect, 10–20 cm long. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.7–2 mm long, acute. Leaf-blades straight or curved, filiform, conduplicate, 5–10 cm long, 1 mm wide, glaucous. Leaf-blade venation with 5–7 secondary veins. Leaf-blade surface scabrous, rough adaxially, glabrous. Leaf-blade margins cartilaginous. Leaf-blade apex callose.

Inflorescence. Inflorescence a panicle. Panicle contracted or spiciform, oblong, interrupted, 3–4 cm long. Panicle axis glabrous. Panicle branches glabrous. 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, 5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes pubescent. Floret callus pubescent, with circular scar.

Glumes. Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture, shiny, gaping. Lower glume lanceolate, 3 mm long, 0.75 length of upper glume, membranous, 1-keeled, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 4 mm long, 0.8–0.9 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acute.

Florets. Fertile lemma lanceolate, 4.5 mm long, membranous, shiny, keeled, 3 -veined, 0–3 -veined. Lemma midvein scaberulous. Lemma apex acuminate, mucronate. Palea gaping, 1 length of lemma. Palea keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, oblong, membranous. Anthers 3, 2 mm long. Ovary glabrous. Caryopsis with adherent pericarp, oblong, 2 mm long. Embryo 0.2 length of caryopsis.

$N = 7$ (1 ref TROPICOS). $2n = 14$ (1 ref TROPICOS).

Distribution (TDWG). Continent. Africa.

Country /Province /State. Northern Africa. Morocco.

Koeleria caudata (Link) Steud. *Syn. Pl. Gram.* 293. (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 Portugal. **Basionym or Replaced Name:** *Airochloa caudata* Link, *Linnaea*, 17: 405 (1843). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Portugal, Fundao: Coll?.

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

Derivation (Clifford & Bostock 2007): L. cauda, tail; -ata, possessing. Inflorescence elongated.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose. Basal innovations extravaginal. Culms erect, 45–90 cm long. Ligule an eciliate membrane, 0.5 mm long, truncate. Leaf-blades flat or conduplicate, 2–23 cm long, 0.5–1.5 mm wide, flaccid, glaucous. Leaf-blade surface glabrous, hairless except near base. Leaf-blade margins scabrous.

Inflorescence. Inflorescence a panicle. Peduncle pubescent above. Panicle spiciform, linear, interrupted, 3–18 cm long. Panicle branches pubescent. 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 obovate, laterally compressed, (2–)2.8–4 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, shiny, gaping. Lower glume lanceolate, 1.8–2.5 mm long, 0.7–0.8 length of upper glume, membranous, 1-keeled, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute, mucronate. Upper glume obovate, 2.3–3.5 mm long, 0.9–1 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acute, mucronate.

Florets. Fertile lemma oblong, 2.5–3.5 mm long, membranous, shiny, keeled, keeled above, 3(–5) -veined, 0–3 -veined or more than 3-veined. Lemma surface puberulous. Lemma apex acute. Palea gaping, 1 length of lemma. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, oblong, membranous, 2-toothed. Anthers 3, 0.9–1.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp, fusiform, 2 mm long.

$N = 7$ (1 ref TROPICOS). $2n = 42$ (1 ref TROPICOS), or 43 (1 ref TROPICOS).

Distribution (TDWG). Continent. Europe, Africa.

Region. Southwestern Europe.

Country /Province /State. : Portugal, Spain. **Northern Africa.** Morocco.

Koeleria cenisia Reuter ex Rev. *Bull. Soc. Sci. Angers* 3:139 (1874).

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: Coll?.

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

Derivation (Clifford & Bostock 2007): L. from Mons Cenis, North Italy.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped densely. Butt sheaths thickened and forming a bulb, pubescent, persistent and investing base of culm, with compacted dead sheaths. Culms geniculately ascending, 10–25 cm long. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 1 mm long, lacerate. Leaf-blades flat or convolute, 2–5 cm long, 0.5–1 mm wide, stiff, glaucous. Leaf-blade surface glabrous or pubescent.

Inflorescence. Inflorescence a panicle. Peduncle glabrous. Panicle spiciform, oblong, interrupted, loose, 1–5 cm long, 0.8 cm wide. Panicle axis glabrous. Panicle branches glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

Fertile Spikelets. Spikelets comprising 2–3 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 obovate, laterally compressed, 4–7 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, shiny, gaping. Lower glume lanceolate, 1 length of upper glume, membranous, much thinner on margins, 1-keeled, 1 -veined. Lower glume lateral veins absent. Lower glume surface smooth or asperulous. Lower glume apex acuminate. Upper glume lanceolate, 0.75 length of adjacent fertile lemma, membranous, with hyaline margins, 1-keeled, 3 -veined. Upper glume surface smooth or asperulous. Upper glume apex acuminate.

Florets. Fertile lemma oblong, 4–7 mm long, membranous, shiny, keeled. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn subapical, 0.5–1 mm long overall. Palea gaping. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, membranous. Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp.

Distribution (TDWG). Continent. Europe.

Region. Middle Europe, Southwestern Europe, Southeastern Europe.

Country /Province /State. : Switzerland. : France. : Italy.

Koeleria cheesemanii (Hack.) Petrie. *Trans. N. Z. Inst.* xlviii. 192 (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:** *Trisetum cheesemanii* Hack., *Trans. Proc. N. Z. Inst.* 35: 381 (1903). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: New Zealand, Hooker glacier: Cheeseman 1221 (W holo).

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

Derivation (Clifford & Bostock 2007): in honor of Thomas Frederick Cheeseman (1846–1926) English-born New Zealand botanist.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose. Culms erect, 7.5–30 cm long, 2 -noded, with 0.2–0.25 of their length below uppermost node. Culm-internodes distally pubescent. Leaves mostly basal. Leaf-sheaths puberulous. Ligule an eciliate membrane, erose, truncate. Leaf-blades erect, 2.5–3.5 mm wide, glaucous. Leaf-blade surface scaberulous, glabrous. Leaf-blade margins scaberulous.

Inflorescence. Inflorescence a panicle. Panicle spiciform, linear or lanceolate, 2.5–7 cm long, 1.2 cm wide. Primary panicle branches 2–3 -nate. Panicle axis pubescent. Panicle branches pubescent. 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 lanceolate or elliptic, laterally compressed, 6 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes pubescent.

Glumes. Glumes persistent, similar, reaching apex of florets, similar to fertile lemma in texture, shiny, gaping. Lower glume lanceolate, 1.1 length of upper glume, membranous, 1-keeled, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume surface asperulous. Lower glume apex acute. Upper glume lanceolate, 0.9 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume primary vein scabrous. Upper glume surface asperulous. Upper glume apex acute.

Florets. Fertile lemma oblong, 6 mm long, membranous, shiny, keeled, 5 -veined, more than 3-veined. Lemma lateral veins obscure. Lemma surface asperulous. Lemma apex acute, awned, 1 -awned. Principal lemma awn subapical, 1 mm long overall. Palea gaping, 0.75 length of lemma. Palea keels scabrous.

Flower and Fruit. Lodicules 2, membranous. Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp.

Distribution (TDWG). **Continent.** Australasia.

Country /Province /State. **New Zealand.** New Zealand North I, New Zealand South I.

Koeleria crassipes Lange. *Kjoeb. Vidensk. Meddel.* 43 (*Pugill.* 42) (1860).

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:** *Koeleria glauca* (Spreng.) DC., *Cat. Hort. Monsp.* 117. (1813). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Spain, Escorial: Lange.

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

Derivation (Clifford & Bostock 2007): *L. crassus*, thick; pes, foot. Culms swollen at the base.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose. Basal innovations extravaginal. Culms erect, 20–60 cm long. Leaf-sheaths pubescent. Leaf-sheath oral hairs ciliate. Ligule an eciliate membrane, 0.5 mm long, truncate. Leaf-blades flat or convolute, 3–6 cm long, 0.5–2 mm wide, stiff, glaucous. Leaf-blade surface glabrous, hairless except near base. Leaf-blade margins scabrous.

Inflorescence. Inflorescence a panicle. Peduncle pubescent above. Panicle spiciform, linear, continuous, 1–6 cm long. Panicle branches pubescent. 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 obovate, laterally compressed, 3–4 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, shiny, gaping. Lower glume lanceolate, 2–3.2 mm long, 0.9–1 length of upper glume, membranous, 1-keeled, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume obovate, 2.3–3.2 mm long, 0.9–1 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acute.

Florets. Fertile lemma oblong, 2.5–3.5 mm long, membranous, shiny, keeled, keeled above, 3(–5) -veined, 0–3 -veined or more than 3-veined. Lemma surface pubescent. Lemma apex acute. Palea gaping, 1 length of lemma. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, oblong, membranous, 2-toothed. Anthers 3, 1.3–2.6 mm long. Ovary glabrous. Caryopsis with adherent pericarp, fusiform, 2 mm long.

Distribution (TDWG). **Continent.** Europe.

Region. **Northern Europe, Southwestern Europe, Southeastern Europe, Eastern Europe, Middle Europe.**

Country /Province /State. : Denmark, GB Aliens (Ryves et al), Sweden. : Austria, Belgium, Czechoslovakia, Germany, Hungary, Netherlands, Poland. : France, Portugal, Spain. : Romania. Baltic States, Central European Russia, East European Russia, North European Russia, Northwest European Russia.

Koeleria delavignei Czernj. ex Domin. *Bibl. Bot.* 65:247 (1907).

Accepted by: N.Tsvelev, *Grasses of the Soviet Union* (1983).

TYPE from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Russia, Kharkov: Czerniaev (LE iso).

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

Derivation (Clifford & Bostock 2007): in honor of Gislain François de la Vigne (-1805) sometime Prof. Botany, Kharkov, Ukraine.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped loosely. Rhizomes elongated. Culms geniculately ascending, 80–100 cm long. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane. Leaf-blades flat or convolute, 20–30 cm long, 0.75 mm wide, mid-green. Leaf-blade surface glabrous.

