

Walwhalleya jacobiana R.D.B.Whalley & J.J.Bruhl, *Telopea* 13: 85 (2011).

TYPE from Australia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: South Australia. Flinders Range[s], north, Oraparinna National Park, Hans Heysen Range. c. 18 km west-north-west of Oraparinna homestead. 17 Sep. 1971, *E.N.S. Jackson 1880*; holo: AD; iso: BRI, CANB, K, MEL, MO, NE, NSW, PERTH, PRE, SI, US.

Classification. Subfamily Panicoideae. Tribe: Paniceae. Subtribe INCERTAE SEDIS.

Habit, Vegetative Morphology. Perennial, caespitose. Culms erect, 10–20 cm long. Culm-internodes thin-walled, distally glabrous. Culm-nodes glabrous. Lateral branches sparse. Leaf-sheaths longer than adjacent culm internode, without keel, glabrous on surface, outer margin glabrous. Ligule an eciliate membrane, 1.5–2.8 mm long, entire or erose, truncate or obtuse. Collar glabrous. Leaf-blades involute, 4–10 cm long, 1.6–2.5 mm wide. Leaf-blade surface scaberulous, pilose, hairy adaxially. Leaf-blade margins scaberulous. Leaf-blade apex acuminate, hardened.

Inflorescence. Inflorescence a panicle. Panicle open, oblong, 4–8 cm long. Primary panicle branches whorled at lower nodes, bearing 1–3 fertile spikelets on each lower branch. Panicle axis 4–8 noded, scabrous. Panicle branches pubescent in axils. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, angular, 15–20 mm long, scabrous, tip cupuliform.

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, 2.5–2.9 mm long, 1.1–1.3 mm wide, falling entire. Rhachilla internodes elongated between glumes.

Glumes. Glumes reaching apex of florets, thinner than fertile lemma. Lower glume ovate, clasping, 1.7–2.1 mm long, 0.6–0.7 length of spikelet, membranous, without keels, 5–7 -veined. Lower glume surface scabrous. Lower glume apex acute or acuminate. Upper glume elliptic, 2.2–2.6 mm long, 1 length of spikelet, membranous, without keels, 7–9 -veined. Upper glume surface pilose. Upper glume apex acute.

Florets. Basal sterile florets 1, barren, without significant palea. Lemma of lower sterile floret similar to upper glume, elliptic, 2.2–2.6 mm long, 1 length of spikelet, chartaceous, 7–9 -veined, with equidistant veins. Fertile lemma elliptic, dorsally compressed, 1.7–2.1 mm long, indurate, pallid, without keel. Lemma margins involute. Lemma apex acute. Palea involute, indurate.

Distribution (TDWG). Continent. Australasia.

Country /Province /State. Australia. South Australia. Southern.

Walwhalleya proluta (F. Muell.) K.E. Wills & J.J. Bruhl. *Austral. Syst. Bot.* 19(4): 327 (2006).

Accepted by: D.Sharp, D. & B.K.Simon, *AusGrass* (2002).

TYPE from Australia. **Basionym or Replaced Name:** *Panicum prolutum* F.Muell., *Trans. & Proc. Victorian Inst. Advancem. Sci.* 1854/1855: 46 (1855). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *F. von Mueller s.n.*, Australia: Victoria: Avoca River (MEL; IT: K).

Illustrations (Books): J.P.Jessop, G.R.M. Dashorst & F.M.James, *Grasses of South Australia* (2006) (494, Fig. 426), N.Walsh & T.Entwistle, *Flora of Victoria* Vol 2 (1994) (607, Fig. 123 as *Homopholis proluta*), S.W.L.Jacobs, R.D.B.Whalley & D.J.B.Wheeler., *Grasses of New South Wales*, 4th edn (2008) (400), T.D.Stanley & E.Ross, *Flora of South East Queensland, Gramineae* (1989) (195, Fig. 30 as *Panicum prolutum*), D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002).

Images: D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002);.

Derivation (Clifford & Bostock 2007): *L. proluo*, wash; *lutus*, swamp. Growing near water.

Classification. Subfamily Panicoideae. Tribe: Paniceae. Subtribe INCERTAE SEDIS.

Habit, Vegetative Morphology. Perennial, caespitose. Rootstock evident. Basal innovations extravagant. Culms erect, 20–70 cm long, wiry, 5 -noded. Leaf-sheaths smooth or scaberulous. Ligule an eciliate membrane, 2–4 mm long, truncate or obtuse. Leaf-blades 2–15 cm long, 2–7 mm wide. Leaf-blade surface smooth or scaberulous. Leaf-blade apex acute or acuminate.

Inflorescence. Inflorescence a panicle. Panicle open, ovate, effuse, 10–25 cm long. Primary panicle branches spreading, branching divaricately, 5–20 cm long. Panicle branches scabrous, with prominent pulvini. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 1.5–10 mm long, scabrous, tip cupuliform.

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, compressed slightly, plano-convex, acute, 3–4 mm long, falling entire.

Glumes. Glumes reaching apex of florets, thinner than fertile lemma. Lower glume ovate, 0.66–0.85 length of spikelet, membranous, much thinner on margins, without keels, 5 -veined. Lower glume lateral veins prominent, parallel at apex. Lower glume apex obtuse or acute. Upper glume elliptic, 1 length of spikelet, membranous, without keels, 7(–9) -veined. Upper glume apex acute.

Florets. Basal sterile florets 1, barren, without significant palea. Lemma of lower sterile floret similar to upper glume, elliptic, 1 length of spikelet, membranous, 7 -veined, acute or acuminate. Fertile lemma elliptic, dorsally compressed, 2.25–2.5 mm long, indurate, shiny, without keel. Lemma surface puberulous, hairy above, with clavate hairs. Lemma margins involute. Lemma apex acute. Palea involute, indurate.

Flower and Fruit. Anthers 3. Caryopsis with adherent pericarp.

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

Region. Northern Europe (*).

Country /Province /State. : GB Aliens (Ryves et al). **Australia.** South Australia, Queensland, New South Wales, Victoria.

TDWG4. Southern. South East, Inland. Coast, Tablelands, Western Slopes, Western Plains.

Walwhalleya pungens K.E. Wills & J.J. Bruhl. *Austral. Syst. Bot.* 19(4): 327 (2006).

Accepted by: D.Sharp, D. & B.K.Simon, *AusGrass* (2002).

TYPE from Australia. **Basionym or Replaced Name:** *Whalleya pungens* Wills & J. Bruhl, *Austral. Syst. Bot.* 13: 463–465, f. 1, 2c (2000). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Australia: New South Wales: Woodsreef [precise locality withheld], 11 Dec 1995, K.W. Wills, J.J. Bruhl, R.D.B. Whalley & J.R. Hosking 100e (HT: NSW; IT: BRI, CANB, K, MEL, NE).

Illustrations (Books): S.W.L.Jacobs, R.D.B.Whalley & D.J.B.Wheeler., *Grasses of New South Wales*, 4th edn (2008) (400).

Images: D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002);.

Derivation (Clifford & Bostock 2007): L. pungo, prick. Leaf-blades sharp-pointed.

Classification. Subfamily Panicoideae. Tribe: Paniceae. Subtribe INCERTAE SEDIS.

Distribution (TDWG). Continent. Australasia.

Country /Province /State. **Australia.** New South Wales.

TDWG4. Western Slopes.

Walwhalleya subxerophila (Domin) K.E. Wills & J.J. Bruhl. *Austral. Syst. Bot.* 19(4): 327 (2006).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online (as *Panicum*), U.Quattrocchi, *CRC World Dictionary of Grasses* (2006) (as *Panicum*), D.Sharp, D. & B.K.Simon, *AusGrass* (2002).

TYPE from Australia. **Basionym or Replaced Name:** *Panicum subxerophilum* Domin, *Biblioth. Bot.* 85: 316 (1915). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Queensland: bewaldete Sandhgel der Dividing Range bei Jericho, *Domin III. 1910* (PR).

Illustrations (Books): S.W.L.Jacobs, R.D.B.Whalley & D.J.B.Wheeler., *Grasses of New South Wales*, 4th edn (2008) (400), T.D.Stanley & E.Ross, *Flora of South East Queensland, Gramineae* (1989) (195, Fig. 30 as *Panicum*), D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002).

Images: D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002);.

Derivation (Clifford & Bostock 2007): L. sub, approaching; Gk. xerophilum, desert lover. From semi-desert regions.

Classification. Subfamily Panicoideae. Tribe: Paniceae. Subtribe INCERTAE SEDIS.

Habit, Vegetative Morphology. Perennial, caespitose. Basal innovations extravaginal. Culms erect, 20–70 cm long, wiry, 5 -noded. Culm-internodes scaberulous. Culm-nodes glabrous. Lateral branches lacking or sparse. Leaf-sheaths smooth or scaberulous. Ligule an eciliate membrane, 1–3.5 mm long, erose, truncate. Leaf-blades flat or convolute, 2–12 cm long, 1.5–3.5 mm wide. Leaf-blade surface smooth or scaberulous. Leaf-blade apex acuminate.

Inflorescence. Inflorescence a panicle. Panicle open, ovate, 5–20 cm long, with spikelets clustered towards branch tips. Primary panicle branches spreading, whorled at lower nodes, sparsely divided, 7–13 cm long. Panicle branches capillary, scaberulous, pubescent in axils. Spikelets solitary or in pairs. Fertile spikelets pedicelled. Pedicels present, 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 or oblong, dorsally compressed, compressed slightly, obtuse, 2–2.75 mm long, falling entire.

Glumes. Glumes reaching apex of florets, thinner than fertile lemma. Lower glume ovate, 0.5–0.66 length of spikelet, membranous, much thinner on margins, without keels, 3–5 -veined. Lower glume surface scabrous

or tuberculate. Lower glume apex obtuse. Upper glume elliptic, 1 length of spikelet, membranous, without keels, 9 -veined. Upper glume surface scabrous or tuberculate. Upper glume apex obtuse.

Florets. Basal sterile florets 1, barren, with palea. Lemma of lower sterile floret similar to upper glume, elliptic, 1 length of spikelet, membranous, 7 -veined, prominently veined, scabrous or tuberculate, obtuse or acute. Fertile lemma elliptic, dorsally compressed, 2–2.5 mm long, indurate, pallid, shiny, without keel. Lemma margins involute. Lemma apex acute. Palea involute, indurate.

Flower and Fruit. Anthers 3. Caryopsis with adherent pericarp.

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

Region. Northern Europe (*).

Country /Province /State. : GB Aliens (Ryves et al). **Australia.** Queensland, New South Wales.

TDWG4. Central, South East, Inland. Western Slopes, Western Plains.

Wangenheimia lima (L.) Trin. *Fund. Agrost.* 132 (1820).

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:** *Cynosurus lima* L., *Sp. Pl.* 72 (1753). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Spain, *Loefling s.n.*.

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

Derivation (Clifford & Bostock 2007): *L. lima*, file. Leaves or glumes scabrid.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Annual, caespitose. Culms 7–30 cm long. Ligule an eciliate membrane, 1.5–2.5 mm long, lacerate. Leaf-blades convolute, 2–4 cm long, 1–2 mm wide. Leaf-blade surface ribbed.

Inflorescence. Inflorescence composed of racemes. Racemes 1, single, linear or oblong, straight or arcuate, unilateral, 0.8–3.5 cm long. Rhachis pubescent on surface, pubescent on margins. Spikelet packing broadside to rhachis, crowded, regular, 2 -rowed. Spikelets pectinate, solitary. Fertile spikelets sessile.

Fertile Spikelets. Spikelets comprising 2–12 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong or ovate, laterally compressed, 3.5–5 mm long, breaking up at maturity, disarticulating below each fertile floret.

Glumes. Glumes lateral (the lower), persistent, dissimilar, reaching apex of florets, firmer than fertile lemma. Lower glume subulate, 4–5 mm long, 0.8 length of upper glume, 1 -veined. Lower glume lateral veins absent. Upper glume lanceolate, coriaceous, 1-keeled, 2–3 -veined. Upper glume primary vein scabrous. Upper glume surface glabrous or pubescent. Upper glume apex acuminate.

Florets. Fertile lemma oblong, 3–4 mm long, chartaceous, much thinner on margins, keeled, keeled all along or above, 5 -veined, more than 3-veined. Lemma lateral veins obscure. Lemma surface glabrous or pubescent. Lemma apex acuminate. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 2, glabrous. Anthers 3, 2–2.5 mm long. Ovary glabrous. Caryopsis with adherent pericarp, 1.8–2.4 mm long. Embryo 0.25 length of caryopsis. Hilum elliptic.

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

Distribution (TDWG). Continent. Europe, Africa.

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

Country /Province /State. : GB Aliens (Ryves et al). : Portugal, Spain. **Northern Africa.** Algeria, Morocco, Western Sahara.

Whiteochloa airoides (R. Br.) M. Lazarides. *Brunonia*, 1(1): 73 (1978).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), D.Sharp, D. & B.K.Simon, *AusGrass* (2002).

TYPE from Australia. **Basionym or Replaced Name:** *Panicum airoides* R. Br., *Prodr.* 190 (1810). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *R. Brown 6112*, Australia: Northern Territory: Darwin & Gulf Distr.: Gulf of Carpenteria, Cape Shield (BM; IT: B, E, K, P).

Illustrations (Books): J.R.Wheeler et al, *Flora of the Kimberley Region* (1992) (1237, Fig. 350), J.C.Tothill, & J.B.Hacker. *The grasses of southern Queensland* (1983) (434), D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002).

Images: D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002); (*Brunonia* 1: 75, Fig. 1 (1978)).

Derivation (Clifford & Bostock 2007): Gk. -oides, resembling. Inflorescences resemble those of *Aira*.

Classification. Subfamily Panicoideae. Tribe: Paniceae. Subtribe SETARIINAE.

Habit, Vegetative Morphology. Perennial, caespitose. Butt sheaths woolly, persistent and investing base of culm, with compacted dead sheaths. Culms 45–100 cm long, 3–4 -noded. Culm-nodes pubescent or bearded. Ligule a ciliolate membrane, 0.5 mm long. Leaf-blades 10–24 cm long, 2–5 mm wide. Leaf-blade surface scaberulous.

Inflorescence. Inflorescence a panicle. Panicle open or contracted, linear or oblong, interrupted, 10–25 cm long, 1–10 cm wide, contracted about primary branches. Primary panicle branches simple or moderately divided, 3–12 cm long, naked below or bearing spikelets almost to the base. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 1–5.5 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 oblong, laterally compressed, compressed slightly, 3–4 mm long, falling entire. Rhachilla internodes elongated below proximal fertile floret. Rhachilla elongation slender (obscure).

Glumes. Glumes dissimilar, reaching apex of florets, thinner than fertile lemma. Lower glume orbicular, 0.33 length of spikelet, membranous, 1-keeled, 3–5 -veined. Lower glume apex cuspidate. Upper glume ovate, 3–4 mm long, 1 length of spikelet, membranous, without keels, keel-less except near apex, 5–7 -veined. Upper glume lateral veins ribbed. Upper glume apex laterally pinched.

Florets. Basal sterile florets 1, male, with palea. Lemma of lower sterile floret similar to upper glume, ovate, 1 length of spikelet, scarious, 5 -veined, sulcate, acute. Palea of lower sterile floret winged on keels. Fertile lemma orbicular, dorsally compressed, gibbous, 2.5–3 mm long, indurate, shiny, without keel, 3 -veined, 0–3 -veined. Lemma surface rugose. Lemma margins involute. Lemma apex acute. Palea indurate.

Flower and Fruit. Anthers 3, 1.5–2 mm long. Caryopsis with adherent pericarp, ellipsoid, 1.75–2.25 mm long. Hilum punctiform or elliptic.

Distribution (TDWG). Continent. Australasia.

Country /Province /State. Australia. Western Australia, Northern Territory, Queensland.

TDWG4. Kimberley, Eremean. Darwin & Gulf, Victoria R & Barkly Tableland. North, Central.

Whiteochloa biciliata M. Lazarides. *Brunonia*, 1(1): 85 (1978).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), D.Sharp, D. & B.K.Simon, *AusGrass* (2002).

TYPE from Australia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Australia: Western Australia: Northern Province: Cockatoo Sands near Kununurra, 8 Mar 1963, *Lazarides 6791* (HT: CANB; IT: BRI, K, L, NT, PERTH, US).

Illustrations (Books): D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002).

Images: *Brunonia* 1: 87, Fig. 4 (1978).

Derivation (Clifford & Bostock 2007): L. bis, twice; cilium, hair; -ata, possessing. Upper glume densely ciliate on the marginal pair of nerves.

Classification. Subfamily Panicoideae. Tribe: Paniceae. Subtribe SETARIINAE.

Habit, Vegetative Morphology. Annual, caespitose. Culms 45–105 cm long, 6 -noded, without nodal roots or rooting from lower nodes. Culm-internodes smooth or scaberulous. Culm-nodes constricted, glabrous. Leaf-sheaths smooth or scaberulous, glabrous on surface or pilose or hirsute, with tubercle-based hairs, outer margin glabrous or hairy. Ligule a ciliolate membrane, 0.5 mm long. Leaf-blades 5–10(–19) cm long, 2–3(–5) mm wide. Leaf-blade surface scaberulous, glabrous to hispid. Leaf-blade margins cartilaginous, scabrous, glabrous or tuberculate-ciliate.

Inflorescence. Inflorescence a panicle. Panicle open, ovate, 8–14 cm long, 3–9 cm wide. Primary panicle branches 5–11 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 1.5–12 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 oblong, laterally compressed, compressed slightly, 2.5–3.75 mm long, falling entire. Rhachilla internodes elongated below proximal fertile floret. Rhachilla elongation slender.

Glumes. Glumes dissimilar, reaching apex of florets, thinner than fertile lemma. Lower glume ovate, 1.5 mm long, 0.4–0.6 length of spikelet, membranous, 1-keeled, 3 -veined. Lower glume primary vein eciliate or ciliate. Lower glume margins eciliate or ciliate. Lower glume apex obtuse or acute, mucicous or mucronate. Upper glume ovate, 1 length of spikelet, membranous, without keels, keel-less except near apex, 5 -veined. Upper glume lateral veins ribbed. Upper glume surface smooth or asperulous, glabrous or pubescent, hairy on veins. Upper glume margins ciliate. Upper glume apex acuminate, mucronate.

Florets. Basal sterile florets 1, male, with palea. Lemma of lower sterile floret similar to upper glume, oblong, 1 length of spikelet, scarious, 5 -veined, sulcate, glabrous or puberulous, hairy above, acute. Fertile

lemma elliptic, dorsally compressed, 1.75–2.25 mm long, indurate, without keel. Lemma surface granulose. Lemma margins involute. Lemma apex acute or acuminate. Palea indurate.

Flower and Fruit. Anthers 3. Caryopsis with adherent pericarp, ellipsoid, 1.5–2 mm long, dark brown.

Distribution (TDWG). Continent. Australasia.

Country /Province /State. Australia. Western Australia.

TDWG4. Kimberley.

Whiteochloa capillipes (Benth.) M. Lazarides. *Brunonia*, 1(1): 79 (1978).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), D.Sharp, D. & B.K.Simon, *AusGrass* (2002), J.F.Veldkamp, *Poaceae ms (Flora Malesiana)*.

TYPE from Australia. **Basionym or Replaced Name:** *Panicum capillipes* Benth., *Fl. Austral.* 7: 484 (1878). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *Schultz 806*, Australia: Nort Darwin Territory: Darwin & Gulf Distr.: Port (K; ILT: B). LT designated by Hughes, *Bull. Misc. Inform.* 1923: ? (1923).

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

Images: D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002); (*Brunonia* 1: 83, Fig. 3 (1978)).

Derivation (Clifford & Bostock 2007): L. capillis, a hair; pes, foot. As for *Capillipedium*.

Classification. Subfamily Panicoideae. Tribe: Paniceae. Subtribe SETARIINAE.

Habit, Vegetative Morphology. Annual or perennial, short-lived, caespitose. Rootstock evident. Rhizomes absent or short. Butt sheaths pubescent or pilose. Culms 60–105 cm long, 4–6 -noded, without nodal roots or rooting from lower nodes. Culm-nodes constricted, purple, glabrous. Leaf-sheaths glabrous on surface or pilose or hirsute, with simple hairs or tubercle-based hairs, outer margin glabrous or hairy. Ligule a ciliolate membrane, 0.25 mm long. Leaf-blades 10–25 cm long, 3–7 mm wide. Leaf-blade surface scaberulous, glabrous or pilose or hirsute. Leaf-blade margins cartilaginous, scabrous, glabrous or tuberculate-ciliate, hairy at base.

Inflorescence. Inflorescence a panicle. Peduncle glabrous or pilose above or hirsute above. Panicle open, ovate, 16–25 cm long, 5–6 cm wide. Primary panicle branches 7–14 cm long. Panicle axis glabrous or pilose. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 6–15 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 oblong, laterally compressed, compressed slightly, 2.25–3 mm long, falling entire. Rhachilla internodes elongated below proximal fertile floret. Rhachilla elongation slender.