Inflorescence. Inflorescence a panicle. Peduncle pubescent above. Panicle spiciform, linear, interrupted, loose, 6–9 cm long, 1–1.5 cm wide. Panicle axis pubescent. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

Fertile Spikelets. Spikelets comprising 2–3 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 obovate, laterally compressed, 3.5–4.5 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, shiny, gaping. Lower glume lanceolate, 0.7–0.8 length of upper glume, membranous, much thinner on margins, 1-keeled, 1 -veined. Lower glume lateral veins absent. Lower glume apex obtuse. Upper glume oblong, 1 length of adjacent fertile lemma, membranous, with hyaline margins, 1-keeled, 3 -veined. Upper glume apex obtuse.

Florets. Fertile lemma oblong, 3.5–4.5 mm long, membranous, shiny, keeled. Lemma apex obtuse, awned, 1 -awned. Principal lemma awn subapical, 1 mm long overall. Palea gaping, 1 length of lemma. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, membranous. Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp.

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

Region. Eastern Europe.

Country /Province /State. Belarus, Central European Russia, East European Russia, South European Russia, Northwest European Russia, Ukraine. Siberia. Altay, Irkutsk, Tuva.

TDWG4.

Koeleria embergeri Quezel. *Bull. Soc. Hist. Nat. Afr. Nord*, xlv. 257 (1954).

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, Moyen Atlas: Emberger.

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

Derivation (Clifford & Bostock 2007): In honor of Louis Emberger (1897–1969) French botanist.

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. Culms erect, 7–9 cm long. Leaf-sheaths striately veined, glabrous on surface. Leaf-sheath oral hairs ciliate. Ligule an eciliate membrane, 0.3 mm long, erose. Leaf-blades curved, plicate, 1–2 cm long, 1 mm wide. Leaf-blade venation comprising 7 vascular bundles, with 5 inner ridges, with sclerenchyma strands below veins, with subepidermal sclerenchyma free from veins, with continuous uniform subepidermal sclerenchyma layer on the underside. Leaf-blade surface glabrous. Leaf-blade margins cartilaginous. Leaf-blade apex obtuse.

Inflorescence. Inflorescence a panicle. Panicle contracted, linear, interrupted, loose, 0.9–1.3 cm long. Panicle axis smooth, glabrous. 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, 2.7–2.9 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, 2 mm long, 0.75 length of upper glume, membranous, much thinner on margins, 1-keeled, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 2.5–2.7 mm long, 1 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acute.

Florets. Fertile lemma lanceolate, 4.5 mm long, membranous, keeled, 3 -veined, 0–3 -veined. Lemma surface scaberulous, rough above. Lemma apex acute. Palea keels scaberulous. Palea apex dentate, 2 -fid, with excurrent keel veins. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Anthers 3, 2 mm long. Ovary glabrous.

Distribution (TDWG). Continent. Africa.

Country /Province /State. Northern Africa. Morocco.

Koeleria eriostachya Panic. *Verh. Zool. Bot. Ges. Wien*, vi. 591. (1856).

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:** *Koeleria caucasica* (Domin) Fedtsch., *Rastit. Turkest.* :120 (1915). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Yugoslavia, Krusevac: Panic (K iso).

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

Derivation (Clifford & Bostock 2007): Gk. erion, wool; stachys, ear of corn. Inflorescence branches or spikelets densely hairy.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose. Rhizomes short. Butt sheaths pubescent, withering or persistent and investing base of culm, with compacted dead sheaths. Culms erect, 15–20 cm long, 1–2 -noded. Lateral branches lacking. Leaves mostly basal. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.5–1 mm long, truncate. Leaf-blades convolute, 5–20 cm long, 1–3 mm wide. Leaf-blade surface pubescent. Leaf-blade apex acuminate.

Inflorescence. Inflorescence a panicle. Peduncle glabrous or pubescent above. Panicle spiciform, oblong, continuous or interrupted, 2–8 cm long, 0.6–1.5 cm wide. Panicle axis pubescent. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, pubescent.

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, 4.5–6.5 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, shiny, gaping. Lower glume lanceolate, 2.9–4.8 mm long, 0.75–1 length of upper glume, membranous, much thinner on margins, mid-green or purple, 1-keeled, 1 -veined. Lower glume lateral veins absent. Lower glume surface pubescent. Lower glume apex acuminate. Upper glume lanceolate, 3.5–5.2 mm long, 0.9–1 length of adjacent fertile lemma, membranous, with hyaline margins, mid-green or purple, 1-keeled, 3 -veined. Upper glume surface pubescent. Upper glume apex acuminate.

Florets. Fertile lemma oblong, 3.8–5.8 mm long, membranous, much thinner on margins, shiny, keeled, 5 -veined, more than 3-veined. Lemma surface pubescent. Lemma apex acuminate. Palea gaping, 1 length of lemma. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, membranous. Anthers 3, 2.5–4 mm long. Ovary glabrous.

$2n = 56$ (2 refs TROPICOS).

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

Region. Middle Europe, Southeastern Europe.

Country /Province /State. : Austria, Switzerland. : Bulgaria, Italy, Romania, Yugoslavia. **Western Asia.** Iran.

Koeleria fueguina Calderon ex E.G. Nicora. *Fl. Patagonica*, 3: 63 (1978).

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: Holmberg & Calcagnini 3866.

Recent Synonyms: *Trisetum tomentosum* (Desvaux) E.G.Nicora, *Fl. Patagonica*, 3: 246 (1978).

Illustrations (Books): M.N.Correa, *Flora Patagonica* Parte III, Gramineae (1978) (59, Fig 28).

Derivation (Clifford & Bostock 2007): L. *-ina*, indicating possession. From Fuegia, that is Terra del Fuego, the southern most part of Chile and Argentina.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose. Rhizomes short. Culms erect or geniculately ascending, 20–45 cm long, 2–3 -noded. Leaf-sheaths pilose. Ligule a ciliolate membrane, 0.5–2 mm long. Leaf-blades flat or convolute, 6–18 cm long, 1–2 mm wide. Leaf-blade surface pubescent. Leaf-blade margins ciliate.

Inflorescence. Inflorescence a panicle. Peduncle pubescent above. Panicle contracted, lanceolate or oblong, interrupted, 3.5–10 cm long, 1–1.8 cm wide. Panicle axis pubescent. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 2–2.5 mm long, ciliate.

Fertile Spikelets. Spikelets comprising 2–3 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 obovate, laterally compressed, 4–6 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 0.4–0.75 mm long, pubescent. Floret callus pubescent. Floret callus hairs 0.5–1 mm long.

Glumes. Glumes persistent, similar, reaching apex of florets, similar to fertile lemma in texture, shiny, gaping. Lower glume lanceolate, 0.9 length of upper glume, membranous, 1-keeled, 1 -veined. Lower glume primary vein ciliate. Lower glume lateral veins absent. Lower glume hairs 0.5–1 mm long. Lower glume apex acute. Upper glume oblong, 1 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume primary vein ciliate. Upper glume hairs 0.5–1 mm long. Upper glume apex acute.

Florets. Fertile lemma elliptic, 4.5–6 mm long, membranous, shiny, keeled. Lemma surface scabrous. Lemma apex acute, awned, 1 -awned. Principal lemma awn subapical, straight or curved, 1.5–4 mm long overall. Palea gaping. Palea keels ciliolate. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, membranous. Anthers 3, 0.5–0.8 mm long. Ovary glabrous. Caryopsis with adherent pericarp, ovoid, 2–2.5 mm long, dark brown. Endosperm liquid.

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. Rest of Chile- Biobio, La Auracania, Maule, O'Higgins, Santado, Valpariso, Chiloe, Aisen, Magellanes. O'Higgins, Maule. Magellanes.

Koeleria glauca (Spreng.) DC. *Cat. Hort. Monsp.* 117. (1813).

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), T.Koyama, *Grasses of Japan and its neighboring regions* (1987) (as *K. cristata*).

TYPE from Germany. **Basionym or Replaced Name:** *Aira glauca* Spreng., *Nachtr. Bot. Gart. Halle*, 1: 10 (1801). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Germany: Coll?.

Recent Synonyms: *Koeleria cristata* Griseb., non Pers.(1805) in *Goett. Abh.* 19: 250 (1874).

Illustrations (Books): C.E.Hubbard, *Grasses* (1968) (216, as *K. cristata*), G.Hegi, *Flora von Mitteleuropa* 1 (1909), N.N.Tsvelev, *Grasses of the Soviet Union* (1983) (377 (257), Pl.4 as *K. cristata*), L.K.A. Chippindall, *Grasses and Pastures of South Africa* (1955) (83, Fig 54 as *K. cristata*), N.L.Bor, *Gramineae in Flora of Iraq* (1968) (347, Pl. 131 as *K. cristata*), T.Koyama, *Grasses of Japan and its neighbouring regions* (1987) (158, Fig 53 as *K. cristata*).

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 moderately or densely. Rhizomes short or elongated. Butt sheaths thickened and forming a bulb, pubescent, persistent and investing base of culm, with fibrous dead sheaths. Culms erect, 10–45 cm long. Leaf-sheaths glabrous on surface or pubescent. Ligule an eciliate membrane, 1 mm long. Leaf-blades convolute, 2–5 cm long, 1–2 mm wide, stiff, glaucous. Leaf-blade surface scabrous, glabrous or pubescent.

Inflorescence. Inflorescence a panicle. Peduncle pubescent above. Panicle spiciform, linear, interrupted, 2–11 cm long, 0.8 cm wide. Panicle axis pubescent. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

Fertile Spikelets. Spikelets comprising 2–3 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 obovate, laterally compressed, 4–5 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, shiny, gaping. Lower glume lanceolate, 0.9 length of upper glume, membranous, 1-keeled, 1 -veined. Lower glume lateral veins absent. Lower glume surface glabrous or puberulous. Lower glume apex obtuse. Upper glume lanceolate, 0.9 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume surface glabrous or puberulous. Upper glume apex obtuse.

Florets. Fertile lemma ovate, 4–5 mm long, membranous, shiny, keeled. Lemma surface glabrous or puberulous, hairy all along or below. Lemma apex emarginate or obtuse, mucicous or mucronate. Palea gaping. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, membranous. Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp. $2n = 14$ (2 refs TROPICOS), or 49 (2 refs TROPICOS).

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

Region. Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe.

Country /Province /State. : Denmark. Belarus, Estonia, Latvia, Lithuania, Central European Russia, East European Russia, North European Russia, South European Russia, Northwest European Russia, Ukraine. Siberia, Middle Asia, Mongolia, Eastern Asia. Buryatiya, Chita, Irkutsk, Krasnoyarsk, Tuva. Kazakhstan. Japan. Japan Hokkaido, or Honshu.

TDWG4.

Koeleria heribaudii Ujhelyi. *Ann. Hist. -Nat. Mus. Nation. Hung.*, 66: 112 (1974).

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, Massif Central: Coll? (Z holo).

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

Derivation (Clifford & Bostock 2007): In honor of Heribaud Joseph otherwise Jean Baptiste Caumel (1841–1918) French cleric and botanist.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped loosely. Rhizomes short. Basal innovations extravaginal. Culms erect, 35–72 cm long, 1.5–2 mm diam. Lateral branches lacking. Leaves mostly basal. Leaf-sheaths 4–13 cm long, puberulous, outer margin hairy. Leaf-sheath oral hairs ciliate. Leaf-sheath auricles absent. Ligule an eciliate membrane, 1.5 mm long, entire or erose, obtuse. Leaf-blades convolute, 4.5–16 cm long, 1–2.5 mm wide. Leaf-blade surface glabrous or pilose. Leaf-blade margins scaberulous.

Inflorescence. Inflorescence a panicle. Panicle contracted or spiciform, linear, interrupted, 5–8.5 cm long, 1–1.2 cm wide. Panicle axis pubescent. Panicle branches pubescent. 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, 5–7 mm long, 2.5 mm wide, breaking up at maturity, disarticulating below each fertile floret.

Glumes. Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture, shiny, gaping. Lower glume lanceolate, 5.4 mm long, membranous, much thinner on margins, 1-keeled. Lower glume apex acute. Upper glume ovate, 6 mm long, 1 length of adjacent fertile lemma, membranous, with hyaline margins, 1-keeled. Upper glume apex acute.

Florets. Fertile lemma oblong, 6 mm long, membranous, much thinner on margins, shiny, keeled, 5 -veined, more than 3-veined. Lemma surface puberulous. Lemma apex acute. Palea gaping, 5 mm long, 1 length of lemma. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Anthers 3, 2.5 mm long.

$2n = 56$ (1 ref TROPICOS).

Distribution (TDWG). Continent. Europe.

Region. Southwestern Europe.

Country /Province /State. : France.

Koeleria hirsuta Gaud. *Alpina*, iii. 48. (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 Switzerland. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Switzerland, Trepal Mt.: Schleicher.

Illustrations (Books): G.Hegi, *Flora von Mitteleuropa* 1 (1909) (& as var. *schinzii*).

Derivation (Clifford & Bostock 2007): L. hairy. Plant hairy in respect to all or some parts.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped densely. Butt sheaths thickened and forming a bulb, pubescent, persistent and investing base of culm, with compacted dead sheaths. Culms geniculately ascending, 10–35 cm long. Culm-internodes distally glabrous or hirsute. Leaf-sheaths glabrous on surface or pubescent. Ligule an eciliate membrane, 2 mm long, lacerate. Leaf-blades straight or curved, convolute, 3–15 cm long, 0.5–2 mm wide, stiff. Leaf-blade surface puberulous. Leaf-blade apex acute.

Inflorescence. Inflorescence a panicle. Peduncle pubescent above. Panicle spiciform or capitate, oblong or ovate, 1–1.2 cm long, 0.2–0.5 cm wide. Panicle axis pubescent. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

Fertile Spikelets. Spikelets comprising 2–4 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 obovate, laterally compressed, 4.5–6 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, shiny, gaping. Lower glume lanceolate, 1 length of upper glume, membranous, much thinner on margins, 1-keeled, 1 -veined. Lower glume lateral veins absent. Lower glume surface villous. Lower glume apex acute. Upper glume lanceolate, 0.75 length of adjacent fertile lemma, membranous, with hyaline margins, 1-keeled, 3 -veined. Upper glume surface villous. Upper glume apex acute.

Florets. Fertile lemma oblong, 4.5–6 mm long, membranous, shiny, keeled. Lemma surface villous. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn subapical, 1–3 mm long overall. Palea gaping. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, membranous. Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp.

Distribution (TDWG). Continent. Europe.

Region. Middle Europe, Southeastern Europe.

Country /Province /State. : Austria, Switzerland. : Italy.

Koeleria inaequaliglumis Molina. *Bol. Soc. Arg. Bot.* 26:225 (1990).

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, Sierra del Nevado: Boeckle et al. 15603 (BAB holo, BAA, SI, CTES, MERL).

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

Derivation (Clifford & Bostock 2007): *L. inaequalis*, unequal; gluma, husk. Glumes differing in length and/or shape.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose. Rhizomes short. Culms geniculately ascending, 11–45 cm long, 2–3 -noded. Culm-nodes glabrous. Lateral branches lacking. Leaf-sheaths glabrous on surface or pilose, with reflexed hairs. Ligule a ciliolate membrane, 0.5–2 mm long, truncate or acute. Leaf-blades conduplicate, 4–12 cm long, 2–3 mm wide. Leaf-blade surface smooth or scaberulous or scabrous, glabrous or puberulous or pubescent.

Inflorescence. Inflorescence a panicle, exserted. Peduncle pubescent above. Panicle spiciform, linear, interrupted, 3–9 cm long, 0.8–1 cm wide. Panicle axis pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, pubescent.

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, 5–6 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 0.7–1 mm long, pubescent. Floret callus glabrous or sparsely hairy.

Glumes. Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture, shiny, gaping. Lower glume lanceolate, 4–5 mm long, 0.8–0.9 length of upper glume, membranous, 1-keeled, 3 -veined. Lower glume primary vein scaberulous (above). Lower glume apex acuminate. Upper glume lanceolate, 5.2–6 mm long, 1.1 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume primary vein scabrous (above). Upper glume apex acute.

Florets. Fertile lemma elliptic, 4.5–5 mm long, membranous, shiny, keeled, 5 -veined, more than 3-veined. Lemma lateral veins obscure, stopping well short of apex. Lemma apex acute, mucronate. Palea gaping. Palea keels scaberulous.

Flower and Fruit. Lodicules 2, 1 mm long, membranous. Anthers 3, 1.2–2 mm long, purple. Caryopsis with adherent pericarp, fusiform, laterally compressed, 2.5 mm long. Hilum elliptic. Endosperm liquid.

Distribution (TDWG). Continent. South America.

Country /Province /State. Southern South America. Argentina Northwest.

TDWG4. Mendoza, San Juan.

Koeleria karavajevii Govoruchin. *Novosti Sist. Vyssh. Rast.*, 8: 22 (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>: *fide* TROPICOS and Kew Synonymy Database: Russia, Lake Arangastakh: Dobretsova (MW holo, LE).

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

Derivation (Clifford & Bostock 2007): in honor of Mikhail Nikolaevich Karavajev (1903-) Soviet botanist.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped densely. Butt sheaths thickened and forming a bulb, persistent and investing base of culm, with compacted dead sheaths. Culms erect, 12–30 cm long. Leaf-sheaths puberulous. Ligule an eciliate membrane, 0.2–0.7 mm long, pubescent on abaxial surface. Leaf-blades filiform, convolute, 5–7 cm long, 0.5–1 mm wide, stiff, glaucous. Leaf-blade surface scaberulous, rough abaxially, puberulous, hairy adaxially.

Inflorescence. Inflorescence a panicle. Peduncle pubescent above. Panicle spiciform, lanceolate, interrupted, loose, 2.5–3.5 cm long, 0.7–0.9 cm wide. Panicle axis pubescent. Panicle branches pubescent. 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 obovate, laterally compressed, 3.5–5.2 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes pubescent.

Glumes. Glumes persistent, similar, reaching apex of florets, similar to fertile lemma in texture, shiny, gaping. Lower glume lanceolate, 3 mm long, 0.7–0.8 length of upper glume, membranous, 1-keeled, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume oblong, 4 mm long, 1 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume apex acute.

Florets. Fertile lemma oblong, 4 mm long, membranous, shiny, keeled, 3 -veined, 0–3 -veined. Lemma surface puberulous. Lemma apex acute. Palea gaping, 0.9 length of lemma.

Flower and Fruit. Lodicules 2, membranous. Anthers 3, 1.5–2.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. Siberia. Yakutiya.

TDWG4.

Koeleria kurdica Ujhelyi. *Ann. Hist.-Nat. Mus. Nat. Hungar.* 1x. 91 (1968).

Regarded by K as a synonym (*K. macrantha*).

Accepted by: N.Tsvelev, *Grasses of the Soviet Union* (1983).

TYPE from Turkey. T:<Type of Basionym>; *vide* TROPICOS and Kew Synonymy Database: Turkey, Kurdistan, Deir Zafran: Sintenis 1130.

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

Derivation (Clifford & Bostock 2007): L. -ica, belonging to. From western Turkey to Caucasus, that is regions inhabited by Kurds.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped densely. Rhizomes short. Butt sheaths pubescent, persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms erect, 25–50 cm long. Leaf-sheaths puberulous. Ligule a ciliate membrane, 0.3–0.5 mm long. Leaf-blades convolute, 2–5 cm long, 0.6–1.8 mm wide, stiff, glaucous. Leaf-blade surface glabrous.