Glumes. Glumes dissimilar, reaching apex of florets, thinner than fertile lemma. Lower glume ovate, 1 mm long, 0.3–0.3 length of spikelet, membranous, 1-keeled, 3–5 -veined. Lower glume primary vein smooth or scaberulous. Lower glume margins eciliate or ciliolate. Lower glume apex acute. Upper glume oblong, 1 length of spikelet, membranous, without keels, keel-less except near apex, 5–7 -veined. Upper glume primary vein smooth or scaberulous. Upper glume lateral veins ribbed. Upper glume margins eciliate or ciliolate. Upper glume apex acuminate.

Florets. Basal sterile florets 1, male, with palea. Lemma of lower sterile floret similar to upper glume, ovate, 1 length of spikelet, scarious, fenestrate (at base), 5 -veined, sulcate, smooth or scaberulous, rough at apex, acute. Fertile lemma elliptic, dorsally compressed, 1.75–2 mm long, indurate, without keel. Lemma surface granulose. Lemma margins involute. Lemma apex apiculate. Palea indurate.

Flower and Fruit. Anthers 3. Caryopsis with adherent pericarp, ellipsoid, 1–1.5 mm long. Embryo 0.5 length of caryopsis.

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

Country /Province /State. Malesia, Papuaia. Lesser Sunda Is, Moluccas. New Guinea. Australia. Western Australia, Northern Territory, Queensland.

TDWG4. Kimberley. Darwin & Gulf. North.

Whiteochloa cymbiformis (Hughes) B.K.Simon. *Austrobaileya*, 2(1): 23: (1984).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), D.Sharp, D. & B.K.Simon, *AusGrass* (2002).

TYPE from Australia. **Basionym or Replaced Name:** *Panicum cymbiforme* Hughes, *Bull. Misc. Inform. Kew* 1923(9): 323 (1923). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *A. Cunningham 341*, 1822, Australia: Western Australia (US-1445623 (fragm.)).

Illustrations (Books): C.A.Gardner, *Flora of Western Australia*, Vol 1, Part 1, *Gramineae* (1952) (255, Pl. 75 as *Panicum*).

Images: D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002);

Derivation (Clifford & Bostock 2007): Gk. kymbe, boat; forme, appearance.

Classification. Subfamily Panicoideae. Tribe: Paniceae. Subtribe SETARIINAE.

Habit, Vegetative Morphology. Annual. Culms 100–200 cm long, without nodal roots or with prop roots. Culm-nodes glabrous or pubescent. Ligule a ciliolate membrane. Leaf-blades 10–30 cm long, 4–6 mm wide.

Inflorescence. Inflorescence a panicle. Panicle open, lanceolate or elliptic, 40–70 cm long, contracted about primary branches. Primary panicle branches 3–15 cm long, bearing spikelets almost to the base. Panicle branches scabrous. Spikelets in pairs. Fertile spikelets pedicelled. Pedicels present.

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 oblong, laterally compressed, compressed slightly, 3–3.5 mm long, falling entire. Rhachilla internodes elongated below proximal fertile floret. Rhachilla elongation slender, 0.2 mm long.

Glumes. Glumes dissimilar, shorter than spikelet, thinner than fertile lemma. Lower glume ovate, 1 mm long, 0.33 length of spikelet, membranous, 1-keeled, 3 -veined. Lower glume apex acute. Upper glume oblong, 2.7–3.2 mm long, 0.9–1 length of spikelet, membranous, without keels, keel-less except near apex, 7 -veined. Upper glume lateral veins ribbed.

Florets. Basal sterile florets 1, male, with palea. Lemma of lower sterile floret similar to upper glume, oblong, 3 mm long, 1 length of spikelet, scarios, 5–7 -veined, sulcate, acute. Fertile lemma elliptic, dorsally compressed, 2 mm long, indurate, shiny, without keel. Lemma margins involute. Lemma apex acute. Palea indurate.

Flower and Fruit. Anthers 3. Caryopsis with adherent pericarp.

Distribution (TDWG). Continent. Australasia.

Country /Province /State. Australia. Western Australia, Northern Territory.

TDWG4. Kimberley, Eremean. Darwin & Gulf, Victoria R & Barkly Tableland, Central Australia.

Whiteochloa multiciliata M. Lazarides. *Brunonia*, 1(1): 88 (1978).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), D.Sharp, D. & B.K.Simon, *AusGrass* (2002).

TYPE from Australia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Australia: Northern Territory: Darwin & Gulf Distr.: on Start Highway, 10.5 mi SE of Mataranka, 21 Mar 1964, *Lazarides 7093* (HT: CANB; IT: BRI, K, L, MO, NSW, NT, PERTH,).

Illustrations (Books): D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002).

Images: *Brunonia* 1: 91, Fig. 5 (1978).

Derivation (Clifford & Bostock 2007): L. multus, many; cilium, hair; -ata, possessing. With seven rows of hairs on the upper glume.

Classification. Subfamily Panicoideae. Tribe: Paniceae. Subtribe SETARIINAE.

Habit, Vegetative Morphology. Annual, caespitose. Culms 45–75 cm long, 4–6 -noded. Culm-internodes channelled. Culm-nodes glabrous. Leaf-sheaths glabrous on surface or pilose or hirsute, with tubercle-based hairs, outer margin hairy. Ligule a ciliolate membrane, 0.5 mm long. Leaf-blades 10–17.7 cm long, 3–5.5 mm wide. Leaf-blade surface smooth or scaberulous, glabrous or hispid, with tubercle-based hairs. Leaf-blade margins cartilaginous, scabrous, glabrous or tuberculate-ciliate, hairy at base.

Inflorescence. Inflorescence a panicle. Peduncle glabrous. Panicle open, ovate, 14–18 cm long, 5–10 cm wide. Primary panicle branches 7–14 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 1–9 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 oblong, laterally compressed, compressed slightly, 2.5–3.5 mm long, falling entire. Rhachilla internodes elongated below proximal fertile floret. Rhachilla elongation slender.

Glumes. Glumes dissimilar, reaching apex of florets, thinner than fertile lemma. Lower glume oblate, 1 mm long, 0.25–0.4 length of spikelet, membranous, 1-keeled, 3 -veined. Lower glume surface smooth or scabrous, glabrous or hispid, hairy on veins. Lower glume apex acute. Upper glume oblong, 1 length of spikelet, membranous, without keels, keel-less except near apex, 7 -veined. Upper glume lateral veins ribbed. Upper glume surface smooth or asperulous, hispid, hairy on veins, with tubercle-based hairs. Upper glume margins tuberculate, ciliate. Upper glume apex acuminate.

Florets. Basal sterile florets 1, male, with palea. Lemma of lower sterile floret similar to upper glume, ovate, 1 length of spikelet, scarios, 5 -veined, sulcate, scaberulous, rough above, glabrous or hispid, hairy on

veins, obtuse. Fertile lemma elliptic, dorsally compressed, 1.5–2 mm long, indurate, shiny, without keel. Lemma margins involute. Lemma apex acute. Palea indurate.

Flower and Fruit. Anthers 3. Caryopsis with adherent pericarp, ellipsoid, 1.5 mm long, light brown.

Distribution (TDWG). Continent. Australasia.

Country /Province /State. Australia. Northern Territory.

TDWG4. Darwin & Gulf, Victoria R & Barkly Tableland.

Whiteochloa semitonsa (F. Muell. ex Benth.) C.E.Hubb. *Proc. Bot. Soc. Queensl.* lxii. 111 (1952).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), D.Sharp, D. & B.K.Simon, *AusGrass* (2002).

TYPE from Australia. **Basionym or Replaced Name:** *Panicum semitonsum* F. Muell. ex Benth., *Fl. Austral.* 7: 483 (1878). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: LT: *Eley s.n.*, Australia: Northern Territory: Darwin & Gulf Distr., Victoria River (K). LT designated by Hughes, *Kew Bull.* 9:30 (1923).

Illustrations (Books): D.Sharp & B.K.Simon, *AusGrass.* Grasses of Australia. CD-Rom Version 1.0. (2002).

Images: D.Sharp & B.K.Simon, *AusGrass.* Grasses of Australia. CD-Rom Version 1.0. (2002);

Derivation (Clifford & Bostock 2007): L. semi-, half; tonsa, shaven. Origin unclear, not given by author.

Classification. Subfamily Panicoideae. Tribe: Paniceae. Subtribe SETARIINAE.

Habit, Vegetative Morphology. Annual, caespitose. Culms 30–60 cm long, 3–6 -noded. Culm-internodes smooth or scaberulous. Culm-nodes glabrous or pubescent. Leaf-sheaths glabrous on surface or hispid or hirsute, with tubercle-based hairs, outer margin hairy. Ligule a fringe of hairs, 0.5 mm long. Leaf-blades flat or conduplicate, 6–11(–23) cm long, 3–4(–4.5) mm wide. Leaf-blade surface scabrous, rough adaxially or on both sides, glabrous or hirsute. Leaf-blade margins cartilaginous, scabrous.

Inflorescence. Inflorescence composed of racemes. Racemes 7–12, borne along a central axis, unilateral, (2–)3–5(–8.5) cm long, secondarily branched, secondary branches racemulose. Central inflorescence axis 8–14 cm long. Rhachis angular. Spikelets in pairs. Fertile spikelets pedicelled, 2 in the cluster. Pedicels present, unequal, 0.5–2(–3.5) 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, laterally compressed, compressed slightly, acute, 2.5–3(–3.75) mm long, falling entire. Rhachilla internodes elongated below proximal fertile floret (0.1mm). Rhachilla elongation slender.

Glumes. Glumes dissimilar, reaching apex of florets, thinner than fertile lemma. Lower glume oblate, 1–1.5 mm long, 0.33 length of spikelet, membranous, without keels, 3–5 -veined. Lower glume primary vein tuberculate, ciliate. Lower glume surface smooth or tuberculate, glabrous or hispid, hairy on veins, with tubercle-based hairs. Lower glume margins eciliate or ciliate. Lower glume apex acute, mucicous or mucronate. Upper glume oblong, 1 length of spikelet, membranous, without keels, 5–7 -veined. Upper glume lateral veins ribbed. Upper glume surface smooth or tuberculate, rough on veins, glabrous or hispid, hairy on veins, with tubercle-based hairs. Upper glume margins ciliolate. Upper glume apex acuminate.

Florets. Basal sterile florets 1, male or barren, with palea. Lemma of lower sterile floret similar to upper glume, ovate, 1 length of spikelet, scarious, 5 -veined, sulcate, glabrous or hispid, acuminate. Palea of lower sterile floret 1 length of lemma, winged on keels. Fertile lemma elliptic, dorsally compressed, 1.75–2.5 mm long, indurate, without keel. Lemma surface rugulose. Lemma margins involute. Lemma apex apiculate. Palea indurate.

Flower and Fruit. Caryopsis with adherent pericarp, ellipsoid, 1.5–1.75 mm long, dark brown.

Distribution (TDWG). Continent. Australasia.

Country /Province /State. Australia. Northern Territory, Queensland.

TDWG4. Darwin & Gulf. North.

Willkommia annua Hack. *Verh. Bot. Ver. Brand.* . 146. (1888).

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>: *vide* TROPICOS and Kew Synonymy Database: Namibia, Olukonda: *Schinz* (K iso).

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

Derivation (Clifford & Bostock 2007): L. annual. Annuals.

Classification. Subfamily Chloridoideae. Tribe: Cynodontae.

Habit, Vegetative Morphology. Annual, caespitose. Stolons present. Culms 30–60 cm long. Ligule a fringe of hairs. Leaf-blades 1–3 cm long, 1.5–2.5 mm wide. Leaf-blade margins cartilaginous, ciliate.

Inflorescence. Inflorescence composed of racemes. Racemes 2–4, borne along a central axis, unilateral, 1.5–2.5 cm long. Central inflorescence axis 2–5 cm long. Rhachis flattened. Spikelet packing adaxial. Spikelets ascending, solitary. Fertile spikelets sessile.

Fertile Spikelets. Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, dorsally compressed, 4–5 mm long, breaking up at maturity, disarticulating below each fertile floret. Floret callus elongated, 0.5 mm long, pubescent, pungent.

Glumes. Glumes lower persistent, upper deciduous, dissimilar, reaching apex of florets, firmer than fertile lemma. Lower glume lanceolate, 2.5–3.3 mm long, 0.66 length of upper glume, hyaline, without keels, 0 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume elliptic, 4–5 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 1 -veined. Upper glume primary vein conspicuous. Upper glume lateral veins absent. Upper glume apex acute.

Florets. Fertile lemma elliptic, 4–5 mm long, membranous, without keel, 3 -veined, 0–3 -veined. Lemma surface glabrous or pubescent. Lemma margins ciliate. Lemma apex acute, awned, 1 -awned. Principal lemma awn 0.5–1 mm long overall.

Flower and Fruit. Caryopsis with adherent pericarp.

Distribution (TDWG). Continent. Africa.

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

Willkommia newtonii Hack. *Bull. Herb. Boiss. Ser. I. iv.* 810 (1896).

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

TYPE from Angola. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Angola, Biballa: *Newton* (K iso).

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

Derivation (Clifford & Bostock 2007): in honor of Francisco Newton (1864–1909) Portuguese botanist who collected in Angola.

Classification. Subfamily Chloridoideae. Tribe: Cynodonteae.

Habit, Vegetative Morphology. Perennial, caespitose. Stolons present. Culms decumbent, 20–50 cm long, rooting from lower nodes. Ligule a fringe of hairs. Leaf-blades 1–2 cm long, 3–3.5 mm wide. Leaf-blade margins tuberculate-ciliate. Leaf-blade apex acute.

Inflorescence. Inflorescence composed of racemes. Racemes 12–16, borne along a central axis, closely spaced, unilateral, 1.5–2.5 cm long. Central inflorescence axis 2–4 cm long. Rhachis angular. Spikelet packing adaxial. Spikelets ascending, solitary. Fertile spikelets sessile.

Fertile Spikelets. Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, dorsally compressed, 2.5–3 mm long, breaking up at maturity, disarticulating below each fertile floret. Floret callus elongated, 0.3 mm long, pubescent, pungent.

Glumes. Glumes lower persistent, upper deciduous, dissimilar, reaching apex of florets, firmer than fertile lemma. Lower glume elliptic, 1.5–2 mm long, 0.66 length of upper glume, hyaline, without keels, 0 -veined. Lower glume lateral veins absent. Lower glume apex obtuse. Upper glume elliptic, 2.5–3 mm long, 1 length of adjacent fertile lemma, chartaceous, without keels, 1 -veined. Upper glume primary vein conspicuous, scabrous. Upper glume lateral veins absent. Upper glume surface asperulous, rough above. Upper glume apex acute.

Florets. Fertile lemma elliptic, 2.5–3 mm long, membranous, without keel, 3 -veined, 0–3 -veined. Lemma margins ciliate. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–1.5 mm long overall.

Flower and Fruit. Caryopsis with adherent pericarp.

Distribution (TDWG). Continent. Africa.

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

Willkommia sarmentosa Hack. *Verh. Bot. Ver. Brand.* . 145. (1888).

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>: *vide* TROPICOS and Kew Synonymy Database: Namibia, Ulukonda: *Schinz* 1885.

Illustrations (Books): G.V.Pope et al., *Flora Zambesiaca* 10 (2(1999):220 t. 64), L.K.A. Chippindall, *Grasses and Pastures of South Africa* (1955) (205, Fig. 181), G.E.Gibbs Russell et al, *Grasses of Southern Africa* (1990) (355, Fig. 235).

Images: *Brunonia* 1: 81, Fig. 2 (1978).

Derivation (Clifford & Bostock 2007): *L. sarmentum*, small branch; -osa, abundance. Culms much branched.

Classification. Subfamily Chloridoideae. Tribe: Cynodonteae.

Habit, Vegetative Morphology. Perennial. Stolons present. Culms 40–60 cm long, wiry. Ligule a ciliate membrane. Leaf-blades 3–20 cm long, 1–5 mm wide. Leaf-blade margins cartilaginous, spinulose.

Inflorescence. Inflorescence composed of racemes. Racemes 3–9, borne along a central axis, unilateral, 2.5–8 cm long. Central inflorescence axis 8–22 cm long. Rhachis flattened. Spikelet packing adaxial. Spikelets ascending, solitary. Fertile spikelets sessile.

Fertile Spikelets. Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, dorsally compressed, 3.7–4.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Floret callus elongated, 0.5 mm long, pubescent, pungent.

Glumes. Glumes lower persistent, upper deciduous, dissimilar, exceeding apex of florets, firmer than fertile lemma. Lower glume lanceolate, 3 mm long, 0.75 length of upper glume, 0.75 length of spikelet, hyaline, without keels, 0 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume elliptic, 3.7–4.5 mm long, 1.3 length of adjacent fertile lemma, chartaceous, without keels, 1 -veined. Upper glume primary vein conspicuous. Upper glume lateral veins absent. Upper glume surface asperulous. Upper glume apex acute.

Florets. Fertile lemma elliptic, 3 mm long, membranous, without keel, 3 -veined, 0–3 -veined. Lemma surface pilose. Lemma apex obtuse, awned, 1 -awned. Principal lemma awn 1 mm long overall. Palea keels ciliate.

Flower and Fruit. Caryopsis with adherent pericarp, ellipsoid.

Distribution (TDWG). Continent. Africa.

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

Willkommia texana Hitchcock. *Coult. Bot. Gaz.* v. 283. (1903).

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

TYPE from USA. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *J.G. Smith s.n.*, 21 Jul 1897, USA: Texas: Ennis (US-81733; IT: US-879624).

Recent Synonyms: *Willbleibia stolonifera* (Parodi) Herter, *Revista Sudamer. Bot.* 9: 85 (1952).

Illustrations (Books): M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 25 *Poaceae*, part 2 (2003) (229 as var. *texana*), F.W.Gould, *The Grasses of Texas* (1975) (314, Fig. 165), A.L.Cabrera, *Flora de la Provincia de Buenos Aires, IV Pt 2 Gramineas* (1970) (394, Fig. 102).

Derivation (Clifford & Bostock 2007): *L. -ana*, indicating location. From Texas, USA.

Classification. Subfamily Chloridoideae. Tribe: Cynodonteae.

Habit, Vegetative Morphology. Perennial, caespitose. Culms 20–40 cm long. Ligule a fringe of hairs. Leaf-blades flat or involute, 2–10 cm long, 1–3 mm wide, stiff. Leaf-blade margins scaberulous.

Inflorescence. Inflorescence composed of racemes. Racemes 4–20, borne along a central axis, unilateral, 2–3 cm long. Central inflorescence axis 4–15 cm long. Rhachis angular. Spikelet packing adaxial, 2 -rowed. Spikelets appressed, solitary. Fertile spikelets sessile.

Fertile Spikelets. Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, dorsally compressed, 4–5 mm long, breaking up at maturity, disarticulating below each fertile floret.

Glumes. Glumes lower persistent, upper deciduous, dissimilar, exceeding apex of florets, firmer than fertile lemma. Lower glume oblong, 2–3 mm long, 0.5–0.66 length of upper glume, hyaline, without keels, 0 -veined. Lower glume lateral veins absent. Lower glume apex obtuse. Upper glume elliptic, 4–5 mm long, 1.1 length of adjacent fertile lemma, hyaline, without keels, 1 -veined. Upper glume apex obtuse.

Florets. Fertile lemma elliptic, 3.5–4.5 mm long, membranous, without keel, 3 -veined, 0–3 -veined. Lemma surface pubescent. Lemma margins ciliate. Lemma apex acute, mucronate. Palea surface pilose, hairy on back.

Flower and Fruit. Caryopsis with adherent pericarp.

Distribution (TDWG). Continent. North America, South America.

Country /Province /State. North-central USA, South-central USA. Oklahoma. Texas. Southern South America. Argentina Northeast.
TDWG4. Buenos Aires.

Xerochloa barbata R. Br. *Prod.* 197 (1810). (1810).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), D.Sharp, D. & B.K.Simon, *AusGrass* (2002).

TYPE from Australia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Australia: R. Brown 6144 (K iso).

Recent Synonyms: *Xerochloa laniflora* Benth., *Fl. Austral.* 7: 502. (1878).

Illustrations (Books): C.A.Gardner, *Flora of Western Australia*, Vol 1, Part 1, *Gramineae* (1952) (291 & 293, Pl 85 & 86), J.R.Wheeler et al, *Flora of the Kimberley Region* (1992) (1245, Fig. 351), D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002).

Derivation (Clifford & Bostock 2007): L. bearded, barbed. With hairs on the callus, glumes or lemma.

Classification. Subfamily Panicoideae. Tribe: Paniceae. Subtribe SETARIINAE.

Habit, Vegetative Morphology. Annual or perennial. Culms erect or geniculately ascending or decumbent, 20–50 cm long, 2–5 -noded. Culm-nodes glabrous. Ligule a fringe of hairs, 0.4–1.8 mm long. Leaf-blades deciduous at the ligule, filiform or linear, flat or involute, 2.5–13 cm long, 1.5–4 mm wide. Leaf-blade surface smooth.

Inflorescence. Synflorescence compound, linear, 3–15 cm long, open, with principal spatheoles embracing a compact fascicle of racemes, each subtended by a subsidiary bract (3–5 racemes).