Inflorescence. Inflorescence a panicle. Peduncle pubescent above. Panicle spiciform, linear or lanceolate, interrupted, 3–6 cm long, 0.5–1 cm wide. Panicle axis puberulous. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

Fertile Spikelets. Spikelets comprising 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 obovate, laterally compressed, 7 mm long, 2.2 mm wide, 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, shiny, gaping. Lower glume lanceolate, 3.5 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 surface glabrous or puberulous. Lower glume apex acute. Upper glume oblong, 4.5 mm long, 0.66–0.75 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume primary vein scabrous. Upper glume surface glabrous or puberulous. Upper glume apex acute.

Florets. Fertile lemma oblong, 6 mm long, membranous, shiny, keeled. Lemma surface pubescent. Lemma apex acute or acuminate, mucous. Palea gaping, 5 mm long. Palea keels ciliate.

Flower and Fruit. Lodicules 2, membranous. Anthers 3, 1.9 mm long. Ovary glabrous. Caryopsis with adherent pericarp.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. Western Asia. Turkey.

TDWG4.

Koeleria kurtzii Hack. ex Kurtz. *Bol. Acad. Buenos Aires*, xvi. 261. (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 Argentina. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Argentina, Sierra de Famatina: Hieronymus & Niederlein 702 (CORD lecto).

Illustrations (Books): S.A.Rennoize, *Gramineas de Bolivia* (1998) (163, Fig. 39), E.G.Nicora, *Los Generos de Gramineas de America Austral* (1987) (316, Fig.107 as *K.grisebachii*), A.L.Cabrera, *Flora de la Provincia de Buenos Aires, IV Pt 2 Gramineas* (1970) (164, Fig. 45), M.N.Correa, *Flora Patagonica* Parte III, Gramineae (1978) (65, Fig. 31 as *K.grisebachii*).

Derivation (Clifford & Bostock 2007): in honor of Fritz Kurtz (1854–1920) who collected in South America.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial. Culms erect, 40–50 cm long. Culm-internodes distally pubescent. Culm-nodes glabrous. Leaf-sheaths pilose. Ligule an eciliate membrane. Leaf-blades 5–10 cm long, 1–3 mm wide, stiff. Leaf-blade surface glabrous. Leaf-blade apex abruptly acute.

Inflorescence. Inflorescence a panicle. Peduncle pubescent above. Panicle spiciform, linear, 6–14 cm long. Panicle axis pilose. Panicle branches pilose. 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 cuneate, laterally compressed, 4–4.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

Glumes. Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture, shiny, gaping. Lower glume lanceolate, 2.5–3 mm long, 0.7–0.8 length of upper glume, membranous, 1-keeled, 1 -veined. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume elliptic, 3–3.5 mm long, 1 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume apex acute, mucronate.

Florets. Fertile lemma elliptic, 3–3.5 mm long, membranous, shiny, keeled, 5 -veined, more than 3-veined. Lemma lateral veins obscure. Lemma apex acute, awned, 1 -awned. Principal lemma awn subapical, 0.7–1 mm long overall. Palea gaping, 3 mm long. Palea keels scaberulous.

Flower and Fruit. Lodicules 2, membranous. Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp.

Distribution (TDWG). Continent. South America.

Country /Province /State. Western South America, Southern South America. Bolivia, Peru. Argentina Northeast, Argentina Northwest, Chile North, Chile Central, Chile South.

TDWG4. Catamarca, Jujuy, La Rioja, Mendoza, Salta, San Juan, Tucuman. Buenos Aires, Cordoba. Chubut, Neuquén. Tarapaca. Maule. Magellanes.

Koeleria litvinowii Domin. *Bibl. Bot.* 65:116 (1907).

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 *K. argentea*), N.Tsvelev, *Grasses of the Soviet Union* (1983) (as *Trisetum*).

TYPE from Russia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Russia, Aflatun: Litvinov.

Recent Synonyms: *Trisetum litvinowii* (Domon)Nevski, *Tr. Sredniaz. Univ.* ser. 8B, 17:1 (1934).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 449 as *Koeleria litvinowii* ssp. *litvinowii*).

Derivation (Clifford & Bostock 2007): In honor of Dimitri Ivanovich Litinov (1854–1929) Russian botanist.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped loosely. Culms erect or geniculately ascending, 25–45 cm long, 2–5 -noded. Ligule an eciliate membrane, 1–2 mm long. Leaf-blades 3.5–10 cm long, 2–4 mm wide. Leaf-blade surface scaberulous, rough on both sides, glabrous or pubescent, sparsely hairy. Leaf-blade margins scabrous. Leaf-blade apex acuminate.

Inflorescence. Inflorescence a panicle. Peduncle glabrous or pilose above. Panicle spiciform, oblong, continuous or interrupted, 3–7 cm long. Panicle branches pilose. 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 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes pubescent. Floret callus pubescent.

Glumes. Glumes persistent, similar, reaching apex of florets, thinner than fertile lemma, shiny, gaping. Lower glume lanceolate, 4.5–5 mm long, 0.9 length of upper glume, membranous, 1-keeled, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume elliptic, 5–5.5 mm long, 1.1 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume apex acute.

Florets. Fertile lemma elliptic, 4.5–5 mm long, membranous, much thinner above, much thinner on margins, shiny, keeled, 5–7 -veined, more than 3-veined. Lemma apex entire, awned, 1 -awned. Principal lemma awn subapical, straight, 0.5–1.2 mm long overall. Palea gaping, hyaline. Palea keels scaberulous.

Flower and Fruit. Anthers 3, 0.6–1.2 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Hilum punctiform.

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

Country /Province /State. Middle Asia, Western Asia, China, Mongolia. Kazakhstan, Kirgizistan, Turkmenistan, Tadjikistan. Afghanistan. China South Central, China North-Central, Qinghai, Tibet, Xinjiang. **Indian Subcontinent.** Pakistan, West Himalaya.

TDWG4. Gansu, Sichuan, Yunnan, Himachal Pradesh.

Koeleria lobata (Bieb.) Roem. & Schult. *Syst.* ii. 620 (1817).

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) (& as *K. moldovica*).

TYPE from Russia. **Basionym or Replaced Name:** *Dactylis lobata* Bieb., *Fl. Taur. Cauc.* 1: 67 (1808). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Russia, Tauria: Steven (LE holo).

Recent Synonyms: *Koeleria gracilis* Guss., non Pers. (1805) *Fl. Sic. Prod.* 1: 121 (1827).

Illustrations (Books): G.Hegi, *Flora von Mitteleuropa* 1 (1909) (as *K. gracilis*).

Derivation (Clifford & Bostock 2007): *L. lobus*, lobe; *-ata*, possessing. Lemma lobed.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped densely. Butt sheaths thickened and forming a bulb, glabrous. Culms erect, 20–32 cm long, 1 -noded. Lateral branches lacking. Leaves mostly basal. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.5–1 mm long, erose, truncate. Leaf-blades convolute, 1.5–3 cm long, 0.4–1 mm wide. Leaf-blade margins ciliate. Leaf-blade apex acuminate.

Inflorescence. Inflorescence a panicle. Panicle spiciform, oblong or ovate, interrupted, 2–3 cm long, 0.7–1.7 cm wide. Panicle axis pubescent. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, pubescent.

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, 5–7.5 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, shiny, gaping. Lower glume lanceolate, 3–5.5 mm long, 0.75–1 length of upper glume, membranous, much thinner on margins, 1-keeled, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute or acuminate. Upper glume lanceolate, 4.5–6.8 mm long, 1 length of adjacent fertile lemma, membranous, with hyaline margins, 1-keeled, 3 -veined. Upper glume apex acute or acuminate.

Florets. Fertile lemma oblong, 5–6.8 mm long, membranous, much thinner on margins, shiny, keeled, 5 -veined, more than 3-veined. Lemma apex acute to setaceously acuminate, muticous or mucronate or awned, 1 -awned. Principal lemma awn 0–1 mm long overall. Palea gaping, 1 length of lemma. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, membranous. Anthers 3, 2–3 mm long. Ovary glabrous.

$2n = 28$ (1 ref TROPICOS).

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

Region. Southeastern Europe, Eastern Europe.

Country /Province /State. : Bulgaria, Romania, Turkey Europe. Krym, East European Russia, Northwest European Russia, Ukraine. **Northern Africa.** Algeria, Morocco, Tunisia. **Western Asia.** East Aegean Is.

TDWG4. Uttah Pradesh, Himachal Pradesh, Jammu Kashmir.

Koeleria luerssenii (Domin) Domin. *Biblioth. Bot.* lxxv. 228 (1907).

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:** *Koeleria gracilis* subsp. *luerssenii* Domin, *Bibl. Bot.* 65:228 (1907). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Russia, Teberda: Litvinov 182 (LE holo).

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

Derivation (Clifford & Bostock 2007): in honor of Christian Luerssen (1843–1916) German botanist.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped loosely. Rhizomes short. Culms erect, 25–90 cm long. Leaves mostly basal. Leaf-sheaths smooth, glabrous on surface or puberulous. Ligule an eciliate membrane. Leaf-blades flat or convolute, 20 cm long, 0.5–1.7 mm wide. Leaf-blade surface smooth, glabrous. Leaf-blade margins glabrous or ciliate.

Inflorescence. Inflorescence a panicle. Peduncle pubescent above. Panicle spiciform, linear, interrupted, loose, 7–8 cm long, 0.6–0.7 cm wide. Panicle axis pubescent. Panicle branches pubescent. Spikelets solitary. Fertile spikelets sessile.

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 obovate, laterally compressed, 4.1–7 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, shiny, gaping. Lower glume lanceolate, 0.7–0.8 length of upper glume, membranous, 1-keeled, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acuminate. Upper glume oblong, 1 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acuminate.

Florets. Fertile lemma oblong, 6 mm long, membranous, shiny, keeled. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn subapical. Palea gaping.

Flower and Fruit. Lodicules 2, membranous. Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp. $2n = 18$ (1 ref TROPICOS).

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. Caucasus. North Caucasus.

TDWG4.

Koeleria macrantha (Ledeb.) Schult. *Mant.* ii. 345. (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), D.Sharp, D. & B.K.Simon, *AusGrass* (2002), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980), N.L.Bor, *Grasses of Burma, Ceylon, India and Pakistan* (1960) (as *K. cristata*), N.Tsvelev, *Grasses of the Soviet Union* (1983) (as *K. tokiensis*), W.D.Clayton & N.Snow, *Key to Pacific Grasses* (2010).

TYPE from Russia. **Basionym or Replaced Name:** *Aira macrantha* Ledeb., *Mem. Acad. Peterb.* 5: 515 (1812). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Russia, Siberia, Jablonnoi Khrebet: Tilesius (LE holotype).

Recent Synonyms: *Koeleria nitida* Nutt., *Gen. Am.* i. 74 (1818). *Koeleria glaucovirens* Domin, *Magyar Bot. Lap.* 3: 273. (1904).

Illustrations (Books): C.E.Hubbard, *Grasses* (1968) (as *K. cristata*), L.K.A. Chippindall, *Grasses and Pastures of South Africa* (1955) (as *K. cristata*), T.A.Cope, *Flora of Pakistan* 143: *Poaceae* (1982) (513, Fig 58), N.Walsh & T.Entwistle, *Flora of Victoria* Vol 2 (1994) (458, Fig 89), S.W.L.Jacobs, R.D.B.Whalley & D.J.B.Wheeler., *Grasses of New South Wales*, 4th edn (2008) (288), A.Wilson (ed.), *Flora of Australia*, Vol 44A. *Poaceae* (2009) (155, Fig 23), D.Sharp & B.K.Simon, *AusGrass*. *Grasses of Australia*. CD-Rom Version 1.0. (2002), M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (755), S-L Chen et al, *Flora of China*, *Illustrations, Poaceae* (2007) (Fig. 449).

Images: R.Darke, *Ornamental Grasses* (2004);, R.Darke, *The Encyclopaedia of Grasses for Liveable Landscapes* (2007);

Derivation (Clifford & Bostock 2007): Gk. makros, large; anthos, flower. Spikelets large.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose. Rhizomes elongated. Butt sheaths papery, pilose, persistent and investing base of culm, with soft dead sheaths. Culms erect, 10–60 cm long, 1–3 -noded. Leaves mostly basal. Ligule an eciliate membrane, 0.2–0.7 mm long. Leaf-blades filiform or linear, flat or convolute, 5–20 cm long, 1–2.5 mm wide, stiff. Leaf-blade surface smooth or scabrous, glabrous or pubescent.

Inflorescence. Inflorescence a panicle. Peduncle pubescent above. Panicle spiciform, linear or lanceolate, continuous or interrupted, 1–10 cm long, 0.5–2 cm wide. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, oblong.

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 or cuneate, laterally compressed, 4–6 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes pubescent.

Glumes. Glumes persistent, similar, reaching apex of florets or shorter than spikelet, similar to fertile lemma in texture, shiny, gaping. Lower glume oblong, 3–4 mm long, 0.7–0.8 length of upper glume, membranous, much thinner on margins, 1-keeled, 1 -veined. Lower glume lateral veins absent. Lower glume surface glabrous or pubescent. Lower glume apex acute. Upper glume oblong, 4–5.5 mm long, 1–1.2 length of adjacent fertile lemma, membranous, with hyaline margins, 1-keeled, 3 -veined. Upper glume surface glabrous or pubescent. Upper glume apex acute.

Florets. Fertile lemma oblong, 3.5–5.5 mm long, membranous, much thinner on margins, shiny, keeled, keeled above, 3 -veined, 0–3 -veined. Lemma apex acute, muticous or mucronate or awned, 0–1 -awned. Principal lemma awn 0–0.4(–0.7) mm long overall. Palea gaping. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, oblong, membranous, 2-toothed. Anthers 3, 1.4–2.4 mm long. Ovary glabrous. Caryopsis 2.5–3 mm long.

$N = 14$ (1 ref TROPICOS). $2n = 14$ (1 ref TROPICOS), or 28 (2 refs TROPICOS).

Distribution (TDWG). **Continent.** Europe, Temperate Asia, Tropical Asia, Australasia (*), Pacific, North America.

Region. Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe.

Country /Province /State. : Great Britain, Ireland. : Austria, Belgium, Czechoslovakia, Germany, Hungary, Netherlands, Poland, Switzerland. : Balears, France, Spain. : Albania, Bulgaria, Greece, Italy, Romania, Turkey Europe, Yugoslavia. Baltic States, Krym, Central European Russia, East European Russia, North European Russia, South European Russia, Northwest European Russia, Ukraine. Siberia, Russian far east, **Middle Asia, Caucasus, Western Asia, Arabian Peninsula, China, Mongolia, Eastern Asia.** Altay, Buryatiya, Chita, Irkutsk, Krasnoyarsk, Tuva. Amur, Khabarovsk, Magadan, Primorye. Kazakhstan, Kirgizistan, Turkmenistan, Tadzhikistan, Uzbekistan. Afghanistan, Iran, Iraq. China South Central, Inner Mongolia, Manchuria, China North-Central, Qinghai, China Southeast, Tibet, Xinjiang. Mongolia. Japan. **Indian Subcontinent.** India, Nepal, Pakistan, West Himalaya. **Australia.** New South Wales (*), A.C.T. (*), Victoria (*), Tasmania (*). **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.** Alaska, Yukon, Northwest Territories. Alberta, British Columbia, Manitoba, Saskatchewan. Ontario. Colorado, Idaho, Montana, Oregon, Washington, Wyoming. Illinois, Iowa, Kansas, Minnesota, Missouri, North Dakota, Nebraska, Oklahoma, South Dakota, Wisconsin. Ohio. Arizona, California, Nevada, Utah. New Mexico, Texas. Louisiana. Northwest Mexico.

TDWG4. Hebei, Shaanxi, Shandong. Anhui, Fujian, Henan, Zhejiang. Hubei, Sichuan. Tablelands. Sonora.

Koeleria mendocinensis (Hauman) Calderon ex E.G. Nicora. *Fl. Patagonica*, 3: 64 (1978).

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, Laguna de Horcones: Hauman in BA 39788 (BA holo).

Illustrations (Books): M.N.Correa, *Flora Patagonica* Parte III, Gramineae (1978) (*Fl. Pat.* 3: 59, Fig. 27 (1978)).

Derivation (Clifford & Bostock 2007): L. *-ensis*, denoting origin. From Mendoza Province, Argentina.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose. Rhizomes short. Culms erect, 15–30 cm long. Culm-internodes distally glabrous. Leaf-sheaths pubescent. Ligule an eciliate membrane, 1 mm long, lacerate. Leaf-blades 1–2 mm wide. Leaf-blade surface pubescent.

Inflorescence. Inflorescence a panicle. Peduncle glabrous. Panicle spiciform, linear, 4–9 cm long. Panicle axis glabrous. Panicle branches glabrous. 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 obovate, laterally compressed, 4.5–6 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1–2 mm long, pilose, with 1–1.2 mm long hairs. Floret callus pubescent.

Glumes. Glumes persistent, similar, reaching apex of florets, similar to fertile lemma in texture, shiny, gaping. Lower glume elliptic or oblong, 3.8–4.5 mm long, 0.9–1 length of upper glume, membranous, 1-keeled, 1–3 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent or distinct. Lower glume apex acute. Upper glume elliptic or oblong, 4.2–5 mm long, 1 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acute.

Florets. Fertile lemma oblong, 4–5 mm long, membranous, shiny, keeled. Lemma surface scaberulous. Lemma apex dentate, 2 -fid, acute, awned, 1 -awned. Principal lemma awn subapical, 1.5–1.7 mm long overall. Palea gaping.

Flower and Fruit. Lodicules 2, membranous. Anthers 3, 0.7–1.2 mm long. Ovary glabrous. Caryopsis with adherent pericarp, 3 mm long. Endosperm liquid.

Distribution (TDWG). Continent. South America.

Country /Province /State. Southern South America. Argentina South.

TDWG4. Mendoza. Chubut, Río Negro, Santa Cruz.

Koeleria nitidula Velen. *Fl. Bulg.* 611 (1891).

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>: *fide* TROPICOS and Kew Synonymy Database: Bulgaria, Stanimacha: Pichler (PRC syn) ; Bulgaria, Belledihan: Skorpil (PRM syn) ; Bulgaria, Varna: Velenovsky (PRC syn).

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

Derivation (Clifford & Bostock 2007): L. niteo, shine; -ula, exhibiting tendency. Panicle branches glossy.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped loosely. Rhizomes short. Butt sheaths pubescent. Culms erect, 15–70 cm long, 2 -noded. Lateral branches lacking. Leaves mostly basal. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane. Leaf-blades convolute, 5–13 cm long, 1–1.5 mm wide. Leaf-blade surface scaberulous, rough on both sides. Leaf-blade apex acuminate.

Inflorescence. Inflorescence a panicle. Peduncle glabrous or pubescent above. Panicle spiciform, oblong or ovate, continuous or interrupted, 2.5–10 cm long, 0.7–1.5 cm wide. Primary panicle branches 2–4 cm long. Panicle axis pubescent. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, pubescent.

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, 4.1–5.2 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, shiny, gaping. Lower glume lanceolate, 3.3–4.2 mm long, 1 length of upper glume, membranous, much thinner on margins, 1-keeled, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 3.8–4.7 mm long, 1 length of adjacent fertile lemma, membranous, with hyaline margins, 1-keeled, 3 -veined. Upper glume apex acute.

Florets. Fertile lemma oblong, 3.5–4.4 mm long, membranous, much thinner on margins, shiny, keeled, 5 -veined, more than 3-veined. Lemma apex acute to setaceously acuminate. Palea gaping, 1 length of lemma. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, membranous. Anthers 3, 1.7–2 mm long. Ovary glabrous.