Inflorescence composed of racemes, terminal and axillary, deciduous as a whole, subtended by a spatheole, enclosed. Spatheole elliptic, 0.7–1.3 cm long (subsidiary bracts 6–9mm long), chartaceous or scarious. Racemes 1, single, unilateral, 0.3–1 cm long, bearing few fertile spikelets, bearing 1–2 fertile spikelets on each. Rhachis flattened or angular, villous on surface or woolly on surface, terminating in a barren extension, extension flattened or subulate. Spikelet packing abaxial. Spikelets sunken, solitary. Fertile spikelets sessile.

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 lanceolate or ovate, dorsally compressed, 5.5–10 mm long, falling entire, deciduous with accessory branch structures. Floret callus pilose.

Glumes. Glumes dissimilar, shorter than spikelet, thinner than fertile lemma. Lower glume ovate, 0.4–2.7 mm long, 0.1–0.5 length of spikelet, hyaline or membranous, without keels, 0–1 -veined. Lower glume lateral veins absent. Lower glume surface glabrous or woolly, hairy below. Lower glume apex truncate or acute. Upper glume lanceolate, 2.1–9 mm long, 0.33–0.9 length of spikelet, membranous or scarious, with membranous margins, without keels, 2–5 -veined. Upper glume lateral veins obscure. Upper glume surface glabrous or villous or woolly, hairy below. Upper glume margins eciliate or ciliate. Upper glume apex acute.

Florets. Basal sterile florets 1, male, with palea. Lemma of lower sterile floret lanceolate or oblong, 1 length of spikelet, chartaceous or cartilaginous, much thinner on margins, 3–7 -veined, sulcate, obtuse or acute. Palea of lower sterile floret membranous (firmer below), 1.1 length of lemma, pilose or woolly, adorned on back. Fertile lemma ovate, 5–10 mm long, cartilaginous, shiny, without keel, 3 -veined, 0–3 -veined. Lemma margins flat. Lemma apex caudate. Palea ovate, tightly convolute around flower, 1 length of lemma, cartilaginous, 2 -veined, without keels or 2-keeled. Palea apex acuminate or caudate.

Flower and Fruit. Anthers 3, 4.5–5 mm long.

Distribution (TDWG). Continent. Australasia.

Country /Province /State. Australia. Western Australia, Northern Territory, Queensland.

TDWG4. Kimberley, Eremean. Darwin & Gulf, Victoria R & Barkly Tableland, Central Australia. North, Inland.

Xerochloa imberbis R. Br. *Prod.* 197 (1810).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), D.Sharp, D. & B.K.Simon, *AusGrass* (2002), J.F.Veldkamp, *Poaceae ms (Flora Malesiana)*.

TYPE from Australia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Australia: R. Brown 6143 (K iso).

Illustrations (Books): C.A.Gardner, *Flora of Western Australia*, Vol 1, Part 1, *Gramineae* (1952) (293, Pl. 86), J.R.Wheeler et al, *Flora of the Kimberley Region* (1992) (1245, Fig. 351), D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002).

Derivation (Clifford & Bostock 2007): L. beardless. Glumes and/or lemmas glabrous.

Classification. Subfamily Panicoideae. Tribe: Paniceae. Subtribe SETARIINAE.

Habit, Vegetative Morphology. Perennial, caespitose. Rhizomes short. Culms geniculately ascending or decumbent, 15–75 cm long, 3–5 -noded. Culm-nodes glabrous. Ligule a fringe of hairs, 0.15–0.5 mm long. Leaf-blades linear or filiform, flat or involute, 6–25 cm long, 0.8–4 mm wide.

Inflorescence. Synflorescence compound, linear, 3–10 cm long, open, with principal spatheoles embracing a compact fascicle of racemes, each subtended by a subsidiary bract.

Inflorescence composed of racemes, terminal and axillary, deciduous as a whole, subtended by a spatheole, embraced at base by subtending leaf. Spatheole oblong, scarious. Racemes 1, single, unilateral, 0.8–1.5 cm long, bearing few fertile spikelets, bearing 3–5 fertile spikelets on each. Rhachis angular, glabrous on surface, terminating in a barren extension, extension subulate, extension 3–4 mm long. Spikelets appressed, solitary. Fertile spikelets sessile.

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 lanceolate, dorsally compressed, 5.8–12 mm long, 1.1–1.5 mm wide, falling entire, deciduous with accessory branch structures. Spikelet callus glabrous.

Glumes. Glumes dissimilar, shorter than spikelet, thinner than fertile lemma. Lower glume oblong or ovate, 1–2 mm long, 0.15–0.2 length of spikelet, hyaline or membranous, without keels, 0 -veined. Lower glume lateral veins absent. Lower glume apex truncate or acute or acuminate. Upper glume lanceolate or oblong, 4.5–9 mm long, 0.6–0.8 length of spikelet, chartaceous, without keels, 5 -veined. Upper glume lateral veins obscure. Upper glume surface glabrous. Upper glume apex truncate or acute.

Florets. Basal sterile florets 1, male, with palea. Lemma of lower sterile floret lanceolate or obovate, 1 length of spikelet, chartaceous, 5–7 -veined, obscurely veined, sulcate, glabrous, acute or acuminate. Palea of lower sterile floret membranous, 1 length of lemma. Fertile lemma lanceolate, 5.5–11 mm long, cartilaginous, without keel. Lemma lateral veins obscure. Lemma margins flat. Lemma apex acuminate. Palea cartilaginous.

Flower and Fruit. Anthers 3, 3.4 mm long.

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

Country /Province /State. Indo-China, Malesia. Java. Australia. Western Australia, Northern Territory, Queensland.

TDWG4. Kimberley, Eremean. Darwin & Gulf, Victoria R & Barkly Tableland. North.

Xerochloa sp. (Mitchell 4323)

Yakirra australiensis (Domin) M. Lazarides & R.D. Webster. *Brunonia*, 7(2): 293: (1985).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), D.Sharp, D. & B.K.Simon, *AusGrass* (2002).

TYPE from Australia. **Basionym or Replaced Name:** *Panicum australiense* Domin, *J. Linn. Soc., Bot.* 41: 271, t. 10, f. 7; t. 11, f. 8–12 (1912). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Australia: Western Australia: Northern Province: between Ashburton and Yule River, *E. Clement s.n.* (HT: K).

Illustrations (Books): J.P.Jessop, G.R.M. Dashorst & F.M.James, *Grasses of South Australia* (2006) (496, Fig 427 as var. *australiensis*), C.A.Gardner, *Flora of Western Australia*, Vol 1, Part 1, *Gramineae* (1952) (263, Pl.76 as *Ichnanthus*), J.R.Wheeler et al, *Flora of the Kimberley Region* (1992) (1247, Fig. 352 as *Vetiveria*), D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002).

Images: D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002);

Derivation (Clifford & Bostock 2007): L. -ensis, denoting origin. From Australia.

Classification. Subfamily Panicoideae. Tribe: Paniceae. Subtribe PANICINAE .

Habit, Vegetative Morphology. Annual or perennial. Culms erect, 5–30 cm long, 5–10 -noded. Lateral branches ample. Ligule a fringe of hairs, 0.5–2 mm long. Leaf-blades flat or involute, 3–10 cm long, 1–4 mm wide.

Inflorescence. Inflorescence a panicle, terminal and axillary, shorter than basal leaves, embraced at base by subtending leaf. Panicle open or contracted, elliptic, 2–5 cm long. Primary panicle branches 0.5–2 cm long, bearing 2–5 fertile spikelets on each lower branch. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 1–6 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 or oblong, dorsally compressed, 3.2–4.5 mm long, 1–1.4 mm wide, falling entire, readily shedding fertile florets. Rhachilla internodes elongated between glumes. Floret callus evident, winged, with free apical wings, truncate.

Glumes. Glumes dissimilar, reaching apex of florets or shorter than spikelet, thinner than fertile lemma. Lower glume elliptic or ovate, 1.6–2.8 mm long, 0.5–0.6 length of spikelet, membranous, without keels, 3–5 -

veined. Lower glume apex acute or acuminate. Upper glume elliptic or oblong, 3–4.3 mm long, 0.95–1 length of spikelet, membranous, without keels, 7 -veined. Upper glume apex acuminate.

Florets. Basal sterile florets 1, barren, without significant palea. Lemma of lower sterile floret similar to upper glume, elliptic or oblong, 1 length of spikelet, membranous, 7 -veined, acuminate. Fertile lemma elliptic or ovate, 2.3–2.8 mm long, indurate, without keel. Lemma margins involute. Lemma apex obtuse or acute. Palea involute, 1 length of lemma, indurate. Palea apex obtuse.

Flower and Fruit. Anthers 3, 1–1.5 mm long.

Distribution (TDWG). Continent. Australasia.

Country /Province /State. Australia. Western Australia, Northern Territory, South Australia, Queensland.

TDWG4. Kimberley, Eremean. Darwin & Gulf, Victoria R & Barkly Tableland, Central Australia. NW & Lake Eyre. North, Inland.

Yakirra foliolosa (Munro ex Hook. f.) Clayton. *Kew Bulletin* 42(2): 403. 1987.

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), N.L.Bor, *Grasses of Burma, Ceylon, India and Pakistan* (1960) (as *Ichnanthus*).

TYPE from India. **Basionym or Replaced Name:** *Ichnanthus foliolosus* Munro ex Hook. f., *Fl. Brit. India* 7(21): 61 (1897) [1896]. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Coll. Ukn. WALLICH CAT.* 8680, 1848, India (K; IT: US-1445122).

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

Derivation (Clifford & Bostock 2007): L. folium, leaf; -olus, diminutive; -osa, abundance.

Classification. Subfamily Panicoideae. Tribe: Paniceae. Subtribe PANICINAE .

Habit, Vegetative Morphology. Annual. Culms geniculately ascending, 13–30 cm long. Leaf-sheaths hispid. Ligule a fringe of hairs. Leaf-blades 2–6 cm long, 2–4 mm wide. Leaf-blade surface hispid. Leaf-blade apex abruptly acute.

Inflorescence. Inflorescence a panicle, terminal and axillary, shorter than basal leaves, embraced at base by subtending leaf. Panicle contracted, oblong, 1–3 cm long, bearing few spikelets. Primary panicle branches simple. Spikelets solitary or in pairs. Fertile spikelets pedicelled, 1–2 in the cluster. Pedicels present, angular, unequal.

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 elliptic, dorsally compressed, 5 mm long, falling entire, readily shedding fertile florets. Floret callus evident (obliquely attached to truncate floret and deciduous), 0.1–0.2 mm long, winged, with free apical wings, with this appendage 0.2–0.3 mm long, truncate.

Glumes. Glumes similar, reaching apex of florets, thinner than fertile lemma. Lower glume ovate, 0.7–0.8 length of spikelet, membranous, without keels, 5 -veined. Lower glume apex caudate. Upper glume ovate, 1 length of spikelet, coriaceous, without keels, 5–7 -veined. Upper glume apex caudate.

Florets. Basal sterile florets 1, barren, without significant palea. Lemma of lower sterile floret similar to upper glume, ovate, 1 length of spikelet, coriaceous, 5 -veined, caudate. Fertile lemma ovate, 2 mm long, indurate, without keel, 7 -veined, more than 3-veined. Lemma margins involute. Lemma apex obtuse. Palea involute, indurate.

Distribution (TDWG). Continent. Tropical Asia.

Country /Province /State. Indo-China. Myanmar.

Yakirra majuscula (F. Muell. ex Benth.) M. Lazarides & R.D. Webster. *Brunonia*, 7(2): 295: (1985).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), D.Sharp, D. & B.K.Simon, *AusGrass* (2002).

TYPE from Australia. **Basionym or Replaced Name:** *Panicum majusculum* F. Muell. ex Benth., *Fl. Austral.* 7: 482 (1878). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Elsey s.n.*, Australia: Northern Territory: Victoria River Distr.: Victoria River (K; IT: MEL).

Illustrations (Books): D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002).

Images: D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002);, K.Domin, *Bibliotheca Botanica* 85 (1915) (310, fig.68 as *Panicum majusculum* var. *pilosum*).

Derivation (Clifford & Bostock 2007): L. majus, great; -ula, diminutive. Somewhat larger in some respect than related species.

Classification. Subfamily Panicoideae. Tribe: Paniceae. Subtribe PANICINAE .

Habit, Vegetative Morphology. Annual. Culms 30–60 cm long. Ligule a fringe of hairs. Leaf-blades 5–10 cm long, 2–4 mm wide.

Inflorescence. Inflorescence a panicle. Panicle open, ovate, 4–12 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

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, 5–6 mm long, falling entire, readily shedding fertile florets. Floret callus evident, 0.75 mm long, winged, with free apical wings, with this appendage 0.5 mm long, truncate.

Glumes. Glumes dissimilar, reaching apex of florets, thinner than fertile lemma. Lower glume ovate, 0.5 length of spikelet, membranous, without keels, 5 -veined. Lower glume apex acute. Upper glume ovate, 5–6 mm long, 1 length of spikelet, membranous, without keels, 7 -veined. Upper glume apex acute.

Florets. Basal sterile florets 1, barren, without significant palea. Lemma of lower sterile floret similar to upper glume, ovate to orbicular, 1 length of spikelet, membranous, 5 -veined, acute. Fertile lemma ovate, 4–5 mm long, indurate, without keel, 5 -veined, more than 3-veined. Lemma margins involute. Lemma apex obtuse. Palea involute, 1 length of lemma, indurate. Palea apex obtuse.

Distribution (TDWG). Continent. Australasia.

Country /Province /State. Australia. Western Australia, Northern Territory, Queensland. Kimberley. Darwin & Gulf, Victoria R & Barkly Tableland. North.

Yakirra muelleri (Hughes) M. Lazarides & R.D. Webster. *Brunonia*, 7(2): 294: (1985).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), D.Sharp, D. & B.K.Simon, *AusGrass* (2002).

TYPE from Australia. **Basionym or Replaced Name:** *Ichnanthus muelleri* Hughes, *Bull. Misc. Inform. Kew* 1923(9): 329 (1923). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Mueller s.n.*, Australia: Western Australia: Northern Province; north-west Australia, near King Sound (K; IT: MEL, P).

Illustrations (Books): D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002).

Images: D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002);.

Derivation (Clifford & Bostock 2007): in honor of Ferdinand Jacob Heinrich Mueller (1825–96) German-born Australian botanist.

Classification. Subfamily Panicoideae. Tribe: Paniceae. Subtribe PANICINAE .

Habit, Vegetative Morphology. Annual. Culms erect, 8–30 cm long, 4–8 -noded. Culm-nodes pubescent. Lateral branches ample. Ligule a fringe of hairs, 0.4–1.5 mm long. Leaf-blades flat or involute, 2–12 cm long, 1–5 mm wide.

Inflorescence. Inflorescence a panicle, embraced at base by subtending leaf. Panicle open, ovate, 1–8 cm long. Primary panicle branches 1–5 cm long, bearing 1–6 fertile spikelets on each lower branch. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 2–12 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 lanceolate or oblanceolate or elliptic, dorsally compressed, 4.7–5.5 mm long, 1.4–1.7 mm wide, falling entire, readily shedding fertile florets. Rhachilla internodes elongated between glumes. Floret callus evident, winged, with free apical wings, truncate.

Glumes. Glumes dissimilar, reaching apex of florets, thinner than fertile lemma. Lower glume ovate, 1.5–3.1 mm long, 0.33–0.66 length of spikelet, membranous, without keels, 5–7 -veined. Lower glume apex acute. Upper glume lanceolate or elliptic, 4.7–5.5 mm long, 1 length of spikelet, membranous, without keels, 7 -veined. Upper glume apex acute or acuminate.

Florets. Basal sterile florets 1, barren, without significant palea. Lemma of lower sterile floret similar to upper glume, elliptic or oblong, 1 length of spikelet, membranous, 7 -veined, acute or acuminate. Fertile lemma elliptic, 2.9–3.4 mm long, indurate, without keel. Lemma margins involute. Lemma apex obtuse. Palea involute, 1 length of lemma, indurate. Palea apex obtuse.

Flower and Fruit. Anthers 3.

Distribution (TDWG). Continent. Australasia.

Country /Province /State. Australia. Western Australia, Northern Territory, Queensland.

TDWG4. Kimberley. Darwin & Gulf, Central Australia. North, Central, Inland.

Yakirra nulla M. Lazarides & R.D. Webster. *Brunonia*, 7(2): 295 (1985).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), D.Sharp, D. & B.K.Simon, *AusGrass* (2002).

TYPE from Australia. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Australia: Northern Territory: Darwin & Gulf District: ca. 8 mi NE of Adelaide River township, 17 Mar 1965, *Lazarides & Adams 262* (HT: CANB; IT: K, L, NT).

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

Images: D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002);.

Derivation (Clifford & Bostock 2007): *L. nullus*, nothing. Apex of the stipe lacks appendages.

Classification. Subfamily Panicoideae. Tribe: Paniceae. Subtribe PANICINAE .

Habit, Vegetative Morphology. Annual or perennial, short-lived. Culms erect or decumbent, 50–60(–100) cm long, 4–6 -noded. Culm-internodes terete or elliptical in section, distally glabrous or hirsute. Leaf-sheaths as wide as blade at the collar or narrower than blade at the collar, hirsute. Ligule a fringe of hairs, 0.5–1.5 mm long. Leaf-blades 5–8(–17) cm long, 5–10 mm wide. Leaf-blade surface glabrous or pilose. Leaf-blade margins cartilaginous, scabrous. Leaf-blade apex acuminate.

Inflorescence. Inflorescence a panicle. Panicle open, ovate, 8–23 cm long, 4–12 cm wide, contracted about primary branches. Primary panicle branches 5–16 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 1–4.5 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, 3.8–5 mm long, falling entire, readily shedding fertile florets. Rhachilla internodes elongated between glumes. Floret callus evident, 0.6–1 mm long, without wings, truncate.

Glumes. Glumes dissimilar, reaching apex of florets, thinner than fertile lemma. Lower glume ovate, 1.5–2.5 mm long, 0.5 length of spikelet, membranous, without keels, 3–5 -veined. Lower glume apex acuminate. Upper glume elliptic, 1 length of spikelet, membranous, without keels, 7 -veined. Upper glume apex acute.

Florets. Basal sterile florets 1, barren, with palea. Lemma of lower sterile floret similar to upper glume, elliptic, 1 length of spikelet, membranous, 5 -veined, acute. Fertile lemma elliptic or oblong, 2.5–3.8 mm long, indurate, shiny, without keel, 7 -veined, more than 3-veined. Lemma margins involute. Lemma apex acute. Palea involute, indurate.

Flower and Fruit. Anthers 3, 1.7 mm long. Caryopsis with adherent pericarp, oblong, 1.7 mm long. Embryo 0.5 length of caryopsis. Hilum punctiform.

Distribution (TDWG). Continent. Australasia.

Country /Province /State. Australia. Northern Territory.

TDWG4. Darwin & Gulf.

Yakirra pauciflora (R. Br.) M. Lazarides & R.D. Webster. *Brunonia*, 7(2): 294: (1985).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), D.Sharp, D. & B.K.Simon, *AusGrass* (2002).

TYPE from Australia. **Basionym or Replaced Name:** *Panicum pauciflorum* R. Br., *Prodr.* 191 (1810). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *R. Brown s.n.*, 1803, Australia: Northern Territory: Darwin & Gulf Distr.: North Coast, Gulf of Carpenteria (BM(fragm., US-80903); IT: B, E, K, MEL, P).

Illustrations (Books): D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002).

Images: D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002);.

Derivation (Clifford & Bostock 2007): *L. paucus*, few; flos, flower. Spikelets few per inflorescence.

Classification. Subfamily Panicoideae. Tribe: Paniceae. Subtribe PANICINAE .

Habit, Vegetative Morphology. Annual. Culms erect, 31–75 cm long, 4–8 -noded. Culm-nodes glabrous. Lateral branches sparse. Ligule a fringe of hairs, 0.5–2 mm long. Collar glabrous. Leaf-blades flat or involute, 4–20 cm long, 1.5–5 mm wide.

Inflorescence. Inflorescence a panicle. Panicle open, ovate, 3–12 cm long. Primary panicle branches 2–6 cm long, bearing 2–8 fertile spikelets on each lower branch. Panicle branches smooth or scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 3–20 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 oblanceolate or elliptic or oblong, dorsally compressed, 3.7–5.2 mm long, 1.1–1.8 mm wide, falling entire, readily shedding fertile florets. Rhachilla internodes elongated between glumes. Floret callus evident, winged, with free apical wings, truncate.

Glumes. Glumes dissimilar, reaching apex of florets, thinner than fertile lemma. Lower glume ovate, 2–3.1 mm long, 0.5–0.6 length of spikelet, membranous, without keels, 5–7 -veined. Lower glume apex acute. Upper glume lanceolate or elliptic, 3.6–5.1 mm long, 1 length of spikelet, membranous, without keels, 7 -veined. Upper glume apex acute or acuminate.