$2n = 14$ (1 ref TROPICOS).

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

Region. Middle Europe, Southeastern Europe.

Country /Province /State. : Austria, Hungary. : Bulgaria, Turkey Europe, Yugoslavia. **Western Asia.** Iran.

Koeleria novozelandica Domin. *Biblioth. Bot.* lxxv. 116 (1907).

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, Canterbury, Waterfall Creek: Cockayne (Z holo).

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

Derivation (Clifford & Bostock 2007): L. -ica, belonging to. From New Zealand.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped loosely or moderately. Butt sheaths pubescent. Culms erect, 15–30 cm long. Culm-internodes distally glabrous or pubescent. Leaf-sheaths pubescent. Ligule an eciliate membrane. Leaf-blades convolute, 7–15 cm long, 1–2.5 mm wide, stiff, glaucous. Leaf-blade surface scaberulous, rough on both sides, glabrous. Leaf-blade margins scaberulous.

Inflorescence. Inflorescence a panicle. Peduncle pubescent above. Panicle spiciform, linear, interrupted, 5–8 cm long. Panicle axis pubescent. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

Fertile Spikelets. Spikelets comprising 2–3 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 obovate, laterally compressed, 3.5–5.5 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, shiny, gaping. Lower glume lanceolate, 1 length of upper glume, membranous, 1-keeled, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 0.8 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acute.

Florets. Fertile lemma lanceolate, 3.5–5.5 mm long, membranous, shiny, keeled. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn subapical, 0.75–1.25 mm long overall. Palea gaping, 0.75 length of lemma. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, membranous. Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp.

Distribution (TDWG). Continent. Australasia.

Country /Province /State. New Zealand. New Zealand North I, New Zealand South I.

Koeleria permollis Steud. *Syn. Pl. Gram.* 293 (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 Argentina. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Argentina, Patagonia, Bahia Blanco: Darwin 553 (K iso).

Illustrations (Books): S.A.Renvoize, *Gramineas de Bolivia* (1998) (Fig. 39), A.Burkat, *Flora Ilustrada de Entre Rios (Argentina)*, Pt II, Gramineas (1969) (80, Fig 23), M.N.Correa, *Flora Patagonica Parte III, Gramineae* (1978) (Fig. 30).

Illustrations (Journals): *Ruizia* (13:160, Fig 17d-e (1993) as *Koeleria bergii*).

Derivation (Clifford & Bostock 2007): L. per, very; mollis, soft. Foliage densely covered with short soft hairs.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped loosely or moderately. Rhizomes short. Culms erect, 25–35 cm long. Leaf-sheaths pubescent. Ligule an eciliate membrane. Leaf-blades convolute, 0.5–1 mm wide. Leaf-blade surface pubescent.

Inflorescence. Inflorescence a panicle. Panicle spiciform, oblong, continuous or interrupted, 5–7 cm long. Panicle axis pubescent. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

Fertile Spikelets. Spikelets comprising 2–3 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 obovate, laterally compressed, 5–6 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, shiny, gaping. Lower glume lanceolate, 1 length of upper glume, membranous, 1-keeled, 1 -veined. Lower glume lateral veins absent. Lower glume apex obtuse. Upper glume lanceolate, 0.75 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume apex obtuse.

Florets. Fertile lemma oblong, 5–6 mm long, membranous, shiny, keeled. Lemma apex obtuse, awned, 1 -awned. Principal lemma awn subapical, 0.5–1 mm long overall. Palea gaping, 1 length of lemma. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, membranous. Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp.

Distribution (TDWG). Continent. South America.

Country /Province /State. Western South America, Southern South America. Bolivia. Argentina Northeast, Argentina South, Chile Central, Uruguay. Falkland Is (Malvinas).

TDWG4. Catamarca, Mendoza, San Luis. Buenos Aires, Cordoba, Entre Rios, La Pampa. Chubut, Neuquén, Río Negro, Tierra del Fuego. O'Higgins.

Koeleria praeandina Molina. *Bol. Soc. Arg. Bot.* 26:221 (1990).

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, Bella Vista: Covas 18017 (BAA holo, SI).

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

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose. Rhizomes short. Culms geniculately ascending, 30–73 cm long, 2–3 -noded. Culm-nodes glabrous. Lateral branches lacking. Leaf-sheaths glabrous on surface or pubescent. Ligule a ciliolate membrane, 0.7–3 mm long, truncate or acute. Leaf-blades 2.5–19 cm long, 1.5–2 mm wide. Leaf-blade surface glabrous or puberulous. Leaf-blade margins ciliate. Leaf-blade apex obtuse.

Inflorescence. Inflorescence a panicle, exerted or embraced at base by subtending leaf. Peduncle pubescent above. Panicle spiciform, linear, interrupted, 3.5–17.5 cm long, 0.3–1 cm wide. Panicle axis pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, pubescent.

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, 4–6 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1–1.5 mm long, pubescent. Floret callus sparsely hairy.

Glumes. Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture, shiny, gaping. Lower glume lanceolate, 5–5.5 mm long, 0.8–0.9 length of upper glume, membranous, 1-keeled, 3 -veined. Lower glume primary vein scaberulous (above). Lower glume apex acuminate. Upper glume lanceolate, 5–5.5 mm long, 1.1 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume primary vein scabrous (above). Upper glume apex acute.

Florets. Fertile lemma elliptic, 4–4.5 mm long, membranous, shiny, keeled, 5 -veined, more than 3-veined. Lemma lateral veins obscure, stopping well short of apex. Lemma apex acute, muticous or mucronate. Palea gaping. Palea keels scaberulous.

Flower and Fruit. Lodicules 2, 1 mm long, membranous. Anthers 3, 1–1.8 mm long. Caryopsis with adherent pericarp, ellipsoid, laterally compressed, 2.5 mm long. Hilum elliptic. Endosperm liquid.

Distribution (TDWG). Continent. South America.

Country /Province /State. Southern South America. Argentina Northwest.

TDWG4. Mendoza, Salta.

Koeleria pubescens (Lam.) P. Beauv. *Ess. Agrostogr.* 85 (1812).

Accepted by: W.D. Clayton & K. Harman, *GrassBase* (2008) and online (as *Rostraria villosa*).

Basionym or Replaced Name: *Rostraria litorea* (Ali.) Holub, *Folia Geobot. Phytotax.*, 9 (3): 271 (1974).

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

Derivation (Clifford & Bostock 2007): L. villi, long weak hairs; -osa, abundance. The plant in whole or in part covered with long hairs.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Annual. Culms erect or geniculately ascending, 5–60 cm long. Culm-internodes distally glabrous or pubescent. Leaf-sheaths pilose. Ligule an eciliate membrane, 1–2 mm long, pilose on abaxial surface, truncate or obtuse. Leaf-blades 2–7 cm long, 3–8 mm wide. Leaf-blade surface pubescent, hairy on both sides. Leaf-blade apex attenuate.

Inflorescence. Inflorescence a panicle. Panicle spiciform, linear or oblong, 1–12 cm long, 0.5 cm wide. Panicle axis pubescent. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, oblong.

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 oblong, laterally compressed, 3.5–6 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes glabrous. Floret callus glabrous.

Glumes. Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture, parallel to lemmas. Lower glume elliptic, 3.5–6 mm long, 1 length of upper glume, membranous, without keels, 1 -veined. Lower glume primary vein pectinately ciliate. Lower glume lateral veins absent. Lower glume surface villous. Lower glume apex obtuse to acuminate. Upper glume elliptic, 3.5–6 mm long, 1.1 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume primary vein pectinately ciliate. Upper glume surface villous. Upper glume apex obtuse to acuminate.

Florets. Fertile lemma elliptic, 3–5.5 mm long, membranous, much thinner on margins, keeled, 5 -veined, more than 3-veined. Lemma midvein scaberulous. Lemma surface smooth or punctate, glabrous. Lemma apex dentate, 2 -fid, acute, awned, 1 -awned. Principal lemma awn from a sinus, 0.5–1 mm long overall. Palea gaping, hyaline. Palea keels scaberulous. Rhachilla extension glabrous.

Flower and Fruit. Anthers 3, 1.5–2 mm long. Ovary glabrous.

Distribution (TDWG). Continent. Europe and Africa.

Region. Northern Europe (*), Southwestern Europe, Southeastern Europe.

Country /Province /State. : GB Aliens (Ryves et al). **Northern Africa.** Algeria, Libya, Morocco, Tunisia.

Koeleria pyramidata (Lam.) Beauv. *Agrost.* 166 (1812).

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) (& as *K. grandis*).

TYPE from France. **Basionym or Replaced Name:** *Poa pyramidata* Lam., *Illustr.* 1: 183 (1791). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: France: Coll? (P holo).

Illustrations (Books): 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) (755), F.W.Gould, *The Grasses of Texas* (1975) (126, Fig. 62), R.McVaugh, *Flora Nova-Galiciana* Vol.14 *Gramineae* (1983), E.Hafliger & E.Schultz, *Grass Weeds*, CIBA-GEIGY (2:89(1980)).

Derivation (Clifford & Bostock 2007): L. like a pyramid. Panicle pyramid-shaped.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped loosely. Rhizomes short. Butt sheaths glabrous or pubescent. Culms erect, 70–90 cm long, 2-noded. Lateral branches lacking. Leaves mostly basal. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane. Leaf-blades 7–24 cm long, 1.5–2.5 mm wide, mid-green or glaucous. Leaf-blade surface glabrous. Leaf-blade margins smooth or scaberulous. Leaf-blade apex acuminate.

Inflorescence. Inflorescence a panicle. Panicle open, pyramidal, 12–13.5 cm long, 3.5–5 cm wide. Primary panicle branches spreading, 2.5–4.5 cm long. Panicle axis pubescent. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 0.7–7.5 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, 6–7.3 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, shiny, gaping. Lower glume lanceolate, 3.5–4 mm long, 0.66–0.75 length of upper glume, membranous, much thinner on margins, 1-keeled, 1-veined. Lower glume lateral veins absent. Lower glume surface smooth or asperulous. Lower glume apex acute. Upper glume lanceolate, 5–5.3 mm long, 0.9 length of adjacent fertile lemma, membranous, with hyaline margins, 1-keeled, 3-veined. Upper glume surface smooth or asperulous. Upper glume apex acute.

Florets. Fertile lemma oblong, 5.5–5.8 mm long, membranous, much thinner on margins, shiny, keeled, 5-veined, more than 3-veined. Lemma surface glabrous or pubescent. Lemma apex acute to setaceously acuminate. Palea gaping, 1 length of lemma. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, membranous. Anthers 3, 2–2.5 mm long. Ovary glabrous.

$2n = 14$ (1 ref TROPICOS), or 56 (1 ref TROPICOS), or 84 (1 ref TROPICOS).

Distribution (TDWG). Continent. Europe, Temperate Asia, North America.

Region. Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe, Eastern Europe.

Country /Province /State. : Denmark, Sweden. : Austria, Belgium, Czechoslovakia, Germany, Hungary, Netherlands, Poland, Switzerland. : France. : Bulgaria, Italy, Romania, Yugoslavia. Belarus, Estonia, Latvia, Lithuania, Baltic States, Central European Russia, North European Russia, South European Russia, Northwest European Russia, Ukraine. **Western Asia.** Turkey. **Mexico.** Central Mexico, Northeast Mexico, Gulf (Mexico), Northwest Mexico, Southwest Mexico.

TDWG4. Distrito Federal, Mexico State, Tlaxcala. Coahuila, Chihuahua, Durango, Guanajuato, Neuvo Leon, San Luis Potosi, Tamaulipas, Zacatecas. Veracruz. Baja California, Sonora. Jalisco, Oaxaca.

Koeleria rhodopea Ujhelyi. *Ann. Hist.-Nat. Mus. Nat. Hungar.* lx. 83 (1968).

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, Rhodope to Markovo: Velenovsky (PRC holo).

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

Derivation (Clifford & Bostock 2007): From Mount Rhodopea, Bulgaria.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped loosely. Rhizomes short. Butt sheaths sparsely hairy, persistent and investing base of culm, with compacted dead sheaths. Basal innovations extravaginal. Culms erect, 30–65 cm long, 1 mm diam. Lateral branches lacking. Leaves mostly basal. Leaf-sheaths 6–21 cm long, puberulous. Ligule an eciliate membrane, 0.5 mm long, obtuse. Leaf-blades 15–30 cm long, 1–2.5 mm wide.

Inflorescence. Inflorescence a panicle. Panicle contracted or spiciform, linear, interrupted, 6–13 cm long, 1–1.5 cm wide. Panicle axis pubescent. Panicle branches pubescent. 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, 6.5 mm long, breaking up at maturity, disarticulating below each fertile floret.

Glumes. Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture, shiny, gaping. Lower glume lanceolate, 4 mm long, membranous, much thinner on margins, 1-keeled. Lower glume apex acute. Upper glume ovate, 5 mm long, 0.75 length of adjacent fertile lemma, membranous, with hyaline margins, 1-keeled. Upper glume apex acute.

Florets. Fertile lemma oblong, 6.5 mm long, membranous, much thinner on margins, shiny, keeled, 5 -veined, more than 3-veined. Lemma surface puberulous. Lemma apex acute. Palea gaping, 5.7 mm long, 1 length of lemma. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Anthers 3.

Distribution (TDWG). Continent. Europe.

Region. Southeastern Europe.

Country /Province /State. : Bulgaria.

Koeleria rigorum E. Edgar & E.S. Gibb. *New Zealand J. Bot.*, 37(1): 59 (1999).

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, Douglas Range: Druce (CHR holo).

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

Derivation (Clifford & Bostock 2007): *L. riguus*, a well-watered place. Of well watered places.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial. Rhizomes elongated. Butt sheaths persistent and investing base of culm. Basal innovations extravaginal. Culms erect or geniculately ascending, slender, 25–36 cm long. Culm-internodes distally glabrous to hirsute. Leaf-sheaths ribbed, puberulous. Ligule a ciliate membrane, 0.6–1.1 mm long, truncate or acute. Leaf-blades filiform or linear, flat or conduplicate or involute, 3.2–17 cm long, 0.3–1.2 mm wide. Leaf-blade surface ribbed, grooved adaxially, puberulous, hairy adaxially. Leaf-blade margins scaberulous.

Inflorescence. Inflorescence a panicle. Panicle spiciform, linear, interrupted, 2–7 cm long, 0.3–1 cm wide. Panicle axis pubescent. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, pubescent.

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 laterally compressed, 3.6–6.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 0.8–1.2 mm long, pubescent.

Glumes. Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture, shiny, gaping. Lower glume lanceolate or elliptic, 3.4–4.1 mm long, 0.9–1 length of upper glume, membranous, 1-keeled, 1–3 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent or distinct. Lower glume apex entire or erose, obtuse or acute. Upper glume lanceolate or elliptic, 4–4.2 mm long, 0.9–1 length of adjacent fertile lemma, membranous, 1-keeled, 3–5(–7) -veined. Upper glume primary vein scabrous. Upper glume apex entire or erose, obtuse or acute.

Florets. Fertile lemma elliptic, 4–4.6 mm long, membranous, shiny, keeled. Lemma surface smooth or asperulous, rough above. Lemma apex entire or dentate, 2 -fid, muticous or mucronate or awned, 1 -awned. Principal lemma awn subapical, 0–2 mm long overall. Palea gaping, 4–4.2 mm long, 1 length of lemma. Palea keels scabrous, adorned above, with 0.66 of their length adorned. Rhachilla extension 1–1.5 mm long, pilose.

Flower and Fruit. Lodicules 2, 0.5–1.2 mm long, membranous. Anthers 3, 0.5–1.7 mm long. Caryopsis with adherent pericarp, 2 mm long.

Distribution (TDWG). Continent. Australasia.

Country /Province /State. New Zealand. New Zealand South I.

Koeleria skrjabinii Karavaev & Tsvelev. *Novosti Sist. Vyssh. Rast.*, 8: 23 (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>: *fide* TROPICOS and Kew Synonymy Database: Russia, Lake Nijili: Skryabin (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, culms solitary. Rhizomes short. Culms erect, 25–60 cm long. Culm-internodes distally pilose. Leaf-sheaths pubescent. Ligule an eciliate membrane, 0.2–0.7 mm long, pubescent on abaxial surface. Leaf-blades convolute, 1.5–3.5 mm wide, stiff, glaucous. Leaf-blade surface scabrous, rough adaxially, glabrous.

Inflorescence. Inflorescence a panicle. Peduncle pubescent above. Panicle spiciform, linear, loose, 3.5–9 cm long. Panicle axis pubescent. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

Fertile Spikelets. Spikelets comprising 2–4 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 obovate, laterally compressed, 6–7.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes pubescent.

Glumes. Glumes persistent, similar, reaching apex of florets, similar to fertile lemma in texture, shiny, gaping. Lower glume lanceolate, 4–5 mm long, 0.7–0.8 length of upper glume, membranous, 1-keeled, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume apex acute. Upper glume oblong, 5–6.5 mm long, 1 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume primary vein scabrous. Upper glume apex acute.

Florets. Fertile lemma oblong, 5.4–6.5 mm long, membranous, shiny, keeled. Lemma surface scabrous. Lemma apex acute. Palea gaping, 0.9 length of lemma. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, membranous. Anthers 3, 2.5–3.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp.

$2n = 28$ (1 ref TROPICOS).

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. Siberia. Yakutiya.

TDWG4.

Koeleria splendens Presl. *Cyp. et Gram. Sic.* 34 (1820).

Regarded by K as a synonym (*K. lobata*).

TYPE from Sicily. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Sicily, Mt. Cozzo: Coll?.

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

Derivation (Clifford & Bostock 2007): L. shining. Lemmas glossy.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped densely. Rhizomes short. Butt sheaths thickened and forming a bulb, persistent and investing base of culm, with compacted dead sheaths. Basal innovations intravaginal. Culms erect, 20–45 cm long. Leaves mostly basal. Leaf-sheaths outer margin glabrous or hairy. Ligule an eciliate membrane. Leaf-blades filiform or linear, flat or convolute, 3–5 cm long, 1 mm wide, stiff, glaucous. Leaf-blade surface scabrous, rough adaxially, glabrous or pubescent, hairy abaxially. Leaf-blade margins ciliate.

Inflorescence. Inflorescence a panicle. Panicle spiciform, oblong, continuous or interrupted, 3–8 cm long, 1.2 cm wide. Panicle axis puberulous. Panicle branches puberulous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, oblong.

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 or cuneate, laterally compressed, (4–)6–8 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes pubescent.

Glumes. Glumes persistent, similar, shorter than spikelet or reaching apex of florets, similar to fertile lemma in texture, shiny, gaping. Lower glume oblong, 0.7–0.8 length of upper glume, membranous, 1-keeled, 1 -veined. Lower glume lateral veins absent. Lower glume surface glabrous or pubescent, hairy above. Lower glume apex attenuate. Upper glume oblong, 1–1.2 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume surface glabrous or pubescent, hairy above. Upper glume apex attenuate.

Florets. Fertile lemma oblong, 4–6 mm long, membranous, much thinner on margins, shiny, keeled, keeled above, 3 -veined, 0–3 -veined. Lemma apex acuminate to setaceously acuminate, mucous. Palea gaping. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, oblong, membranous, 2-toothed. Anthers 3. Ovary glabrous.

Distribution (TDWG). Continent. Europe.

Region. Southwestern Europe, Southeastern Europe, Eastern Europe, Middle Europe.

Country /Province /State. : Austria. : Corsica, France, Sardinia, Spain. : Albania, Bulgaria, Greece, Italy, Romania, Sicily, Turkey Europe, Yugoslavia. Krym, Northwest European Russia.