Florets. Basal sterile florets 1, barren, without significant palea. Lemma of lower sterile floret similar to upper glume, elliptic or oblong, 1 length of spikelet, membranous, 7 -veined, acute or acuminate. Fertile lemma elliptic or ovate, 2.6–3.6 mm long, indurate, without keel. Lemma margins involute. Lemma apex obtuse or acute. Palea involute, 1 length of lemma, indurate. Palea apex obtuse.

Flower and Fruit. Anthers 3, 1–1.5 mm long.

Distribution (TDWG). Continent. Australasia.

Country /Province /State. Australia. Western Australia, Northern Territory, Queensland.

TDWG4. Kimberley. Darwin & Gulf. North, Inland.

Yakirra websteri B.K.Simon. *Austrobaileya*, 3(4): 602 (1992).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), D.Sharp, D. & B.K.Simon, *AusGrass* (2002).

TYPE from Australia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Australia: Queensland: Mitchell Dist.: 93 k N of Langlo Crossing, 20 May 1975, G. R. Beeston 1361C (HT: BRI-AQ268164; IT: BRI, CANB, K, NSW).

Illustrations (Books): D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002).

Illustrations (Journals): *Austrobaileya* (3:605, Fig.9 (1992)).

Derivation (Clifford & Bostock 2007): in honor of Robert Dale Webster (1950-) United States botanist.

Classification. Subfamily Panicoideae. Tribe: Paniceae. Subtribe PANICINAE .

Habit, Vegetative Morphology. Perennial. Culms erect, 25–80 cm long, 2–3 -noded. Lateral branches lacking. Leaf-sheaths longer than adjacent culm internode, without keel. Ligule a fringe of hairs, 0.5 mm long. Leaf-blades 7–12 cm long, 2–5 mm wide. Leaf-blade surface pubescent, with tubercle-based hairs. Leaf-blade margins scaberulous.

Inflorescence. Inflorescence a panicle. Panicle open, ovate, 10–20 cm long. Primary panicle branches spreading, 5–10 cm long. Panicle axis pilose, with tubercle-based hairs. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, angular, straight, 2–8 mm long, scabrous.

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 ovate, dorsally compressed, 2.5 mm long, 1.5 mm wide, falling entire, readily shedding fertile florets. Rhachilla internodes elongated between glumes. Floret callus evident, winged, with free apical wings, truncate.

Glumes. Glumes dissimilar, reaching apex of florets, thinner than fertile lemma. Lower glume ovate, 1.5 mm long, 0.66 length of spikelet, membranous, without keels, 3–5 -veined. Lower glume surface scabrous, rough on veins. Lower glume apex acute. Upper glume ovate, 2.5 mm long, 1 length of spikelet, membranous, without keels, 9 -veined. Upper glume apex acute.

Florets. Basal sterile florets 1, barren, with palea. Lemma of lower sterile floret similar to upper glume, ovate, 1 length of spikelet, membranous, acuminate. Fertile lemma elliptic, 1.8 mm long, chartaceous, yellow or light brown, without keel. Lemma margins involute. Lemma apex obtuse. Palea involute, 1 length of lemma, chartaceous.

Flower and Fruit. Caryopsis with adherent pericarp, 1.5 mm long.

Distribution (TDWG). Continent. Australasia.

Country /Province /State. Australia. Queensland.

TDWG4. Inland.

Yushania actinoseta W.T. Lin & Z.M. Wu. *J. South China Agr. Univ.* 16(3): 49–50 (1995).

TYPE from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Guangdong: Ruyuan, Tianjing Shan, 1693 m, 16 Dec. 1994, Z.M. Wu S 379 (HT: CANT).

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

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. China Southeast.

Yushania addingtonii Demoly. *Acta Bot. Gallica* 153(3): 335 (2006).

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

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

Yushania ailuropodina T.P. Yi. *J. Bamboo Res.*, 15(3): 6 (1996).

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

TYPE from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Sichuan: Mabian Xian, Dafengding, 2600–3000 m, under *Abies fabri* forest, 5 July 1995, *D.B. Yi 95005* (HT: SIFS).

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

Derivation (Clifford & Bostock 2007): L. *-ina*, indicating resemblance. From areas inhabited by the Giant Panda *Ailuropoda melanoleuca*.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 300–500 cm long, 8–15 mm diam., woody, 20–25-noded. Culm-internodes terete, thick-walled, 22–26 cm long, distally mealy. Lateral branches dendroid, erect or ascending. Bud complement 1. Branch complement several. Culm-sheaths present, persistent, 6–10 cm long, 0.3–0.5 length of internode, 2 times as long as wide, coriaceous, green and purple, distinctly mottled with last colour, glabrous, glabrous on margins, without auricles, glabrous on shoulders. Culm-sheath ligule 1–2 mm high. Culm-sheath blade linear or lanceolate, reflexed, 1–4 cm long, 1.5–2.5 mm wide, glabrous on surface. Leaves 2–4 per branch. Leaf-sheaths 2–3 cm long, glabrous on surface, outer margin glabrous. Leaf-sheath oral hairs scanty or lacking. Ligule an eciliate membrane, 1 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1–0.15 cm long. Leaf-blades lanceolate, 4–7.5 cm long, 5–7 mm wide, fleshy. Leaf-blade venation with 4 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

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

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

TDWG4. Sichuan.

Yushania alpina (K. Schum.) W.C. Lin. *Bull. Taiwan Forest. Res. Inst.*, 248: 14 (1974).

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

TYPE from Kenya. **Basionym or Replaced Name:** *Arundinaria alpina* K. Schum., *Pflanzenw. Ost-Afrikas* 5: 117 (1895). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Kenya: Massaihochland.-Kikuju, *Fischer 672* (HT: B+?).

Illustrations (Books): H.Jacques-Felix, *Les Graminees d'Afrique tropicale* (1962) (113, Fig. 38 as *Arundinaria alpina*), R.M.Phillip, F.T.E.A., *Gramineae* (1(1970):10, Fig.2 as *Arundinaria alpina*), G.V.Pope et al., *Flora Zambesiaca* 10 (1(1971):76, t. 2 as *Arundinaria alpina*), S.Phillips, *Poaceae* (Gramineae) in I.Hedberg & S.Edwards, *Flora of Ethiopia and Eritrea* (1995) (4, Fig. 1 as *Arundinaria alpina*).

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

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 200–1950 cm long, 50–125 mm diam., woody. Culm-internodes terete, thick-walled, mid-green. Lateral branches dendroid. Branch complement three or several, in an irregular line, with subequal branches. Culm-sheaths present, glabrous or hispid, with red hairs, auriculate, setose on shoulders. Culm-sheath blade linear, acute. Leaf-sheath oral hairs setose. Ligule an eciliate membrane. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades deciduous at the ligule, lanceolate, 5–20 cm long, 6–15 mm wide. Leaf-blade venation with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade apex attenuate, filiform.

Inflorescence. Inflorescence a panicle. Panicle open, elliptic, dense or loose, 5–15 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 1–3 mm long, glabrous.

Fertile Spikelets. Spikelets comprising 5–10 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets linear, laterally compressed, 15–40 mm long, 3–4 mm wide, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes eventually visible between lemmas. Floret callus pubescent.

Glumes. Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture. Lower glume ovate, 4–8 mm long, 0.8 length of upper glume, herbaceous, without keels, 5–9 -veined. Lower glume apex acuminate. Upper glume elliptic, 4–8 mm long, 0.75 length of adjacent fertile lemma, herbaceous, without keels, 5–9 -veined. Upper glume apex acuminate.

Florets. Fertile lemma ovate, 7–10 mm long, herbaceous, without keel, 7–9 -veined, more than 3-veined. Lemma lateral veins with cross-veins. Lemma surface glabrous or puberulous. Lemma apex acute. Palea 1 length of lemma, 2 -veined. Palea keels ciliolate. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 3, obovate, membranous, ciliate. Anthers 3. Stigmas 2 or 3 (rarely). Ovary glabrous. Caryopsis with adherent pericarp, fusiform, apex unappendaged. Embryo 0.2 length of caryopsis. Hilum linear.

Distribution (TDWG). Continent. Africa.

Country /Province /State. West-central tropical Africa, Northeast tropical Africa, East tropical Africa, South tropical Africa. Burundi, Cameroon, Congo, Rwanda, DRC. Ethiopia (inc. Eritrea), Sudan. Kenya, Tanzania, Uganda. Malawi.

Yushania anceps (Mitford) W.C. Lin. *Bull. Taiwan Forest. Res. Inst.*, 248: 9 (1974).

Accepted by: W.D. Clayton & K. Harman, *GrassBase* (2008) and online, T.G. Tutin et al, *Flora Europaea* 5 (1980) (as *Arundinaria*).

TYPE from Asia. **Basionym or Replaced Name:** *Arundinaria anceps* Mitford, *Bamb. Gard.* 181 (1896). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Asia, ; Asia, Cult. in Britain: Mitford.

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

Derivation (Clifford & Bostock 2007): L. two-edged. Culms laterally compressed.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, culms solitary. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 4500 cm long, woody. Culm-internodes terete, thin-walled, 28 cm long, glaucous. Lateral branches dendroid. Branch complement three. Culm-sheaths present, 15 cm long, 3 times as long as wide, chartaceous, hairy on margins, truncate at apex, auriculate, setose on shoulders. Culm-sheath ligule ciliolate. Culm-sheath blade linear, reflexed, 2.5–6 cm long. Leaf-sheaths loose, keeled, striately veined, glabrous on surface. Leaf-sheath oral hairs scanty. Ligule an eciliate membrane, 0.5 mm long, truncate. Leaf-blade base asymmetrical, with a brief petiole-like connection to sheath. Leaf-blades deciduous at the ligule, lanceolate, 15 cm long, 18 mm wide. Leaf-blade midrib indistinct. Leaf-blade venation with 6–10 secondary veins, with distinct cross veins. Leaf-blade surface scabrous, rough abaxially, glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate.

Inflorescence. Inflorescence a panicle. Panicle open, ovate, 7 cm long. Panicle axis smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

Fertile Spikelets. Spikelets comprising 6–10 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets linear, laterally compressed, 45 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes clavate, 5 mm long, pubescent.

Glumes. Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture. Lower glume ovate, 4 mm long, herbaceous, without keels, 3 -veined. Lower glume lateral veins with cross-veins. Lower glume surface pilose, hairy at apex. Lower glume apex acute. Upper glume ovate, 6 mm long, herbaceous, without keels, 5 -veined. Upper glume lateral veins with cross-veins. Upper glume surface pilose, hairy at apex. Upper glume apex acute.

Florets. Fertile lemma ovate, 8 mm long, 3.5 mm wide, herbaceous, without keel, more than 3-veined. Lemma lateral veins with cross-veins. Lemma surface pilose, hairy above. Lemma margins ciliate. Lemma apex acute. Palea 8 mm long, 6 -veined. Palea keels ciliolate. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 3, membranous, veined, ciliate. Anthers 3, 2.5 mm long, anther tip apiculate. Stigmas 3. Ovary glabrous. Caryopsis with adherent pericarp, linear, trigonous, dark brown.

Distribution (TDWG). Continent. Europe (* from W.Himalaya), Tropical Asia.

Region. Northern Europe, Southwestern Europe.

Country /Province /State. : GB Aliens (Ryves et al). : Channel Islands, France. **Indian Subcontinent.** India, West Himalaya.

TDWG4. Uttah Pradesh.

Yushania andropogonoides (Hand.-Mazz.) T.P. Yi. *J. Bamboo Res.*, 5(1): 66 (1986).

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

TYPE from China. **Basionym or Replaced Name:** *Indocalamus andropogonoides* Hand.-Mazz., *Akad. Wiss. Wien, Math.-Naturwiss. Kl., Anz.* 62: 255 (1925). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: 2000–2300 m, 10 June 1917, *H.F. von Handel-Mazzetti 10141* (HT: ?; IT: US-1128965).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 86).

Derivation (Clifford & Bostock 2007): Gk. -oides, resembling. Resembling species of *Andropogon*.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, caespitose. Rhizomes elongated, leptomorph. Butt sheaths absent. Culms erect, 40–115 cm long, woody. Culm-internodes terete. Lateral branches suffrutescent. Culm-sheaths present, 8–10 cm long. Leaves cauline. Leaf-sheaths 4–10 cm long. Leaf-sheath oral hairs scanty. Ligule a ciliolate membrane, 1.5–2.5 mm long, truncate. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 6–12 cm long, 4–7 mm wide. Leaf-blade venation with distinct cross veins. Leaf-blade margins scaberulous. Leaf-blade apex attenuate.

Inflorescence. Inflorescence a panicle. Panicle contracted, oblong, 8–25 cm long. Primary panicle branches appressed, 1–2 -nate. Spikelets 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 linear, subterete, 35 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 5 mm long.

Glumes. Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 6–7 mm long, chartaceous, without keels, 7–9 -veined. Lower glume surface pilose, hairy at apex. Lower glume apex acuminate. Upper glume lanceolate, 6–7 mm long, chartaceous, without keels, 7–9 -veined. Upper glume surface pilose, hairy at apex. Upper glume apex acuminate.

Florets. Fertile lemma lanceolate, 10–11 mm long, chartaceous, without keel, 9 -veined, more than 3-veined. Lemma surface asperulous. Lemma apex acute. Palea apex ciliate. Apical sterile florets resembling fertile though underdeveloped.

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

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Yunnan.

Yushania angustifolia T.P. Yi & J.Y. Shi. *Bull. Bot. Res., Harbin* 27(6): 645–646, f. 1 (2007).

TYPE from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Guizhou: Guiyang, Erguozhai, Guizhou Acad. Forestry Bamboo Garden, 1160, 4 Nov. 2006; cultivated, *T.P. Yi 06090* (HT: SIFS = SAUD).

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

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, caespitose, clumped loosely. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, erect at the tip, 150–200 cm long, 5–7 mm diam., woody. Culm-internodes terete, thick-walled, 16–22 cm long, distally glabrous. Lateral branches suffrutescent. Bud complement 1. Branch complement one (below) or three (above), with 1 branch dominant. Culm-sheaths present, persistent, 0.33–0.4 length of internode, hispid, with tawny hairs, hairy on margins, without auricles, ciliate on shoulders, shoulders with 1–3 mm long hairs. Culm-sheath ligule 0.5–1 mm high, purple. Culm-sheath blade linear or lanceolate, erect or reflexed, 0.3–2.5 cm long, 1–2(–3) mm wide. Leaves cauline, 4–6(–8) per branch. Leaf-sheaths glabrous on surface. Leaf-sheath oral hairs setose, erect, 3–8 mm long, dark. Leaf-sheath auricles absent. Ligule an eciliate membrane, 0.5–1 mm long, purple, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1–0.2 cm long. Leaf-blades lanceolate, 10–13 cm long, 6–10 mm wide. Leaf-blade venation with 6–8 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China.

Guizhou.

Yushania auctiaurita T.P. Yi. *Acta Bot. Yunnanica*, 13(2): 145 (1991).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Guizhou: Leishan Xian, 1700–1800 m, 3 Aug. 1987, T.P. Yi 87463 (HT: SFS).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 91).

Derivation (Clifford & Bostock 2007): *L. augeo*, grow; *aurita*, long-eared. Auricles conspicuous.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 100–250 cm long, 3–10 mm diam., woody. Culm-internodes terete, thin-walled, 8–22 cm long, striate. Culm-nodes flush with internodes. Lateral branches dendroid, erect. Bud complement 1. Branch complement one. Culm-sheaths present, persistent, 3.7–7 cm long, 0.6–0.7 length of internode, coriaceous, hispid, with yellow hairs, hairy on margins, auriculate, setose on shoulders, shoulders with straight hairs, shoulders with 3–6 mm long hairs. Culm-sheath ligule 0.5 mm high. Culm-sheath blade triangular, erect, 0.9–2.2 cm long, 1.5–3 mm wide. Leaves 3–8 per branch. Leaf-sheaths 3–6.5 cm long, glabrous on surface or pilose, outer margin hairy. Leaf-sheath oral hairs setose, 2–7 mm long. Leaf-sheath auricles falcate. Ligule an eciliate membrane, 1 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.15–0.55 cm long. Leaf-blades lanceolate, 2.5–16 cm long, 10–30 mm wide, fleshy. Leaf-blade venation with 10–18 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Guizhou.

Yushania baishanzuensis Z.P. Wang & G.H. Ye. *J. Nanjing Univ., Nat. Sci.*, 1983(3): 494 (1983).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Zhejiang: Baishanzu, 1000–1100 m, Z.P. Wang et al. 82520 (HT: NJU).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 81).

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

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short (25 cm), pachymorph. Butt sheaths absent. Culms erect, 150–200 cm long, 5 mm diam., woody. Culm-internodes terete, thick-walled, 19 cm long, distally mealy. Culm-nodes with distinct supra-nodal ridge. Lateral branches dendroid. Branch complement three to many. Culm-sheaths present, tardily deciduous, 0.5–0.66 length of internode, coriaceous, hispid, with white hairs, hairy on margins, without auricles, glabrous on shoulders or setose on shoulders, shoulders with straight hairs. Culm-sheath ligule 1 mm high. Culm-sheath blade linear or triangular, erect, glabrous on surface. Leaves 3–5 per branch. Leaf-sheaths glabrous on surface. Leaf-sheath oral hairs setose, erect, 0.5–1 mm long. Ligule an eciliate membrane, 0.5 mm long, truncate or obtuse. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades linear or lanceolate, 6–14 cm long, 7–12 mm wide, fleshy. Leaf-blade venation with 8 secondary veins, with obscure cross veins. Leaf-blade surface glabrous, hairless throughout or except near base. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Flower and Fruit. $2n = 48$ (1 ref TROPICOS).

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. China Southeast.

TDWG4. Zhejiang.

Yushania basihirsuta (McCl.) Z.P. Wang & G.H. Ye. *J. Nanjing Univ., Nat. Sci.*, 1981(1): 92 (1981).

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

TYPE from China. **Basionym or Replaced Name:** *Indocalamus basihirsutus* McClure, *Sunyatsenia* 6(1): 35–37 (1941). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Guangdong: 1500–1600 m, *c.s.* 2071 (HT: ?).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 88).

Derivation (Clifford & Bostock 2007): *L. basis*, base; *hirsutus*, hairy. Leaf-bases hairy.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 150 cm long, woody. Culm-internodes terete, thin-walled. Lateral branches dendroid. Branch complement three. Culm-sheaths present. Leaf-sheaths hispid, with reflexed hairs, outer margin hairy. Leaf-sheath oral hairs setose, spreading, 5–10 mm long, dark. Leaf-sheath auricles falcate. Ligule an eciliate membrane or a ciliate membrane, scaberulous on abaxial surface. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades deciduous at the ligule, lanceolate, 6–12 cm long, 7–15 mm wide. Leaf-blade surface pilose, hairy abaxially. Leaf-blade apex acuminate.

Inflorescence. Inflorescence a panicle, comprising 8–16 fertile spikelets. Panicle open, 8–9 cm long, bearing few spikelets. Panicle axis glabrous. Panicle branches glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

Fertile Spikelets. Spikelets comprising 5–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 40–60 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 5–7 mm long, eventually visible between lemmas.

Glumes. Glumes two, persistent, similar, shorter than spikelet. Lower glume lanceolate, 5 mm long, chartaceous, without keels. Lower glume apex acuminate. Upper glume lanceolate, 7 mm long, chartaceous, without keels. Upper glume apex acuminate.

Florets. Fertile lemma lanceolate, 11 mm long, chartaceous, 7 -veined, more than 3-veined. Lemma apex acuminate. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 3. Anthers 3. Stigmas 3. Caryopsis with adherent pericarp, apex unappendaged.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. China Southeast.

TDWG4. Guangdong, Hunan.

Yushania bojieiana T.P. Yi. *J. Bamboo Res.*, 5(1): 30 (1986).

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

TYPE from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China, Jinping Xian: Yi Tong-pei 83178.

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 72).

Derivation (Clifford & Bostock 2007): L. -ana, indicating connection. In honor of Keng Pai-chieh (1917-) Chinese botanist.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short or elongated (15–50 cm), pachymorph. Butt sheaths absent. Culms erect, 300–500 cm long, 10–15 mm diam., woody. Culm-internodes terete, thin-walled, 23–32 cm long, distally mealy. Culm-nodes without obvious supra-nodal ridge or with distinct supra-nodal ridge. Lateral branches dendroid. Branch complement several. Culm-sheaths present, persistent, 0.6–0.8 length of internode, coriaceous, hispid, with yellow hairs or tawny hairs, hairy on margins, triangular at apex, without auricles, glabrous on shoulders or setose on shoulders, shoulders with straight hairs. Culm-sheath ligule 1 mm high, ciliate. Culm-sheath blade linear or lanceolate, glabrous on surface. Leaves 6–8 per branch. Leaf-sheaths glabrous on surface or hispid (at base). Leaf-sheath oral hairs setose, 6 mm long, pale. Ligule an eciliate membrane, 0.5 mm long, truncate or obtuse. Leaf-blade base cuneate or broadly rounded, with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 4.3–9.2 cm long, 10–15 mm wide, fleshy. Leaf-blade venation with 8–10 secondary veins, with obscure cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Yunnan.

Yushania boliana Demoly. *Bambou*, 35: 3 (2000).

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

TYPE from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China, Sichuan, cult in Japan: Demoly 28X2000.

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

Derivation (Clifford & Bostock 2007): L. -ana, indicating connection. In honor of Gerald Bol (1940–1996) United States plant collector and artist.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes elongated. Butt sheaths absent. Culms 600 cm long, woody. Culm-internodes terete, 10–20 cm long, striate, distally pruinose. Lateral branches dendroid. Branch complement many. Culm-sheaths present, 2 length of internode, concolorous, hispid. Culm-sheath blade lanceolate, 10 cm long. Ligule an eciliate membrane. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades lanceolate.

Inflorescence. Inflorescence composed of racemes. Racemes 1, single. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

Fertile Spikelets. Spikelets comprising 2–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 7–14 mm long, breaking up at maturity, disarticulating below each fertile floret.

Glumes. Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, chartaceous, without keels. Lower glume apex acute or acuminate. Upper glume lanceolate, chartaceous, without keels. Upper glume apex acute or acuminate.

Florets. Fertile lemma lanceolate or ovate, 6–7 mm long, chartaceous, without keel, more than 3-veined. Lemma apex acuminate. Palea 5–6 mm long. Apical sterile florets resembling fertile though underdeveloped.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Sichuan.

Yushania brevipaniculata (Hand.-Mazz.) T.P. Yi. *J. Bamboo Res.*, 5(1): 44 (1986).

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

TYPE from China. **Basionym or Replaced Name:** *Arundinaria brevipaniculata* Hand.-Mazz., *Kaisersl. Akad. Wiss. Wien, Math.-Naturwiss. Kl., Anz.* 57: 237 (1920). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Sichuan: Circa rivum ad visum Lolokou in montibus Daliangschan ad or. urbis Ningyuen (Lingyuan), 21 April 1914, *H.F. von Handel-Mazzetti 1676* (HT: ?; IT: US-1129103).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 66).

Derivation (Clifford & Bostock 2007): *L. brevis*, short; *paniculus*, panicle; -ata, possessing. Panicle short and broad.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, culms solitary. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 150–250 cm long, 7 mm diam., woody. Culm-internodes terete, thin-walled, 10–30 cm long, yellow, scaberulous. Culm-nodes flush with internodes. Lateral branches dendroid. Culm-sheaths present. Leaf-sheaths 5 cm long, striately veined, puberulous. Leaf-sheath oral hairs setose. Leaf-sheath auricles falcate. Ligule a ciliolate membrane, 1 mm long. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades deciduous at the ligule, lanceolate, 7–9 cm long, 7–9 mm wide. Leaf-blade venation with distinct cross veins. Leaf-blade margins scaberulous.

Inflorescence. Inflorescence a panicle, embraced at base by subtending leaf. Panicle contracted, oblong, 5–7 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

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

Glumes. Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture. Lower glume ovate, herbaceous, without keels. Lower glume surface puberulous. Lower glume apex acuminate. Upper glume lanceolate, 7–8 mm long, herbaceous, without keels, 5 -veined. Upper glume surface pilose. Upper glume apex acuminate.

Florets. Fertile lemma ovate, 10 mm long, 3–4 mm wide, herbaceous, without keel, 7–9 -veined, more than 3-veined. Lemma lateral veins with cross-veins. Lemma apex acuminate. Palea 6–7 mm long. Palea keels ciliolate. Apical sterile florets resembling fertile though underdeveloped.

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

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Sichuan.

Yushania brevis T.P. Yi. *J. Bamboo Res.*, 5(1): 11 (1986).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Luchun Xian, 2000 m, 19 Sept. 1983, *D.B. Yi 83177* (HT: Herb. Forestry School of Sichuan Province).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 83).

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

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 100–250 cm long, 4–6 mm diam., woody. Culm-internodes terete, solid, 15–39 cm long, smooth, distally glabrous. Culm-nodes flush with internodes. Lateral branches dendroid. Bud complement 1. Branch complement three or several. Culm-sheaths present, persistent, 5–6.2 cm long, coriaceous, glabrous or pubescent, hairy at the base, without auricles, glabrous on shoulders. Culm-sheath ligule 0.5 mm high. Culm-sheath blade linear or lanceolate, erect, 0.5–2 cm long, 1–1.5 mm wide. Leaves 3–6 per branch. Leaf-sheaths 2.2–3.5 cm long, glabrous on surface. Leaf-sheath oral hairs setose, erect, 2–3 mm long. Ligule an eciliate membrane, 0.4 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole glabrous or pubescent. Leaf-blades lanceolate, 8.2–14.5 cm long, 9–13 mm wide, fleshy. Leaf-blade venation with 6–8 secondary veins, with distinct cross veins. Leaf-blade surface glabrous or pubescent. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Yunnan.

Yushania burmanica T.P. Yi. *J. Bamboo Res.*, 14(2): 1 (1995).

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

TYPE from Myanmar. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Burma: North-Eastern Burma: collected from Lintang Special District, Va North County, alt. 2100 m, nearby Ximeng, County of Yunnan, China, 30 Oct 1993, *Yi Tonpei 93022* (HT: SIFS).

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

Derivation (Clifford & Bostock 2007): *L. -ica*, belonging to. From Burma, now Myanmar.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, caespitose, clumped loosely. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 300–600 cm long, 10–25 mm diam., woody, 28–35 -noded. Culm-internodes terete, thick-walled, 10–25 cm long, distally glabrous. Lateral branches dendroid, erect or ascending. Bud complement 1. Branch complement several or many. Culm-sheaths present, persistent, 17–29 cm long, 4–5 times as long as wide, coriaceous, hispid, with appressed hairs, with dark brown hairs, hairy on margins, without auricles, glabrous on shoulders. Culm-sheath ligule 0.8 mm high. Culm-sheath blade linear, narrower than sheath, reflexed, 2.2–9 cm long, 2–4 mm wide. Leaves 3–5 per branch. Leaf-sheaths 4–6 cm long, glabrous on surface, outer margin glabrous. Leaf-sheath oral hairs scanty or pubescent. Ligule an eciliate membrane, 0.7–0.8 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.15–0.25 cm long. Leaf-blades lanceolate, 8.5–14.5 cm long, 13–18 mm wide, fleshy. Leaf-blade venation with 10 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Tropical Asia.

Country /Province /State. Indo-China. Myanmar.

Yushania canoviridis G.H. Ye & Z.P. Wang. *Acta Phytotax. Sin.*, 27(3): 228 (1989).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Hunan: Zhangjiajie, 1000 m, *Z.P. Wang 875001* (HT: NJU).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 64).

Derivation (Clifford & Bostock 2007): *L. canus*, greyish-white; *viridis*, green. Culm sheaths greyish-green.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 100 cm long, 3–6 mm diam., woody, without nodal roots. Culm-internodes terete, thin-walled, distally mealy. Lateral branches dendroid, erect. Branch complement one or two or three. Culm-

sheaths present, deciduous, hispid, with white hairs, hairy on margins, auriculate, ciliate on shoulders. Culm-sheath ligule 1 mm high. Culm-sheath blade lanceolate, deciduous. Leaves 1–4 per branch. Leaf-sheaths glabrous on surface, outer margin hairy. Leaf-sheath oral hairs ciliate. Leaf-sheath auricles erect. Ligule an eciliate membrane, 0.5 mm long. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 1–8 cm long, 2–10 mm wide. Leaf-blade venation with 8 secondary veins. Leaf-blade surface glabrous.

Inflorescence. Inflorescence a panicle, comprising 10–22 fertile spikelets. Panicle open, ovate. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 5–15 mm long.

Fertile Spikelets. Spikelets comprising 3–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets linear, laterally compressed, 7–12 mm long, 1–2 mm wide, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 2.5–3 mm long.

Glumes. Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture. Lower glume ovate, 3–4 mm long, chartaceous, without keels. Upper glume ovate, 3–4 mm long, chartaceous, without keels.

Florets. Fertile lemma ovate, 5–6 mm long, chartaceous, without keel, 7 -veined, more than 3-veined. Lemma lateral veins with cross-veins. Lemma apex acute. Palea 4.5–6 mm long. Palea keels ciliate, adorned above. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

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

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. China Southeast.

TDWG4. Hunan.

Yushania cartilaginea T.H. Wen. *J. Bamboo Res.*, 3(2): 28 (1984).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Guangxi: Boise, 1700 m, *W.W. Chou 82433* (HT: ZJFI).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 90).

Derivation (Clifford & Bostock 2007): *L. cartilaginosa*. Culm sheaths cartilaginous.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 250 cm long, 7 mm diam., woody. Culm-internodes terete, solid, 10–17 cm long, distally mealy. Lateral branches dendroid. Branch complement one or two or three. Culm-sheaths present, persistent, 4–6 cm long, coriaceous, glabrous, hairy on margins, truncate at apex, auriculate, with 5 mm high auricles, with 1–1.5 mm wide auricles, setose on shoulders, shoulders with 7 mm long hairs. Culm-sheath blade linear or lanceolate, reflexed, glabrous on surface. Leaves 8–10 per branch. Leaf-sheaths 2.5–3.5 cm long, glabrous on surface, outer margin hairy. Leaf-sheath oral hairs setose, 10–12 mm long. Leaf-sheath auricles falcate. Ligule an eciliate membrane, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 10–15 cm long, 18–28 mm wide, fleshy. Leaf-blade venation with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins smooth or scaberulous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. China Southeast.

TDWG4. Guangxi.

Yushania cava T.P. Yi. *J. Bamboo Res.*, 4(2): 33 (1985).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Shimian Xian, 2000–2600 m, 27 May 1978, *Q.J. Shao 2* (HT: Herb. Forestry School, Sichuan Prov.).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 71).

Derivation (Clifford & Bostock 2007): *L. cavus*, hollow. Culms hollow.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 400 cm long, 10–20 mm diam., woody. Culm-internodes terete, thin-walled, 21 cm long, striate, distally glabrous. Lateral branches dendroid. Branch complement several. Culm-sheaths present, tardily deciduous, 14 cm long, coriaceous, glabrous, concave at apex or convex at apex, without auricles, glabrous on

shoulders. Culm-sheath ligule 0.5 mm high. Culm-sheath blade linear or lanceolate, deciduous, reflexed, 1.2–5.5 cm long, 1.5–2.5 mm wide, glabrous on surface. Leaves 3–5 per branch. Leaf-sheaths pubescent. Leaf-sheath oral hairs setose, 3–4 mm long. Ligule an eciliate membrane, 0.5 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole glabrous. Leaf-blades lanceolate, 3.5–6 cm long, 5–8 mm wide, fleshy. Leaf-blade venation with 6 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Sichuan.

Yushania chingii T.P. Yi. *J. Bamboo Res.*, 5(1): 45 (1986).

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

TYPE from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Guanghou: Anshun Xian, 1420 m, 7 July 1978, T.P. Yi 78131 (HT: Herb. Forestry School of Sichuan Province).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 92).

Derivation (Clifford & Bostock 2007): in honor of Ching Ren-chang (1898–1986) Chinese botanist.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 100–250 cm long, 3–8 mm diam., woody. Culm-internodes terete, thick-walled or solid, 15–22 cm long, striate. Culm-nodes constricted. Lateral branches dendroid. Bud complement 1. Branch complement several. Culm-sheaths present, persistent, 3.5–5.5 cm long, coriaceous, glabrous, auriculate, setose on shoulders, shoulders with straight hairs, shoulders with 5–8 mm long hairs. Culm-sheath ligule 1 mm high. Culm-sheath blade linear or lanceolate, reflexed, 1.2–2 cm long, 1–2 mm wide. Leaves 5–11 per branch. Leaf-sheaths 5.5–7 cm long. Leaf-sheath oral hairs setose, 5–12 mm long. Leaf-sheath auricles falcate. Ligule an eciliate membrane, 1 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades lanceolate or oblong, 19–26 cm long, 28–40 mm wide, fleshy. Leaf-blade venation with 14–18 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. China South Central, China Southeast.

TDWG4. Guangxi. Guizhou.

Yushania collina T.P. Yi. *J. Bamboo Res.*, 5(1): 13 (1986).

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

TYPE from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Sichuan: Dechang Xian, 2200 m, 24 Jan. 1979, Y.G. Diao 01 (HT: Herb. Forestry School of Sichuan Province).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 84).

Derivation (Clifford & Bostock 2007): L. collis, a hill; -ina, belonging to. Mountain species.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 200–300 cm long, 5–10 mm diam., woody. Culm-internodes terete, thick-walled or solid, 30–40 cm long, striate, distally glabrous. Lateral branches dendroid. Bud complement 1. Branch complement several, in an irregular line. Culm-sheaths present, persistent, coriaceous, glabrous or hispid, with tawny hairs, without auricles, setose on shoulders, shoulders with straight hairs, shoulders with 5–10 mm long hairs. Culm-sheath ligule 0.5–1 mm high. Culm-sheath blade linear or lanceolate, reflexed, 2–9 cm long, 1.5–2.5 mm wide, glabrous on surface. Leaves 2–5 per branch. Leaf-sheaths 4.2–6 cm long, glabrous on surface. Leaf-sheath oral hairs scanty or lacking, erect, 2–3 mm long. Ligule an eciliate membrane, 0.5 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole glabrous. Leaf-blades deciduous at the ligule, lanceolate, 7–22.5 cm long, 12–18 mm wide. Leaf-blade venation with 8–10 secondary veins, with obscure cross veins. Leaf-blade surface glabrous. Leaf-blade margins scaberulous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Sichuan.

Yushania complanata T.P. Yi. *J. Bamboo Res.*, 5(1): 15 (1986).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Guizhou: Fan-jing Shan, 2100–2400 m, 18 Oct. 1982, *D.B. Yi 82196* (HT: Herb. Forestry School of Sichuan Province).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 73).

Derivation (Clifford & Bostock 2007): *L. complano*, level. Culms flattened.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 300–450 cm long, 5–12 mm diam., woody. Culm-internodes terete, thick-walled, 15–24 cm long, distally mealy. Lateral branches dendroid. Bud complement 1. Branch complement several, in an irregular line. Culm-sheaths present, deciduous, 14–24 cm long, coriaceous, pubescent, with appressed hairs, with yellow hairs, without auricles, setose on shoulders, shoulders with straight hairs. Culm-sheath blade linear or lanceolate, reflexed, 1.3–7 cm long, 1–3 mm wide. Leaves 5–7 per branch. Leaf-sheaths 3.5–5.2 cm long, glabrous on surface. Leaf-sheath oral hairs scanty or lacking. Ligule an eciliate membrane, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.15–0.25 cm long. Leaf-blades deciduous at the ligule, lanceolate, 7–14 cm long, 10–16 mm wide. Leaf-blade venation with 8–10 secondary veins, with distinct cross veins. Leaf-blade margins scaberulous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Guizhou.

Yushania confusa (McCl.) Z.P. Wang & G.H. Ye. *J. Nanjing Univ., Nat. Sci.*, 1981(1): 92: (1981).

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

TYPE from China. **Basionym or Replaced Name:** *Indocalamus confusus* McClure, *Lingnan Univ. Sci. Bull.* 9: 20 (1940). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China, Fang: Henry 6832 (K holo).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 97).

Derivation (Clifford & Bostock 2007): *L. confused*. Likely to be mistaken for another species.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Butt sheaths absent. Culms 30–60 cm long, 2.5 mm diam., woody. Culm-internodes terete, 5–7.3 cm long, distally glabrous. Lateral branches suffrutescent, erect. Branch complement one or two or three, with 1 branch dominant. Culm-sheaths present. Leaves cauline. Leaf-sheaths glabrous on surface. Leaf-sheath oral hairs ciliate. Ligule a ciliolate membrane, brown, scaberulous on abaxial surface, truncate or obtuse. Leaf-blade base cuneate or broadly rounded, with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 6.8 cm long, 6 mm wide. Leaf-blade venation with 6 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade apex acuminate.

Inflorescence. Inflorescence a panicle, comprising 5–15 fertile spikelets. Panicle open, 5–10 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

Fertile Spikelets. Spikelets comprising 2–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets linear, laterally compressed, 15–25 mm long, breaking up at maturity, disarticulating below each fertile floret. Spikelet callus pubescent. Rhachilla internodes 5 mm long.

Glumes. Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 2–4 mm long, chartaceous, without keels. Lower glume apex acuminate. Upper glume lanceolate, 5–8 mm long, chartaceous, without keels. Upper glume apex obtuse.

Florets. Fertile lemma ovate, 10 mm long, chartaceous, keeled, keeled above, more than 3-veined. Lemma surface smooth or scaberulous. Lemma apex acuminate, mucronate. Palea chartaceous. Palea keels ciliate. Palea apex obtuse. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 3, 1–2 mm long, ciliate. Anthers 3, 7.5 mm long. Stigmas 2. Ovary glabrous. Caryopsis with adherent pericarp.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Shanxi. Hunan. Guizhou, Hubei, Sichuan.

Yushania crassicollis T.P. Yi. *Bull. Bot. Res. North-East. Forest. Inst.*, 8(4): 68 (1988).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Xinning Xian, 2450–2600 m, 31 Aug. 1986, T.P. Yi 86235 (HT: SCFI).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 72).

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 300–500 cm long, 10–25 mm diam., woody, 18–26 -noded. Culm-internodes terete, solid, 15–20 cm long, estriate, distally glabrous. Lateral branches dendroid, ascending. Branch complement several. Culm-sheaths present, persistent, 15–31 cm long, 4 times as long as wide, coriaceous, yellow or purple, hispid, with appressed hairs, with yellow hairs, hairy on margins, without auricles, setose on shoulders, shoulders with straight hairs, shoulders with 2–7 mm long hairs. Culm-sheath ligule 0.5 mm high, entire. Culm-sheath blade linear or lanceolate, erect or reflexed, 1–8 cm long, 1–3.5 mm wide, flat or wrinkled, glabrous on surface. Leaves 3–6 per branch. Leaf-sheaths 2–4 cm long, glabrous on surface, outer margin glabrous. Leaf-sheath oral hairs setose, erect or curly, 1.5–3 mm long, dark. Ligule an eciliate membrane, 0.1 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1–0.2 cm long. Leaf-blades lanceolate, 3–11 cm long, 5–13 mm wide, fleshy. Leaf-blade venation with 4–8 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Yunnan.

Yushania crispata T.P. Yi. *J. Bamboo Res.*, 10(1): 26 (1991).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China, Tianlin Xian: Yi Tong-pei 78131.

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 78).

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 200–700 cm long, 10–30 mm diam., woody. Culm-internodes terete, solid, 30–35 cm long, distally hirsute. Lateral branches dendroid, ascending. Branch complement several. Culm-sheaths present, persistent, coriaceous, pilose, without auricles, setose on shoulders, shoulders with 10–20 mm long hairs. Culm-sheath ligule 1–1.5 mm high. Culm-sheath blade linear, reflexed, 2–7.5 cm long, 2 mm wide. Leaves 2–3(–5) per branch. Leaf-sheaths 2.2–4.5 cm long, glabrous on surface or pubescent. Leaf-sheath oral hairs setose, 4–7 mm long. Leaf-sheath auricles absent. Ligule an eciliate membrane, 1 mm long, truncate. Collar with external ligule. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1–0.15 cm long. Leaf-blades lanceolate, 5–11 cm long, 8–12 mm wide. Leaf-blade venation with 6–8 secondary veins, with obscure cross veins. Leaf-blade surface glabrous. Leaf-blade apex attenuate.

Inflorescence. Inflorescence a panicle. Panicle open, ovate, 7–12 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, flexuous or sinuous, 15–40 mm long, glabrous.

Fertile Spikelets. Spikelets comprising 4–8(–14) fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets linear, laterally compressed, 16–30(–40) mm long, 2–3 mm wide, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 2–5 mm long, pilose, hairy at tip.

Glumes. Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 3–4 mm long, herbaceous, without keels. Lower glume apex acuminate. Upper glume lanceolate, 6–7 mm long, herbaceous, without keels, 5–7 -veined. Upper glume apex acuminate.

Florets. Fertile lemma lanceolate, 6–8 mm long, herbaceous, without keel, 7–9 -veined, more than 3-veined. Lemma surface puberulous. Lemma apex acuminate. Palea 5.5–7.5 mm long. Palea keels ciliate. Palea surface pubescent, hairy on back. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 3, 1.5 mm long, membranous, ciliate. Anthers 3, 5–6 mm long. Stigmas 3. Ovary glabrous. Caryopsis with adherent pericarp, ellipsoid, 5 mm long, apex unappendaged. Embryo 0.2 length of caryopsis. Hilum linear.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Sichuan.

Yushania dafengdingensis T.P. Yi. *J. Bamboo Res.*, 15(3): 9 (1996).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Sichuan: Mabian Xian, Dafengding, 2200–3000 m, under *Abies fabri* forest, 3 July 1995, *T.P. Yi 95004* (HT: SIFS).