Koeleria thonii Domin. *Biblioth. Bot.* lxx. 139 (1907).

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, Minusinka: Martyanov 270 (LE holo).

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

Derivation (Clifford & Bostock 2007): in honor of Carl Thon, Bohemian zoologist.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose. Butt sheaths yellow. Culms erect, 30–60 cm long. Leaf-sheaths antrorsely scabrous. Ligule an eciliate membrane. Leaf-blades convolute, 8–10 cm long, 2–3 mm wide, stiff, glaucous. Leaf-blade surface scabrous, glabrous.

Inflorescence. Inflorescence a panicle. Peduncle glabrous or pubescent above. Panicle spiciform, linear, interrupted, 10–14 cm long, 2 cm wide. 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 obovate, laterally compressed, 6–8 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, shiny, gaping. Lower glume lanceolate, 0.7–0.8 length of upper glume, membranous, 1-keeled, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume oblong, 0.75 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume apex acute.

Florets. Fertile lemma elliptic, 6–7 mm long, membranous, shiny, keeled. Lemma apex acuminate, mucous or mucronate. Palea gaping. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, membranous. Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. Siberia, Mongolia. Irkutsk, Krasnoyarsk, Tuva.

TDWG4.

Koeleria tzvelevii N.V. Vlasova. *Bot. Zhurn.*, 72(12): 1668 (1987).

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, Sclerin Borzja, Argunj R.: Nomokonov & Zarubin (LE holo).

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

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped loosely. Butt sheaths persistent and investing base of culm, with compacted dead sheaths or fibrous dead sheaths. Culms 30–40 cm long. Culm-internodes distally pilose. Ligule an eciliate membrane. Leaf-blades flat, 8–15 cm long, 1–1.5 mm wide, stiff. Leaf-blade surface smooth or scaberulous, rough adaxially, glabrous.

Inflorescence. Inflorescence a panicle. Panicle contracted, oblong, 6–7 cm long, 1 cm wide. 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 obovate, laterally compressed, 4–4.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes pubescent.

Glumes. Glumes persistent, similar, shorter than spikelet or reaching apex of florets, similar to fertile lemma in texture, shiny, gaping. Lower glume lanceolate, 3–3.5 mm long, 0.75 length of upper glume, membranous, 1-keeled, 1 -veined. Lower glume primary vein scaberulous. Lower glume lateral veins absent.

Lower glume apex acuminate. Upper glume oblong, 4 mm long, 1 length of adjacent fertile lemma, membranous, 1-keeled. Upper glume primary vein scaberulous. Upper glume apex acuminate.

Florets. Fertile lemma oblong, 3.5–4 mm long, membranous, shiny, keeled. Lemma surface pilose. Lemma apex acute, mucronate. Palea gaping.

Flower and Fruit. Anthers 3.

Distribution (TDWG), Continent. Temperate Asia.

Country /Province /State. Siberia. Chita.

TDWG4.

Koeleria vallesiana (Honck.) Bertol ex Roemer & Schultes., *Mant.* ii. 346 (1824).

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): C.E.Hubbard, *Grasses* (1968) (244), G.Hegi, *Flora von Mitteleuropa* 1 (1909).

Derivation (Clifford & Bostock 2007): L. -ana, indicating location. From Valesia, now Canton of Valais, Switzerland.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose. Butt sheaths scarious, not bulbous or thickened and forming a bulb, persistent and investing base of culm, with fibrous dead sheaths. Culms erect, 10–40 cm long, 1–3 -noded. Leaves mostly basal. Ligule an eciliate membrane, 0.3–0.7 mm long. Leaf-blades filiform or linear, flat or convolute, 3–12 cm long, 1–3 mm wide, stiff. Leaf-blade surface ribbed, glabrous or pubescent.

Inflorescence. Inflorescence a panicle. Peduncle pubescent above. Panicle spiciform, linear or lanceolate, continuous or interrupted, 2–5.5(–7.5) cm long, 0.6–1.2 cm wide. Panicle branches pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, oblong.

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 or cuneate, laterally compressed, 4.5–6.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes pubescent.

Glumes. Glumes persistent, similar, reaching apex of florets or shorter than spikelet, similar to fertile lemma in texture, shiny, gaping. Lower glume lanceolate, 3.5–5.5 mm long, 0.7–0.8 length of upper glume, membranous, much thinner on margins, 1-keeled, 1 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent. Lower glume surface glabrous. Lower glume apex acute. Upper glume elliptic, 4–6.3 mm long, 1–1.1 length of adjacent fertile lemma, membranous, with hyaline margins, 1-keeled, 3 -veined. Upper glume primary vein scabrous. Upper glume surface glabrous. Upper glume apex acute, mucicous or mucronate or awned, 1 -awned, awn 0–0.4 mm long.

Florets. Fertile lemma elliptic, 4–5.3(–5.7) mm long, membranous, much thinner on margins, shiny, keeled, keeled above, 3 -veined, 0–3 -veined. Lemma surface puberulous. Lemma apex acute, mucicous or mucronate. Palea gaping. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, oblong, membranous, 2-toothed. Anthers 3, (1.7–)2–2.5(–2.7) mm long. Ovary glabrous.

$N = 14$ (1 ref TROPICOS). $2n = 42$ (2 refs TROPICOS), or 56 (1 ref TROPICOS).

Distribution (TDWG), Continent. Europe, Africa.

Region. Northern Europe, Middle Europe, Southwestern Europe, Southeastern Europe.

Country /Province /State. : Great Britain. : Germany, Switzerland. : France, Portugal, Spain. : Greece, Italy. Northern Africa. Algeria, Morocco, Tunisia.

Koeleria ventanica Molina. *Bol. Soc. Arg. Bot.* 26:228 (1990).

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, Sierra de Curamalal: Leguizamon & Martinez 21/xi/1972 (BAA holo, BAB).

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

Derivation (Clifford & Bostock 2007): L. -cola, dweller. From Sierra de la Ventana, Argentina.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose. Rhizomes short. Culms geniculately ascending, 24–54 cm long, 2–3 -noded. Culm-nodes glabrous or pubescent. Lateral branches lacking. Leaf-sheaths glabrous on surface. Ligule a ciliate membrane, 1–2 mm long, truncate or acute. Leaf-blades 6–30 cm long, 1.5–2.5 mm wide. Leaf-blade surface scaberulous, glabrous. Leaf-blade margins scaberulous. Leaf-blade apex obtuse.

Inflorescence. Inflorescence a panicle. Peduncle glabrous. Panicle spiciform, linear, continuous or interrupted, 6–14 cm long, 0.7–1.7 cm wide. Panicle axis scabrous, with scattered hairs. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, scabrous, bearing a few hairs.

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, 4–5 mm long, 2 mm wide, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 0.25–1 mm long, glabrous or sparsely hairy. Floret callus sparsely hairy.

Glumes. Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture, shiny, gaping. Lower glume lanceolate, 3–4 mm long, 0.8–0.9 length of upper glume, membranous, 1-keeled, 3 -veined. Lower glume primary vein scaberulous (above). Lower glume apex acuminate. Upper glume lanceolate, 4–5 mm long, 1 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume primary vein scabrous (above). Upper glume apex acute.

Florets. Fertile lemma elliptic, 4–5 mm long, membranous, shiny, keeled, 5 -veined, more than 3-veined. Lemma midvein scabrous. Lemma lateral veins distinct. Lemma apex acute, awned, 1 -awned. Principal lemma awn subapical, straight, 1–3 mm long overall. Palea gaping, 1 length of lemma. Palea keels scaberulous.

Flower and Fruit. Lodicules 2, 1 mm long, membranous. Anthers 3, 1.2 mm long. Caryopsis with adherent pericarp, fusiform, laterally compressed, 2.5 mm long. Hilum elliptic. Endosperm liquid.

Distribution (TDWG). Continent. South America.

Country /Province /State. Southern South America. Argentina Northeast.

TDWG4. Buenos Aires.

Koeleria vurilochensis Calderon ex E.G. Nicora. *Fl. Patagonica*, 3: 66 (1978).

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, Bariloche: Parodi 15298.

Illustrations (Books): M.N.Correa, *Flora Patagonica* Parte III, Gramineae (1978) (65, Fig 30).

Derivation (Clifford & Bostock 2007): *L. -ensis*, denoting origin. From Vuriloche Pass, Argentina.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Perennial, caespitose, clumped densely. Culms erect, 20–50 cm long. Leaf-sheaths glabrous on surface or pubescent. Ligule an eciliate membrane, 0.5–2 mm long, lacerate. Leaf-blades 10–15 cm long, 2–4 mm wide. Leaf-blade surface scabrous, rough abaxially or on both sides, glabrous or pubescent. Leaf-blade margins glabrous or ciliate.

Inflorescence. Inflorescence a panicle. Peduncle glabrous or pubescent above. Panicle spiciform, linear, 5–10 cm long. Panicle axis pubescent. Panicle branches pubescent. 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 obovate, laterally compressed, 6–7 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 1.2–1.6 mm long, pilose. Floret callus pubescent.

Glumes. Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture, shiny, gaping. Lower glume lanceolate, 5–5.5 mm long, 0.7–0.8 length of upper glume, membranous, 1-keeled, 3 -veined. Lower glume apex acute. Upper glume oblong, 5.5–6.5 mm long, 0.9 length of adjacent fertile lemma, membranous, 1-keeled, 3 -veined. Upper glume apex acute.

Florets. Fertile lemma oblong, 5.5–6.5 mm long, membranous, shiny, keeled. Lemma apex acute, awned, 1 -awned. Principal lemma awn subapical, 1–2 mm long overall. Palea gaping.

Flower and Fruit. Lodicules 2, membranous. Anthers 3, 1.2–1.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp. Endosperm liquid.

Distribution (TDWG). Continent. South America.

Country /Province /State. Southern South America. Argentina South.

TDWG4. Chubut, Neuquén, Río Negro, Santa Cruz.