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

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

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 200–400 cm long, 12–20 mm diam., woody, 12–16 -noded. Culm-internodes terete, thick-walled, 18–22 cm long, smooth, distally mealy. Lateral branches dendroid, erect or ascending. Bud complement 1. Branch complement one. Culm-sheaths present, persistent, 6–10 cm long, 0.3–0.5 length of internode, 1.3 times as long as wide, coriaceous, glabrous, convex at apex, auriculate, setose on shoulders, shoulders with 10–12 mm long hairs. Culm-sheath ligule 1–2.5 mm high. Culm-sheath blade lanceolate or triangular, erect, 8–25 cm long, 3–6 mm wide, glabrous on surface. Leaves 3–6 per branch. Leaf-sheaths 6–10 cm long, glabrous on surface, outer margin glabrous. Leaf-sheath oral hairs setose, 6–10 mm long. Leaf-sheath auricles falcate. Ligule an eciliate membrane, 1–1.5 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1–0.15 cm long, petiole glabrous. Leaf-blades lanceolate, 12–18 cm long, 20–37 mm wide, fleshy, mid-green and glaucous, discolorous with last colour beneath. Leaf-blade venation with 8–14 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Sichuan.

Yushania elegans (Kurz) R.B. Majumdarin & S. Karthikeyan. *Fl. Ind. Enumerat. - Monocot.*: 282: (1989).

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

TYPE from Myanmar. **Basionym or Replaced Name:** *Sinarundinaria elegans*, *Sinobambusa elegans*, *Arundinaria elegans* Kurz, *J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist.* 42: 249 (1873). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: Burma, *Kurz 144* (IT: K).

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

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

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 400–700 cm long, 8–25 mm diam., woody, without nodal roots. Culm-internodes terete, 18–23 cm long, smooth. Culm-nodes swollen. Lateral branches dendroid. Branch complement several, in an irregular line, with subequal branches. Culm-sheaths present, 0.33 length of internode, chartaceous, pubescent, truncate at apex, auriculate. Culm-sheath ligule fimbriate. Culm-sheath blade linear, reflexed, acute. Leaf-sheaths striately veined, smooth, glabrous on surface. Leaf-sheath oral hairs setose. Leaf-sheath auricles erect. Ligule an eciliate membrane. Leaf-blade base with a brief petiole-like connection to sheath, petiole 0.2–0.5 cm long. Leaf-blades deciduous at the ligule, linear or lanceolate, 10–14 cm long, 8–12 mm wide. Leaf-blade midrib conspicuous. Leaf-blade venation with 8–12 secondary veins, with distinct cross veins. Leaf-blade surface smooth, glabrous. Leaf-blade margins cartilaginous, scabrous. Leaf-blade apex acuminate.

Inflorescence. Inflorescence a panicle. Panicle open, ovate. Panicle axis pubescent. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

Fertile Spikelets. Spikelets comprising 4–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets linear, laterally compressed, 25 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes flattened, clavate, eventually visible between lemmas.

Glumes. Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture. Lower glume ovate, 5 mm long, chartaceous, without keels, 3–5 -veined. Lower glume apex acuminate. Upper glume ovate, 5 mm long, chartaceous, 1-keeled, 3–5 -veined. Upper glume primary vein ciliate. Upper glume apex acute.

Florets. Fertile lemma ovate, 6 mm long, chartaceous, without keel, 7 -veined, more than 3-veined. Lemma lateral veins with cross-veins. Lemma apex acuminate. Palea obovate, 6 -veined. Palea keels ciliate. Palea apex dentate, 1 -fid. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 3, membranous, veined, ciliate. Anthers 3, purple. Stigmas 3. Ovary glabrous. Caryopsis with adherent pericarp.

Distribution (TDWG). Continent. Tropical Asia.

Country /Province /State. Indian Subcontinent, Indo-China. Assam, Eastern Himalaya. Myanmar.

TDWG4. Sikkim. Nagaland.

Yushania elevata T.P. Yi. *J. Bamboo Res.*, 5(1): 17 (1986).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China, Tengchong Xian: Yi Tong-pei 83142.

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 81).

Derivation (Clifford & Bostock 2007): *L. eleva*, raise up. Growing at high altitudes.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes elongated (70 cm), pachymorph. Butt sheaths absent. Culms erect, 400–700 cm long, 14–60 mm diam., woody. Culm-internodes terete, thick-walled, 24–60 cm long, distally pubescent. Culm-nodes with distinct supra-nodal ridge, pubescent. Lateral branches dendroid. Branch complement many. Culm-sheaths present, tardily deciduous, coriaceous, pubescent, with tawny hairs, hairy on margins, without auricles, setose on shoulders, shoulders with straight hairs. Culm-sheath ligule 1 mm high, entire. Culm-sheath blade linear or lanceolate, glabrous on surface. Leaves 4–6 per branch. Leaf-sheaths glabrous on surface. Leaf-sheath oral hairs setose, erect, 0.5–1 mm long, dark. Ligule an eciliate membrane, 0.5 mm long, truncate or obtuse. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 4.5–9.5 cm long, 4–9 mm wide, fleshy. Leaf-blade venation with 4–6 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Yunnan.

Yushania exilis T.P. Yi. *J. Bamboo Res.*, 5(1): 20 (1986).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Sichuan: Muchuan Xian, 1280–1350 m, 5 Dec. 1983, *D.B. Yi 83204* (HT: Herb. Forestry School of Sichuan Province).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 75).

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

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 150–250 cm long, 5–8 mm diam., woody. Culm-internodes terete, thick-walled, 28 cm long, smooth, distally glabrous. Lateral branches dendroid. Bud complement 1. Branch complement several. Culm-sheaths present, persistent, 11–16 cm long, coriaceous, purple, pubescent, without auricles, setose on shoulders, shoulders with straight hairs, shoulders with 5–12 mm long hairs. Culm-sheath ligule 1–2 mm high. Culm-sheath blade linear or lanceolate, reflexed, 0.5–4 cm long, 1–1.5 mm wide. Leaves 4–6 per branch. Leaf-sheaths 1.9–2.9 cm long, glabrous on surface. Leaf-sheath oral hairs setose, erect, 2–5 mm long. Ligule an eciliate membrane, 1 mm long, obtuse. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1–0.15 cm long. Leaf-blades lanceolate, 2.3–9.5 cm long, 3.5–8 mm wide, fleshy. Leaf-blade venation with 6 secondary veins, with obscure cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Sichuan.

Yushania falcataurita Hsueh & T.P. Yi. *J. Bamboo Res.*, 5(1): 22 (1986).

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

TYPE from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Tengchong Xian, 1710 m, 15 May 1978, Z.G. Chang *et al.* 016 (HT: Herb. Southwest Forestry College).

Illustrations (Books): S-L Chen *et al.*, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 68).

Derivation (Clifford & Bostock 2007): *L. falx*, sickle; *aurita*, long-eared. Auricles sickle-shaped.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 200–350 cm long, 10 mm diam., woody. Culm-internodes terete, thick-walled or solid, 28 cm long, estriate or striate, distally mealy. Lateral branches dendroid, erect or ascending. Bud complement 1. Branch complement several. Culm-sheaths present, tardily deciduous, coriaceous, pilose, with grey hairs, convex at apex, auriculate, with unequal auricles, setose on shoulders, shoulders with 2–7 mm long hairs. Culm-sheath ligule 0.5–1 mm high. Culm-sheath blade linear or lanceolate, erect or spreading, 0.8–3 cm long, 1.5–2.5 mm wide, glabrous on surface. Leaves 2–4 per branch. Leaf-sheaths 2.8–4.5 cm long, glabrous on surface, outer margin glabrous or hairy. Leaf-sheath oral hairs setose, 1–7 mm long. Leaf-sheath auricles falcate. Ligule an eciliate membrane, 0.5–0.7 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1–0.15 cm long. Leaf-blades lanceolate, 2–8.5 cm long, 5–13 mm wide, fleshy. Leaf-blade venation with 6–10 secondary veins, with obscure cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Yunnan.

Yushania farticaulis T.P. Yi. *J. Bamboo Res.*, 5(1): 24 (1986).

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

TYPE from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Gongshan Xian, 1900–2800 m, 22 Nov. 1977, D.B. Yi 77311 (HT: Herb. Forestry School of Sichuan Province).

Illustrations (Books): S-L Chen *et al.*, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 80).

Derivation (Clifford & Bostock 2007): *L. fartus*, solid with centre softer than outside; *caulis*, stem. Culms solid.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 400–700 cm long, 10–20 mm diam., woody. Culm-internodes terete, solid, 45 cm long, estriate, distally glabrous. Lateral branches dendroid. Bud complement 1. Branch complement many, in an irregular line. Culm-sheaths present, persistent, 14–22 cm long, coriaceous, hispid, with yellow hairs, without auricles, setose on shoulders, shoulders with straight hairs, shoulders with 2–6 mm long hairs. Culm-sheath ligule 1 mm high. Culm-sheath blade linear or lanceolate, reflexed, 2–6 cm long, 2–4 mm wide. Leaves 4–6 per branch. Leaf-sheaths 3.2–4.2 cm long, glabrous on surface or hispid. Leaf-sheath oral hairs scanty, 3–5 mm long. Ligule an eciliate membrane, 1 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1–0.15 cm long. Leaf-blades deciduous at the ligule, lanceolate, 9–15 cm long, 9–12 mm wide. Leaf-blade venation with 6–8 secondary veins, with distinct cross veins. Leaf-blade surface pilose, hairy abaxially. Leaf-blade margins scaberulous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Yunnan.

Yushania farinosa Y.P. Wang & G.H. Ye. *J. Nanjing Univ., Nat. Sci. Ed.* 1981(1): 93, f. 2. (1981).

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

TYPE from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Hunan: Yangming Mountain, about 1600 m, 17 May 1977, Z.P. Wang *et al.* 77023 (HT: NJU).

Illustrations (Books): S-L Chen *et al.*, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 85).

Derivation (Clifford & Bostock 2007): *L. farina*, flour; *-osa*, abundance. Surface of culms very waxy.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short (22 cm), pachymorph. Butt sheaths absent. Culms erect, 250 cm long, 6 mm diam., woody. Culm-internodes terete, thin-walled, 12–22.5 cm

long, ridged (obscurely), distally glabrous. Culm-nodes without obvious supra-nodal ridge or with distinct supra-nodal ridge, glabrous or pubescent. Lateral branches dendroid. Branch complement three to many. Culm-sheaths present, tardily deciduous, coriaceous, hispid, with appressed hairs, with tawny hairs, hairy on margins, without auricles, setose on shoulders, shoulders with straight hairs, shoulders with 5 mm long hairs. Culm-sheath ligule 1 mm high, ciliolate. Culm-sheath blade linear or lanceolate, erect or spreading, glabrous on surface. Leaves 3–5 per branch. Leaf-sheaths glabrous on surface. Leaf-sheath oral hairs setose, 2–4 mm long, pale. Ligule an eciliate membrane, truncate or obtuse. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades lanceolate or oblong, 9–12 cm long, 13–16 mm wide, fleshy. Leaf-blade venation with 8–12 secondary veins, with obscure cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. China Southeast.

TDWG4. Hunan.

Yushania flexa T.P. Yi. *Acta Phytotax. Sin.*, 25(6): 480 (1987).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Sichuan: Lüchun, Fenshuiling, 2100 m, 19 Sept. 1983, *T.P. Yi 83174* (HT: Herb. Forestry School Sichuan).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 74).

Derivation (Clifford & Bostock 2007): L. flecto, bend. Rhachis flexuose.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 300–500 cm long, 10–25 mm diam., woody. Culm-internodes terete, solid, 25–30 cm long, striate, distally mealy. Lateral branches dendroid. Bud complement 1. Branch complement several. Culm-sheaths present, persistent, 12–20 cm long, 3 times as long as wide, coriaceous, hispid, with appressed hairs, with dark brown hairs, glabrous on margins, without auricles, glabrous on shoulders or ciliate on shoulders, shoulders with 2–3 mm long hairs. Culm-sheath ligule 2–3 mm high, entire or ciliate. Culm-sheath blade linear or lanceolate, deciduous, reflexed, 1.5–7.5 cm long, 2–4 mm wide. Leaves 4–6 per branch. Leaf-sheaths 4.5–7 cm long, outer margin glabrous. Leaf-sheath oral hairs scanty or lacking. Ligule an eciliate membrane, 1–2 mm long, purple, obtuse. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.2–0.3 cm long. Leaf-blades lanceolate, 7.5–15.5 cm long, 12–21 mm wide, fleshy. Leaf-blade venation with 6–10 secondary veins, with obscure cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Yunnan.

Yushania glandulosa Hsueh & T.P. Yi. *Bull. Bot. Res. North-East. Forest. Inst.*, 8(4): 73 (1988).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Yingjiang Xian, 1800 m, 17 Sept. 1977, *J.R. Xue 1184* (HT: SCFI).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 94).

Derivation (Clifford & Bostock 2007): L. glans, gland; -ula, diminutive; -osa, abundance. With small glands especially on the leaf-blades.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 200–300 cm long, 4–5 mm diam., woody, 12–16-noded. Culm-internodes terete, solid, 8–23 cm long, scaberulous. Culm-nodes swollen. Lateral branches dendroid, erect or ascending. Branch complement one or two or three. Culm-sheaths present, persistent, 8.5–9 cm long, 5–7 times as long as wide, coriaceous, glabrous, glabrous on margins or hairy on margins, without auricles, glabrous on shoulders. Culm-sheath ligule 0.5 mm high, entire or ciliolate. Culm-sheath blade lanceolate, erect or reflexed, 1.5–2 cm long, 1.5 mm wide, glabrous on surface. Leaves 1–3 per branch. Leaf-sheaths 4–9 cm long, glabrous on surface. Leaf-sheath oral hairs lacking. Leaf-sheath auricles absent. Ligule an eciliate membrane, 0.5–0.8 mm long, lacerate. Collar with external ligule. Leaf-blade base with a brief petiole-like connection to sheath, petiole 0.1–1 cm long, petiole glabrous. Leaf-blades lanceolate, 8–19 cm long, 18–50 mm wide. Leaf-blade venation with 8–20 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade apex attenuate.

Inflorescence. Inflorescence a panicle, comprising 13–33 fertile spikelets. Panicle open, ovate, 6–12 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 5–20 mm long, glabrous.

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 linear, laterally compressed, 12–25 mm long, 1.5–2 mm wide, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 3–3.5 mm long, pilose.

Glumes. Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 1.2–2 mm long, herbaceous, 1-keeled, 1–3 -veined. Lower glume primary vein scabrous. Lower glume lateral veins absent or obscure. Lower glume apex acuminate. Upper glume lanceolate, 3.5–5 mm long, herbaceous, 1-keeled, 5 -veined. Upper glume primary vein scabrous. Upper glume apex acuminate.

Florets. Fertile lemma lanceolate, 4.5–8 mm long, herbaceous, without keel, 5–7 -veined, more than 3-veined. Lemma surface pubescent, hairy at base. Lemma apex attenuate. Palea 1 length of lemma. Palea keels ciliate. Palea surface pubescent, hairy on back. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 3, 1–1.5 mm long, membranous, ciliate. Anthers 3, 3.5–4 mm long, yellow. Stigmas 2. Ovary glabrous. Caryopsis with adherent pericarp, fusiform, apex unappendaged. Embryo 0.2 length of caryopsis. Hilum linear.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Yunnan.

Yushania glauca T.P. Yi & T.L. Long. *J. Bamboo Res.*, 8(2): 33 (1989).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Sichuan: Leibo County, Lami Xian, 2500–3200 m, 16 May 1987, *T.L. Long 1987004* (HT: Herb. Forestry School of Sichuan Province).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 64).

Derivation (Clifford & Bostock 2007): *L. glauca*, bluish-green. Whole plant or any of its parts glaucous.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 300–700 cm long, 14–17 mm diam., woody, 27 -noded. Culm-internodes terete, thick-walled, 26–33 cm long, estriate, distally mealy. Lateral branches dendroid, erect or ascending. Bud complement 1. Branch complement several. Culm-sheaths present, persistent, 5–13 cm long, 0.3–0.5 length of internode, 2 times as long as wide, chartaceous, yellow and purple, distinctly mottled with last colour, glabrous, hairy on margins, convex at apex, auriculate, setose on shoulders, shoulders with 3–4 mm long hairs. Culm-sheath ligule 1–4 mm high, purple, lacerate. Culm-sheath blade lanceolate or triangular, erect, 1.5–5.5 cm long, 5–15 mm wide, glabrous on surface. Leaves 1–5 per branch. Leaf-sheaths 4–6 cm long, glabrous on surface, outer margin glabrous. Leaf-sheath oral hairs setose, 1.5–5.5 mm long, dark. Leaf-sheath auricles falcate. Ligule an eciliate membrane, 1–2 mm long, lacerate, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.25–0.5 cm long, petiole pubescent. Leaf-blades lanceolate, 4–13.5 cm long, 7–17 mm wide, fleshy. Leaf-blade venation with 6–10 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Sichuan.

Yushania grammata T.P. Yi. *J. Bamboo Res.*, 9(3): 30 (1990).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Weixin Xian, 1270 m, 11 Aug. 1988, *T.P. Yi 88133* (HT: Herb. Forestry School of Sichuan Province).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 87).

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms geniculately ascending, 150–300 cm long, 4–15 mm diam., woody, 8–21 -noded. Culm-internodes terete, solid, 10–14 cm long, distally hispid. Culm-nodes flush with internodes. Lateral branches suffrutescent, erect. Bud complement 1. Branch complement one. Culm-sheaths present, persistent, coriaceous, hispid, with appressed hairs, with tawny hairs, hairy on margins, auriculate, setose on shoulders, shoulders with

straight hairs. Culm-sheath ligule 1 mm high. Culm-sheath blade linear or lanceolate, reflexed, 0.7–4.5 cm long, 1.3–3.2 mm wide. Leaves 4–14 per branch. Leaf-sheaths 7–15 cm long, glabrous on surface or hispid, with tubercle-based hairs, outer margin glabrous. Leaf-sheath oral hairs scanty or lacking. Ligule an eciliate membrane, 1–1.5 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 16–25 cm long, 16–35 mm wide, fleshy. Leaf-blade venation with 10–14 secondary veins, with distinct cross veins. Leaf-blade surface pubescent, hairy abaxially. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Yunnan.

Yushania hirsuta (Munro) R.B. Majumdar. S. Karthikeyan et al., *Fl. Ind. Enumerat. - Monocot.*: 282 (1989).

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

TYPE from India. **Basionym or Replaced Name:** *Arundinaria hirsuta* Munro, *Trans. Linn. Soc. London* 26(1): 30 (1868). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: LT: *Griffith 6726*, India: Khasi Hills (K). LT designated by Chao & Renvoize, *Kew Bull.* 44: 355 (1989).

Illustrations (Books): H.J. Noltie, *The Grasses of Bhutan* (2000) (498, Fig. 4 & 508, Fig. 6).

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

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 200 cm long, woody. Culm-internodes terete, thin-walled, 15 cm long, scaberulous, distally hirsute. Lateral branches dendroid. Branch complement one or two. Culm-sheaths present, 10–15 cm long, 4–6 times as long as wide, chartaceous, hispid, with tawny hairs, convex at apex, auriculate, setose on shoulders. Culm-sheath ligule ciliolate. Culm-sheath blade linear, reflexed. Leaf-sheaths striately veined, hispid. Leaf-sheath oral hairs setose. Ligule a ciliolate membrane. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades deciduous at the ligule, lanceolate, 7–12 cm long, 12–16 mm wide. Leaf-blade venation with 8–12 secondary veins, with distinct cross veins. Leaf-blade surface pilose, hairy abaxially. Leaf-blade margins scabrous. Leaf-blade apex attenuate.

Inflorescence. Inflorescence a panicle. Panicle open. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

Fertile Spikelets. Spikelets comprising 7–9 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets linear, laterally compressed, 35 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes clavate.

Glumes. Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture. Lower glume ovate, herbaceous, without keels. Upper glume ovate, 9 mm long, herbaceous, without keels, 5 -veined.

Florets. Fertile lemma ovate, 12 mm long, 4 mm wide, herbaceous, without keel, 9 -veined, more than 3-veined. Lemma margins ciliate, hairy above. Lemma apex acuminate. Palea 8 mm long, 4 -veined. Palea keels ciliolate. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

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

Distribution (TDWG). Continent. Tropical Asia.

Country /Province /State. Indian Subcontinent, Indo-China. Assam, Eastern Himalaya.

TDWG4. Bhutan, Sikkim, Manipur, Nagaland.

Yushania hirticaulis Z.P. Wang & G.H. We. *J. Nanjing Univ., Nat. Sci. Ed.* 1981(1): 94, f. 2. (1981).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Jiangxi: Huanggang Mountain, 1300–2000 m, 26 Oct. 1980, Z.P. Wang 8069 (HT: NJU).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 68).

Derivation (Clifford & Bostock 2007): L. hirtus, hairy; caulis, stem. Culms hairy.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 70–300 cm long, 4.5–10 mm diam., woody. Culm-internodes terete, thin-walled, 12–20 cm long, distally mealy. Culm-nodes with distinct supra-nodal ridge, pubescent. Lateral branches dendroid. Branch

complement three to several. Culm-sheaths present, deciduous but leaving a persistent girdle, coriaceous, hispid, with dark brown hairs, hairy on margins, auriculate, setose on shoulders, shoulders with straight hairs, shoulders with 10–15 mm long hairs. Culm-sheath ligule 1 mm high. Culm-sheath blade triangular, erect. Leaves 3–5 per branch. Leaf-sheaths pilose. Leaf-sheath oral hairs setose, 5–12 mm long, pale. Leaf-sheath auricles erect. Ligule an eciliate membrane, truncate or obtuse. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades linear or lanceolate, 5–12 cm long, 5–10 mm wide, fleshy. Leaf-blade venation with 6–10 secondary veins, with obscure cross veins. Leaf-blade surface pubescent, hairy abaxially. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. China Southeast.

TDWG4. Jiangxi.

Yushania humbertii (A. Camus) D.Ohrnberger. *Bamboos of the World Intro.* 3: 14: (1996).

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

TYPE from Madagascar. **Basionym or Replaced Name:** *Arundinaria humbertii* A. Camus, *Bull. Soc. Bot. France* 73: 624–625 (1927). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: "Madagascar: massif de l'Andringitra (Iratsy), vallées de la Riambava et de l'Antsifotra, alt. 2000 mètres environ.", *Humbert 3750* (HT: P) IT: K.

Recent Synonyms: *Arundinaria ambositrensis* A.Camus, *Bull. Soc. Bot. France* 68: 8. (1931).

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

Derivation (Clifford & Bostock 2007): in honor of Jean Henri Humbert (1887–1967) French botanist who collected in Madagascar.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Butt sheaths absent. Culms erect, 600–800 cm long, woody. Culm-internodes terete, thin-walled. Lateral branches dendroid. Culm-sheaths present. Leaf-sheath oral hairs ciliate, 4–8 mm long. Ligule an eciliate membrane, truncate. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 7–15 cm long, 10–12 mm wide, indurate, glaucous. Leaf-blade venation with 8–10 secondary veins, with distinct cross veins. Leaf-blade surface glabrous, hairless except near base. Leaf-blade margins scaberulous. Leaf-blade apex attenuate.

Inflorescence. Inflorescence a panicle. Panicle 12–20 cm long. Panicle branches scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 13–18 mm long.

Fertile Spikelets. Spikelets comprising 5–6 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 30–55 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 7–8 mm long, pubescent.

Glumes. Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 6 mm long, chartaceous, without keels, 3 -veined. Lower glume margins ciliate. Lower glume apex acute. Upper glume lanceolate, 7–8 mm long, chartaceous, without keels, 7 -veined. Upper glume apex acute, mucronate.

Florets. Fertile lemma oblong or ovate, 11.5 mm long, chartaceous, without keel, 9 -veined, more than 3-veined. Lemma surface pilose, hairy below. Lemma apex acute. Palea 12 mm long, 2 -veined. Palea surface puberulous. Palea apex truncate. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 3, ciliate. Stigmas 2. Caryopsis with adherent pericarp, oblong, apex unappendaged.

Distribution (TDWG). Continent. Africa.

Country /Province /State. Western Indian ocean. Madagascar.

Yushania lacera Q.F. Zheng & K.F. Huang. *Acta Phytotax. Sin.*, 22(3): 218 (1984).

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

TYPE from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Fujian: Jianyang, Wuyi Shan, Zhumugang, 1750 m, *Z.J. Huang, J.Y. He, 124* (HT: FJFC).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 76).

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, culms solitary. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 210 cm long, 8 mm diam., woody. Culm-internodes terete, thick-walled, 20–23 cm long, distally mealy. Culm-nodes swollen. Lateral branches dendroid. Branch complement several. Culm-sheaths present, persistent or tardily deciduous, coriaceous, yellow or purple, hispid, with reflexed hairs, hairy

on margins, without auricles, glabrous on shoulders. Culm-sheath ligule 1.5 mm high, ciliate. Culm-sheath blade linear or lanceolate, reflexed, 1.5 cm long. Leaves 3–8 per branch. Leaf-sheath oral hairs setose, 3–8 mm long. Ligule an eciliate membrane, 1 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 10–13 cm long, 10–12 mm wide, fleshy. Leaf-blade venation with 8–10 secondary veins, with distinct cross veins. Leaf-blade surface pubescent, hairy abaxially. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. China Southeast.

TDWG4. Fujian.

Yushania laetevirens T.P. Yi. *J. Bamboo Res.*, 9(3): 34 (1990).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Suijiang Xian, 1300–1500 m, 23 Aug. 1988, T.P. Yi 88155 (HT: Herb. Forestry School of Sichuan Province).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 82).

Derivation (Clifford & Bostock 2007): *L. laetum*, bright; *virens*, green. Foliage bright-green.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 250–350 cm long, 6–10 mm diam., woody. Culm-internodes terete, thick-walled, 20–30 cm long, striate, distally mealy. Lateral branches dendroid. Bud complement 1. Branch complement several. Culm-sheaths present, persistent, 0.5 length of internode, coriaceous, glabrous, glabrous on margins, without auricles, glabrous on shoulders. Culm-sheath ligule 1–1.4 mm high. Culm-sheath blade linear or lanceolate, reflexed, 0.7–5.8 cm long, 1–2.5 mm wide. Leaves 3–5 per branch. Leaf-sheaths 2.2–3.2 cm long, glabrous on surface, outer margin glabrous. Leaf-sheath oral hairs lacking. Ligule an eciliate membrane, 1 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades linear or lanceolate, 4.5–13 cm long, 10–13 mm wide, fleshy. Leaf-blade venation with 6–8 secondary veins, with obscure cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Yunnan.

Yushania levigata T.P. Yi. *J. Bamboo Res.*, 5(1): 27 (1986).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Lincang Xian, 2500–3000 m, 2 Sept. 1983, D.B. Yi 83150 (HT: Herb. Forestry School of Sichuan Province).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 79).

Derivation (Clifford & Bostock 2007): *L. smooth*. Culms smooth with polished internodes.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 200–450 cm long, 10–20 mm diam., woody. Culm-internodes terete, solid, 30–40 cm long, smooth, distally glabrous. Lateral branches dendroid, erect or ascending. Branch complement several. Culm-sheaths present, persistent, 10–18 cm long, coriaceous, glabrous or puberulous, with appressed hairs, without auricles, glabrous on shoulders. Culm-sheath ligule 0.5–0.8 mm high. Culm-sheath blade lanceolate, reflexed, 1.5–5 cm long, 1.5–3 mm wide. Leaves 3–5 per branch. Leaf-sheaths 2.5–3.6 cm long, glabrous on surface. Leaf-sheath oral hairs scanty or lacking, 0.5–2 mm long. Leaf-sheath auricles absent. Ligule an eciliate membrane, 0.5 mm long, truncate. Collar with external ligule. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 1–1.5 cm long. Leaf-blades lanceolate, 7–10 cm long, 9–12.5 mm wide. Leaf-blade venation with 6–10 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade apex attenuate.

Inflorescence. Inflorescence a panicle, comprising 2–12 fertile spikelets, without bracts or bracteate at branch bases (lowest branch). Panicle open, 2–2.7 cm long, bearing few spikelets. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 5–14 mm long, glabrous.

Fertile Spikelets. Spikelets comprising 4–9 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets linear, laterally compressed, 15–30 mm long, 2–3 mm wide, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 3–4 mm long, pubescent, hairy at tip.

Glumes. Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 4 mm long, herbaceous, without keels, 3–5 -veined. Lower glume apex setaceously acuminate. Upper glume lanceolate, 5–9.5 mm long, herbaceous, without keels, 7–9 -veined. Upper glume apex setaceously acuminate.

Florets. Fertile lemma lanceolate, 5–10 mm long, herbaceous, without keel, 7–9 -veined, more than 3-veined. Lemma surface glabrous. Lemma margins eciliate or pubescent. Lemma apex setaceously acuminate. Palea 4–8 mm long. Palea keels ciliolate. Palea surface pubescent, hairy on back. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 3, membranous. Anthers 3, 3–4 mm long. Stigmas 2. Ovary glabrous. Caryopsis with adherent pericarp, ellipsoid, 3–4 mm long, apex unappendaged. Embryo 0.2 length of caryopsis. Hilum linear.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Yunnan.

Yushania lineolata T.P. Yi. *J. Bamboo Res.*, 4(2): 31 (1985).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China, Shimian Xian: Shao Qi-jun 01.

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 67).

Derivation (Clifford & Bostock 2007): *L. lineata*, linen thread; -ola, diminutive; -ata, possessing. Leaf-sheath marked by fine parallel lines.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short (9–16 cm), pachymorph. Butt sheaths absent. Culms erect, 350 cm long, 9–15 mm diam., woody. Culm-internodes terete, thin-walled, 16–24 cm long, distally glabrous. Culm-nodes with distinct supra-nodal ridge, pubescent. Lateral branches dendroid. Branch complement three or several. Culm-sheaths present, tardily deciduous, 0.66 length of internode, coriaceous, green and brown, distinctly mottled with last colour, glabrous, hairy on margins, convex at apex, auriculate, setose on shoulders, shoulders with straight hairs, shoulders with 4–9 mm long hairs. Culm-sheath ligule 2–3 mm high. Culm-sheath blade linear or lanceolate. Leaves 1–3 per branch. Leaf-sheaths glabrous on surface. Leaf-sheath oral hairs lacking or setose. Leaf-sheath auricles absent. Ligule a ciliolate membrane, 1 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades deciduous at the ligule, lanceolate, 3.5–9.5 cm long, 4–11 mm wide, light green. Leaf-blade venation with 6–8 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous.

Inflorescence. Inflorescence a panicle, comprising 6–12 fertile spikelets. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

Fertile Spikelets. Spikelets comprising 3–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets linear, laterally compressed, 24–40 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 4–5 mm long, pubescent.

Glumes. Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture. Lower glume ovate, herbaceous, without keels. Upper glume lanceolate, herbaceous, without keels.

Florets. Fertile lemma ovate, herbaceous, purple, without keel, more than 3-veined. Lemma surface pubescent, hairy at base. Lemma margins ciliate. Lemma apex obtuse or acuminate. Palea keels ciliate. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 3. Anthers 3. Stigmas 3. Ovary glabrous.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Sichuan.

Yushania longiaurita Q.F. Zheng & K.F. Huang. *Acta Phytotax. Sin.*, 22(3): 217 (1984).

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

TYPE from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Fujian: Dehua, Daiyun Shan, 1500 m, *D.J. Wu 001* (HT: FJFC).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 89).

Derivation (Clifford & Bostock 2007): *L. longus*, long; *auritus*, eared. Leaf-blades with long auricles.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 150 cm long, 4–6 mm diam., woody. Culm-internodes terete, thick-walled, 14 cm long, distally mealy. Culm-nodes swollen. Lateral branches dendroid. Branch complement one or two or three or several. Culm-sheaths present, persistent, chartaceous, glabrous, hairy on margins, auriculate, setose on shoulders, shoulders with straight hairs, shoulders with 6–8 mm long hairs. Culm-sheath ligule 1 mm high. Culm-sheath blade lanceolate, reflexed. Leaves 5–9 per branch. Leaf-sheaths glabrous on surface. Leaf-sheath oral hairs setose, spreading. Leaf-sheath auricles falcate. Ligule an eciliate membrane, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 7–12 cm long, 10–15 mm wide, fleshy. Leaf-blade venation with 8–10 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. China Southeast.

TDWG4. Fujian.

Yushania longissima T.P. Yi, non Huang(1982). *J. Bamboo Res.*, 2(2): 46 (1983).

Regarded by K as a synonym (*Y. yadongensis*).

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

TYPE from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Fujian: Chong'an, about 2100 m, *K.F. Huang 25* (HT: FJFC).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 73).

Derivation (Clifford & Bostock 2007): *L. longus*, long; -issima, most. Internodes very long.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 100–200 cm long, 3–8 mm diam., woody. Culm-internodes terete, thick-walled, 8–15 cm long, distally mealy. Lateral branches dendroid, erect or ascending. Bud complement 1. Branch complement one or two or three or several. Culm-sheaths present, persistent, 8–12 cm long, coriaceous, yellow or brown, hispid, with appressed hairs, with tawny hairs, without auricles, glabrous on shoulders. Culm-sheath ligule 1–1.5 mm high. Culm-sheath blade linear or lanceolate, erect, 0.8–2.1 cm long, 1.5–2.2 mm wide. Leaves 2–7 per branch. Leaf-sheaths 2.5–4.2 cm long, glabrous on surface. Leaf-sheath oral hairs setose. Leaf-sheath auricles absent or erect. Ligule an eciliate membrane, 1 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.15–0.2 cm long. Leaf-blades linear or lanceolate, 6–11.5 cm long, 8–12 mm wide, fleshy. Leaf-blade venation with 6–10 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. China Southeast.

TDWG4. Fujian.

Yushania longiuscula T.P. Yi. *J. Bamboo Res.*, 5(1): 30 (1986).

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

TYPE from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Mengzi Xian, 2100–2300 m, 10 Dec. 1977, *D.B. Yi 77326* (HT: Herb. Forestry School of Sichuan Province).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 77).

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

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 400–500 cm long, 10–20 mm diam., woody. Culm-internodes terete, solid, 30–45 cm long. Lateral branches dendroid. Bud complement 1. Branch complement several. Culm-sheaths present, persistent, 15–21 cm long, coriaceous, pilose, without auricles, setose on shoulders. Culm-sheath ligule 1 mm high. Culm-sheath blade lanceolate, reflexed, 3–8.5 cm long, 2–3.5 mm wide. Leaves 2–4 per branch. Leaf-sheaths 5.5–7 cm long, glabrous on surface. Leaf-sheath oral hairs scanty, 2–7 mm long. Leaf-sheath auricles

absent. Ligule an eciliate membrane, 1 mm long, truncate. Collar with external ligule. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.3–0.4 cm long, petiole glabrous. Leaf-blades lanceolate, 7.2–19 cm long, 15–20 mm wide. Leaf-blade venation with 8–10 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade apex attenuate.

Inflorescence. Inflorescence a panicle, bracteate at branch bases. Panicle open, 7–10 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 18–50 mm long, glabrous.

Fertile Spikelets. Spikelets comprising 4–10 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets linear, laterally compressed, 20–40 mm long, 3.5–5 mm wide, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 3.5–5 mm long, pubescent, hairy above.

Glumes. Glumes persistent, similar, shorter than spikelet. Lower glume ovate, 4–8 mm long, herbaceous, without keels, 3–4 -veined. Lower glume apex acuminate. Upper glume ovate, 8–12 mm long, herbaceous, without keels, 5–7 -veined. Upper glume lateral veins prominent. Upper glume apex acuminate.

Florets. Fertile lemma ovate, 10–16 mm long, herbaceous, without keel, more than 3-veined. Lemma surface glabrous. Lemma apex acuminate. Palea 6–9 mm long. Palea surface glabrous. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 3, membranous. Anthers 3, 4–6 mm long. Stigmas 2. Ovary glabrous. Caryopsis with adherent pericarp, fusiform, apex unappendaged. Embryo 0.2 length of caryopsis. Hilum linear.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Yunnan.

Yushania mabianensis T.P. Yi. *J. Bamboo Res.*, 5(1): 47 (1986).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Sichuan: Mabian Xian, 1550–1900 m, 3 April 1984, *T.P. Yi 84028* (HT: Herb. Forestry School of Sichuan Province).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 86).

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

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 100–200 cm long, 4–8 mm diam., woody. Culm-internodes terete, thick-walled, 20–27 cm long, mid-green and purple, mottled. Lateral branches dendroid. Bud complement 1. Branch complement several, with 1 branch dominant. Culm-sheaths present, persistent, 5.5–10 cm long, coriaceous, hispid, with dark brown hairs, hairy on margins, auriculate, setose on shoulders, shoulders with straight hairs or curved hairs, shoulders with 3–5 mm long hairs. Culm-sheath ligule 0.5 mm high. Culm-sheath blade linear or lanceolate, reflexed, 1–2.2 cm long, 1.5–3 mm wide. Leaves 3–5 per branch. Leaf-sheaths 4.5–7 cm long, glabrous on surface or hispid. Leaf-sheath oral hairs setose, spreading, 5–7 mm long. Leaf-sheath auricles falcate. Ligule an eciliate membrane, 1–1.5 mm long, truncate or obtuse. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.2–0.3 cm long. Leaf-blades lanceolate, 7–20 cm long, 10–28 mm wide, fleshy. Leaf-blade venation with 10–12 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Sichuan.

Yushania maculata T.P. Yi. *J. Bamboo Res.*, 5(1): 33 (1986).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China, Puge Xian: Yi Tong-pei 80136.

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 76).

Derivation (Clifford & Bostock 2007): *L. macula*, spot; -atum, possessing. Culms and leaf-sheaths spotted.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short (40 cm), pachymorph. Butt sheaths absent. Culms erect, 200–350 cm long, 8–15 mm diam., woody. Culm-internodes terete, thick-walled,

30–40 cm long, distally hispid. Culm-nodes without obvious supra-nodal ridge or with distinct supra-nodal ridge, pubescent. Lateral branches dendroid. Branch complement several. Culm-sheaths present, persistent, 0.33 length of internode, coriaceous, green and purple, distinctly mottled with last colour, hispid, hairy at the base, with dark brown hairs, hairy on margins, without auricles, setose on shoulders, shoulders with straight hairs, shoulders with 5–10 mm long hairs. Culm-sheath ligule 1–2.5 mm high. Culm-sheath blade linear or lanceolate, glabrous on surface. Leaves 3–5 per branch. Leaf-sheaths glabrous on surface. Leaf-sheath oral hairs setose, erect, 4–7 mm long, dark. Ligule an eciliate membrane, 1 mm long, truncate or obtuse. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades linear or lanceolate, 9–15 cm long, 9–11 mm wide, fleshy. Leaf-blade venation with 8 secondary veins, with obscure cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex attenuate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Sichuan, Yunnan.

Yushania madagascariensis (A. Camus) D.Ohrnberger. *Bamboos of the World Intro.* 3: 15 (1996).

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

TYPE from Madagascar. **Basionym or Replaced Name:** *Arundinaria madagascariensis* A. Camus, *Bull. Mus. Natl. Hist. Nat.* 30: 394 (1924). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: "Madagascar centr.: Mont Tsaratanana, silve à lichens, alt. 2000–2800 m.", *Perrier de la Bâthie 10778* (HT: P) IT: K.

Recent Synonyms: *Yushania marojejyensis* (A. Camus) D.Ohrnberger, *Bamboos of the World Intro.* 3: 15 (1996). *Arundinaria marojejyensis* A.Camus, *Bull. Soc. Bot. France*, 97: 84 (1950).

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

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

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 200–400 cm long, woody. Culm-internodes terete, thin-walled. Lateral branches dendroid. Culm-sheaths present. Leaf-sheaths striately veined, glabrous on surface. Ligule an eciliate membrane. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades linear or lanceolate, 6 cm long, 3–4 mm wide. Leaf-blade venation with 24–28 secondary veins, with distinct cross veins. Leaf-blade surface scaberulous, rough adaxially, pilose, hairy abaxially. Leaf-blade margins scaberulous. Leaf-blade apex attenuate.

Inflorescence. Inflorescence a panicle. Panicle open. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

Fertile Spikelets. Spikelets comprising 4–5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets linear, laterally compressed, 32–35 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes clavate, pilose, hairy at tip.

Glumes. Glumes persistent, similar, shorter than spikelet. Lower glume ovate, 4.5 mm long, chartaceous, 5–7 -veined. Lower glume lateral veins with cross-veins. Lower glume surface glabrous. Lower glume margins ciliolate. Lower glume apex acuminate. Upper glume ovate, 6.5 mm long, chartaceous, 11 -veined. Upper glume surface glabrous. Upper glume margins ciliolate. Upper glume apex acuminate.

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

Flower and Fruit. Lodicules 3, membranous, ciliate. Anthers 3. Stigmas 3. Caryopsis with adherent pericarp.

Distribution (TDWG). Continent. Africa.

Country /Province /State. Western Indian ocean. Madagascar.

Yushania maling (Gamble) R.B. Majumdar & S. Karthikeyan. *Fl. Ind. Enumerat. - Monocot.*: 283: (1989).

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

TYPE from India. **Basionym or Replaced Name:** *Arundinaria maling* Gamble, *Bull. Misc. Inform. Kew* 1912: 139 (1912). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *Osmaston s.n.*, May 1904, India: Darjeeling Distr.: Tonglo (K). LT designated by Chao & Renvoize, *Kew Bull.* 44: 356 (1989).

Recent Synonyms: *Sinarundinaria maling* (Gamble) C.S.Chao & S.A.Renvoize, *Kew Bull.* 44(2): 356 (1989).

Illustrations (Books): H.J.Noltie, *The Grasses of Bhutan* (2000) (498, Fig. 4).

Derivation (Clifford & Bostock 2007): vernacular name of the species in Nepal.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, culms solitary. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 300–900 cm long, 20–30 mm diam., woody. Culm-internodes terete, thin-walled, 30–40 cm long, antrorsely scabrous. Lateral branches dendroid. Branch complement several, in an irregular line, with subequal branches. Culm-sheaths present, 15–30 cm long, 3 times as long as wide, yellow, hispid, with yellow hairs, auriculate, setose on shoulders. Culm-sheath ligule 10 mm high. Culm-sheath blade linear, erect or spreading, 6–7 cm long, acute. Leaf-sheaths striately veined, glabrous on surface. Leaf-sheath oral hairs setose, 3–5 mm long. Ligule an eciliate membrane, pubescent on abaxial surface, truncate. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades deciduous at the ligule, linear or lanceolate, 5–18 cm long, 8–20 mm wide, mid-green or glaucous, discolorous with last colour beneath. Leaf-blade venation with 6 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scaberulous.

Inflorescence. Inflorescence a panicle, comprising 10–20 fertile spikelets. Panicle open, 10 cm long. Primary panicle branches 10–20 cm long. Panicle axis glabrous. Panicle branches capillary, sinuous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

Fertile Spikelets. Spikelets comprising 7–9 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets linear, laterally compressed, 35 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes clavate, curved, 4–6 mm long, eventually visible between lemmas, pilose. Floret callus pubescent.

Glumes. Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture. Lower glume ovate, 2–4 mm long, herbaceous, without keels, 0 -veined. Lower glume lateral veins absent. Lower glume surface scabrous. Lower glume apex setaceously acuminate. Upper glume ovate, 7–9 mm long, herbaceous, without keels, 5 -veined. Upper glume surface scabrous. Upper glume apex setaceously acuminate.

Florets. Fertile lemma ovate, 10–12 mm long, herbaceous, without keel, 7–9 -veined, more than 3-veined. Lemma lateral veins with cross-veins. Lemma surface scabrous. Lemma apex setaceously acuminate. Palea 7–8 mm long, 5–9 -veined. Palea keels ciliolate. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 3, 2–2.5 mm long, membranous, veined, ciliate. Anthers 3, 5–6 mm long, yellow. Stigmas 3. Ovary glabrous. Caryopsis with adherent pericarp.

Distribution (TDWG). Continent. Tropical Asia.

Country /Province /State. Indian Subcontinent. Eastern Himalaya, Nepal.

TDWG4. Darjeeling, Bhutan, Sikkim, Meghalaya.

Yushania menghaiensis T.P. Yi. *Acta Bot. Yunnanica*, 10(4): 441 (1988).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Menghai Xian, 2300 m, 25 Feb. 1987, T.P. Yi 87021 (HT: SFS).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 83).

Derivation (Clifford & Bostock 2007): L. -ensis, denoting origin. From Menghai Xian, Yunnan.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, erect at the tip, 200–350 cm long, 10–13 mm diam., woody. Culm-internodes terete, thick-walled, 23–26 cm long, estriate, distally mealy. Lateral branches dendroid, erect or ascending. Branch complement several or many. Culm-sheaths present, persistent, 7–17 cm long, 0.3–0.5 length of internode, 3 times as long as wide, coriaceous, yellow, hispid, with appressed hairs, with tawny hairs, hairy on margins, without auricles, glabrous on shoulders or setose on shoulders, shoulders with 3–4 mm long hairs. Culm-sheath ligule 1 mm high, entire. Culm-sheath blade linear, reflexed, 1–5.5 cm long, 1.5–2.2 mm wide, glabrous on surface. Leaves 4–7 per branch. Leaf-sheaths 2.7–5 cm long, glabrous on surface, outer margin glabrous. Leaf-sheath oral hairs setose, 1.5–4 mm long. Ligule a ciliolate membrane, 0.6 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.15–0.25 cm long, petiole pubescent. Leaf-blades lanceolate, 3–24 cm long, 8–31 mm wide, fleshy. Leaf-blade venation with 8–10 secondary veins, with obscure cross veins. Leaf-blade surface pilose, densely hairy. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. China South Central.
TDWG4. Yunnan.

Yushania microphylla (Munro) R.B. Majumdar. S. Karthikeyan et al., *Fl. Ind. Enumerat. - Monocot.*: 283 (1989).

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

TYPE from Bhutan. **Basionym or Replaced Name:** *Arundinaria microphylla* Munro, *Trans. Linn. Soc. London* 26(1): 32 (1868). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: ST: *Griffiths 623*, Bhutan: Tashigang Distr.: Sanah, alt. 7000 ped. s. m. (K). ST: *Griffiths s.n.*, Bhutan: Sanah, alt. 6000–10000 ft (K).

Illustrations (Books): H.J.Noltie, *The Grasses of Bhutan* (2000) (498, Fig. 4 & 508, Fig. 6).

Derivation (Clifford & Bostock 2007): Gk. mikros, small; phyllon, leaf. Leaf-blades short.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 60–120 cm long, woody. Culm-internodes terete, thin-walled, 5–7.5 cm long, distally glabrous. Lateral branches suffrutescent. Branch complement many. Culm-sheaths present. Leaf-sheaths striately veined, pubescent. Leaf-sheath oral hairs setose. Ligule an eciliate membrane, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 2–4 cm long, 3–7 mm wide, fleshy. Leaf-blade venation with 4 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acute. Flowering specimens unknown.

Distribution (TDWG). Continent. Tropical Asia.

Country /Province /State. Indian Subcontinent. Eastern Himalaya, India, Nepal.

TDWG4. Bhutan.

Yushania mitis T.P. Yi. *J. Bamboo Res.*, 9(3): 35 (1990).

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

TYPE from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Yongshan Xian, 1800–2500 m, 2 Sept. 1988, *D.B. Yi 88162* (HT: Herb. Forestry School of Sichuan Province).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 82).

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 300–400 cm long, 10–20 mm diam., woody. Culm-internodes terete, thick-walled, 27–30 cm long, distally glabrous or hispid. Lateral branches dendroid. Bud complement 1. Branch complement several. Culm-sheaths present, deciduous, 0.5 length of internode, coriaceous, brown and purple, distinctly mottled with last colour, hispid, with yellow hairs, hairy on margins, without auricles, glabrous on shoulders. Culm-sheath ligule 1.5–4 mm high, lacerate. Culm-sheath blade linear or lanceolate, reflexed, 1–3 cm long, 1.5–2.5 mm wide. Leaves 3–6 per branch. Leaf-sheaths 1.8–2.3 cm long, glabrous on surface, outer margin hairy. Leaf-sheath oral hairs scanty, 1–5 mm long. Ligule a ciliolate membrane, 0.5 mm long, truncate or obtuse. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 1.2–10.5 cm long, 2–8 mm wide, fleshy. Leaf-blade venation with 4–8 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Yunnan.

Yushania multiramea T.P. Yi. *Bull. Bot. Res. North-East. Forest. Inst.*, 8(4): 69 (1988).

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

TYPE from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Xinping Xian, 2320–2550 m, 31 Aug. 1986, *T.P. Yi 86236* (HT: SCFI).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 85).

Derivation (Clifford & Bostock 2007): L. multus, many; ramus, branch. Culms much branched.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 300–400 cm long, 5–10 mm diam., woody, 15–20 -noded. Culm-internodes terete, solid, 24–28 cm long, smooth, distally glabrous. Culm-nodes flush with internodes. Lateral branches dendroid, ascending. Bud complement 1. Branch complement several or many. Culm-sheaths present, persistent, 8–14 cm long, 5 times as long as wide, coriaceous, yellow, glabrous or pubescent, with grey hairs, glabrous on margins or hairy on margins, without auricles, glabrous on shoulders or setose on shoulders, shoulders with 1–8 mm long hairs. Culm-sheath ligule 0.5 mm high, entire. Culm-sheath blade linear or lanceolate, reflexed, 1–2.5 cm long, 1–2 mm wide, glabrous on surface. Leaves 3–6 per branch. Leaf-sheaths 2.4–3.5 cm long, mostly shorter than adjacent culm internode, pubescent. Leaf-sheath oral hairs setose, 1.5–4.5 mm long, pale. Ligule an eciliate membrane, 0.3 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1 cm long, petiole glabrous. Leaf-blades lanceolate, 4.5–13 cm long, 8–13 mm wide, fleshy. Leaf-blade venation with 6–8 secondary veins, with obscure cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Yunnan.

Yushania niitakayamensis (Hayata) P. C. Keng, *Acta Phytotax. Sin.* vi. 357 (1957).

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

TYPE from China. **Basionym or Replaced Name:** *Arundinaria niitakayamensis* Hayata, *Bot. Mag. (Tokyo)* 21(242): 49–50 (1907). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Taiwan: Ganzan, Mt. Morrison, 3000 m, Nov. 1905, *S. Nagasawa* 678 (HT: T?).

Illustrations (Books): C-C Hsu, *Taiwan Grasses* (1975) (712, Pl. 1483), S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 98).

Derivation (Clifford & Bostock 2007): *L. -ensis*, denoting origin. From Niitaka Yama, Taiwan, known as Yu Shan to the Chinese (see *Yushania*) and as Mt. Morrison to the English (see *morrisonensis*).

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 100–400 cm long, 5–30 mm diam., woody, with aerial roots from the nodes. Culm-internodes terete, thin-walled, 10–30 cm long. Lateral branches dendroid. Branch complement three or several. Culm-sheaths present, coriaceous, brown, antrorsely scabrous, pilose, hairy on margins, setose on shoulders. Culm-sheath blade linear, glabrous on surface. Leaves 3–10 per branch. Leaf-sheaths 2.5–5 cm long, glabrous on surface. Leaf-sheath oral hairs setose. Ligule an eciliate membrane, truncate or obtuse. Leaf-blade base with a brief petiole-like connection to sheath, petiole 0.1–0.2 cm long. Leaf-blades deciduous at the ligule, lanceolate, 4–18 cm long, 5–13 mm wide. Leaf-blade venation with 6–8 secondary veins, with distinct cross veins. Leaf-blade margins scabrous. Leaf-blade apex acuminate.

Inflorescence. Inflorescence comprising only a few spikelets, comprising 2–3 fertile spikelets, terminal and axillary. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

Fertile Spikelets. Spikelets comprising 2–7 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets linear, laterally compressed, 20–40 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 ovate, 4–6 mm long, herbaceous, without keels. Lower glume apex acute. Upper glume ovate, 4–6 mm long, herbaceous, without keels. Upper glume apex acuminate.

Florets. Fertile lemma ovate, 8–12 mm long, herbaceous, without keel, 7–9 -veined, more than 3-veined. Lemma apex acuminate. Palea 8–9 mm long, 8 -veined. Palea keels ciliate. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 3, obovate, 1.2–1.8 mm long, membranous, veined, ciliate. Anthers 3, 8 mm long. Stigmas 2(–3). Caryopsis with adherent pericarp.

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

Country /Province /State. Eastern Asia. Taiwan. **Malesia.** Philippines.

Yushania oblonga T.P. Yi, *J. Bamboo Res.*, 5(1): 52 (1986).

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

TYPE from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Wenshan Xian, 2600–300 m, 12 Dec. 1977, *T.P. Yi 77328* (HT: Herb. Forestry School of Sichuan Province).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 90).

Derivation (Clifford & Bostock 2007): *L. oblongus*, oblong. Culm-sheaths oblong.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 300–450 cm long, 10–20 mm diam., woody. Culm-internodes terete, thin-walled, 30–40 cm long, smooth, distally mealy. Lateral branches dendroid. Bud complement 1. Branch complement one or two or three or several. Culm-sheaths present, persistent, 10–17 cm long, coriaceous, glabrous, auriculate, setose on shoulders, shoulders with 5–10 mm long hairs. Culm-sheath ligule 1 mm high. Culm-sheath blade linear or lanceolate, erect. Leaves 3–7 per branch. Leaf-sheaths 8–9 cm long. Leaf-sheath oral hairs setose, 3–5 mm long. Ligule an eciliate membrane, pubescent on abaxial surface, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.7–0.9 cm long, petiole glabrous. Leaf-blades lanceolate, 14–17 cm long, 36–40 mm wide, fleshy. Leaf-blade venation with 14–16 secondary veins, with obscure cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Yunnan.

Yushania pachyclada T.P. Yi. *J. Bamboo Res.*, 5(1): 54 (1986).

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

TYPE from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Sichuan: Junlian Xian, 1700–1800 m, 5 June 1976, *T.P. Yi 76136* (HT: Herb. Forestry School of Sichuan Province).

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

Derivation (Clifford & Bostock 2007): *Gk. pachys*, thick; *klados*, stem. Culms robust.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 100–200 cm long, 3–10 mm diam., woody. Culm-internodes terete, thick-walled or solid, 20–30 cm long, smooth, distally glabrous. Lateral branches dendroid. Bud complement 1. Branch complement one. Culm-sheaths present, persistent, 5–9 cm long, coriaceous, pilose, with grey hairs or tawny hairs, without auricles, glabrous on shoulders. Culm-sheath ligule 1 mm high. Culm-sheath blade linear or lanceolate, reflexed, 0.4–2.1 cm long, 1–1.5 mm wide. Leaves 2–5 per branch. Leaf-sheaths 3.5–5.5 cm long. Leaf-sheath oral hairs lacking. Ligule an eciliate membrane, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 6–14 cm long, 11–20 mm wide, fleshy. Leaf-blade venation with 8–12 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Sichuan, Yunnan.

Yushania pantlingii (Gamble) R.B. Majumdarin & S. Karthikeyan. *Fl. Ind. Enumerat. - Monocot.*: 283: (1989).

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

TYPE from India. **Basionym or Replaced Name:** *Arundinaria pantlingii* Gamble, *Ann. Roy. Bot. Gard. (Calcutta)* 7: 129, t. 118 (1896). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Pantling's collectors s.n.*, India: Darjeeling Distr./ Sikkim border: Rechi La (K).

Recent Synonyms: *Sinarundinaria pantlingii* (Gamble) C.S. Chao & S.A. Renvoize, *Kew Bull.* 44(2): 359 (1989). *Semiarundinaria pantlingii* (Gamble) Nakai, *Journ. Arnold Arb.* 6: 151 (1925).

Illustrations (Books): H.J. Noltie, *The Grasses of Bhutan* (2000) (508, Fig. 6).

Derivation (Clifford & Bostock 2007): in honor of Robert Pantling (1857–1910) British botanist, who later worked in Calcutta.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 15–20 mm diam., woody. Culm-internodes terete, thin-walled, 18–20 cm long. Culm-nodes pubescent. Lateral branches dendroid. Culm-sheaths present, 25 cm long, smooth, hairy on margins, convex at apex, setose on shoulders. Culm-sheath ligule ciliolate. Culm-sheath blade linear, erect, 7–10 cm long, glabrous on surface. Leaf-sheaths striately veined, outer margin hairy. Leaf-sheath oral hairs setose. Ligule an eciliate membrane, pubescent on abaxial surface. Leaf-blade base with a brief petiole-like connection to sheath, petiole 0.5–0.7 cm long. Leaf-blades deciduous at the ligule, lanceolate or oblong, 12–18 cm long, 15–20 mm wide. Leaf-blade midrib evident. Leaf-blade venation with 8–10 secondary veins, with distinct cross veins. Leaf-blade surface scabrous, rough abaxially. Leaf-blade margins scabrous. Leaf-blade apex acuminate.

Inflorescence. Inflorescence a panicle, terminal and axillary. Panicle open, 10–15 cm long. Panicle branches capillary, flexuous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, filiform.

Fertile Spikelets. Spikelets comprising 6–10 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets linear, laterally compressed, 50 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes clavate, 7–8 mm long, eventually visible between lemmas, pubescent.

Glumes. Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture. Lower glume ovate, 5 mm long, herbaceous, without keels, 3–5 -veined. Lower glume margins ciliolate. Lower glume apex attenuate, mucronate. Upper glume ovate, 10 mm long, herbaceous, without keels, 3–5 -veined. Upper glume margins ciliolate. Upper glume apex acuminate, mucronate.

Florets. Fertile lemma ovate, 12 mm long, herbaceous, without keel, 7 -veined, more than 3-veined. Lemma midvein scabrous. Lemma lateral veins prominent. Lemma apex acuminate, mucronate. Palea 1 length of lemma, 5 -veined. Palea keels ciliolate. Palea apex dentate, 2 -fid, with excurrent keel veins. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 3, membranous, veined, ciliate. Anthers 3. Stigmas 3. Ovary glabrous. Caryopsis with adherent pericarp, oblong.

Distribution (TDWG). Continent. Tropical Asia.

Country /Province /State. Indian Subcontinent. Eastern Himalaya, Nepal.

TDWG4. Bhutan.

Yushania papillosa (W.T. Lin) W.T. Lin. *J. South China Agr. Univ.* 16(3): 49 (1995).

Regarded by K as a synonym (*Y. basihirsuta*).

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

TYPE from China. **Basionym or Replaced Name:** *Sinarundinaria papillosa* W.T. Lin, *J. South China Agr. Univ.* 14(3): 111–112 (1993). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Guangdong: Ruyuan, Wuzhi Shan, 24 Nov. 1992, *M.Y. Xiao 87143* (HT: CANT).

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

Derivation (Clifford & Bostock 2007): *L. papilla*, nipple; -osa, abundance. With papillae on the glumes or lemmas.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. China Southeast.

Yushania pauciramificans T.P. Yi. *Bull. Bot. Res. North-East. Forest. Inst.*, 8(4): 71 (1988).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Xiping Xian, 2510 m, 1 Sept. 1986, *T.P. Yi 86237* (HT: SCFI).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 96).

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, erect at the tip, 200–350 cm long, 6–12 mm diam., woody, 15–20 -noded. Culm-internodes terete, solid, 18–20 cm long, mid-green or purple, distally mealy. Culm-nodes swollen. Lateral branches dendroid, erect or ascending. Bud complement 1. Branch complement one or two or three or several. Culm-sheaths present, persistent, 1–4 cm long, 0.8–0.9 times as long as wide, coriaceous, hispid, with erect hairs, with grey hairs, hairy on margins, without auricles, setose on shoulders, shoulders with straight hairs, shoulders with 2–10 mm long hairs. Culm-sheath ligule 1–1.5 mm high, purple, entire. Culm-sheath blade linear or lanceolate, reflexed, 1–4 cm long, 1.5–3 mm wide, glabrous on surface. Leaves 2–5 per branch. Leaf-sheaths 2.5–7.5 cm long, glabrous on surface, outer margin glabrous. Leaf-sheath oral hairs setose, 3–9 mm long, pale. Ligule an

eciliate membrane, 0.5–1 mm long, purple, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.4–0.7 cm long, petiole glabrous. Leaf-blades lanceolate, 5.2–16 cm long, 15–28 mm wide, fleshy. Leaf-blade venation with 8–12 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Yunnan.

Yushania perrieri (A. Camus) D.Ohrnberger. *Bamboos of the World Intro.* 3: 15 (1996).

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

TYPE from Madagascar. **Basionym or Replaced Name:** *Arundinaria perrieri* A. Camus, *Bull. Mus. Natl. Hist. Nat.* 30: 395 (1924). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: "Madagascar: cimes volcaniques du massif de Manongarivo, vers 1000 m. d'altitude.", *Perrier de la Bâthie 11269* (HT: P).

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

Derivation (Clifford & Bostock 2007): in honor of Joseph Marie Henri Alfred Perrier de la Bbthie (1872–1958) French botanist.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms 400–700 cm long, 50–80 mm diam., woody. Culm-internodes terete. Lateral branches dendroid. Culm-sheaths present. Leaf-sheaths striately veined, glabrous on surface. Ligule an eciliate membrane. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades deciduous at the ligule, lanceolate, 9–10 cm long, 5–6 mm wide. Leaf-blade venation with 8 secondary veins, with distinct cross veins. Leaf-blade surface glabrous, hairless except near base. Leaf-blade margins scaberulous. Leaf-blade apex attenuate.

Inflorescence. Inflorescence a panicle. Panicle open, bearing few spikelets. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

Fertile Spikelets. Spikelets comprising 5 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 35 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes clavate, pubescent.

Glumes. Glumes two, persistent, similar, shorter than spikelet, similar to fertile lemma in texture. Lower glume ovate, 3 mm long, herbaceous, without keels, 7 -veined. Lower glume apex acute. Upper glume ovate, 5 mm long, herbaceous, without keels, 9 -veined. Upper glume lateral veins obscure. Upper glume apex acute.

Florets. Fertile lemma ovate, 12 mm long, herbaceous, without keel, 9 -veined, more than 3-veined. Lemma lateral veins obscure. Lemma surface glabrous. Lemma apex acuminate. Palea 9–10 mm long. Palea keels scaberulous, adorned above. Palea surface pubescent, hairy on back. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

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

Distribution (TDWG). Continent. Africa.

Country /Province /State. Western Indian ocean. Madagascar.

Yushania polytricha Hsueh & T.P. Yi. *J. Bamboo Res.*, 5(1): 58 (1986).

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

TYPE from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Kunming Shi, 1950 m, 20 Oct. 1978, *T.P. Yi 78191* (HT: Herb. Forestry School of Sichuan Province).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 88).

Derivation (Clifford & Bostock 2007): Gk. *polys*, several; *thrix*, hair. Auricles bearing abundant long hairs on their margins.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 100–200 cm long, 3–8 mm diam., woody. Culm-internodes terete, solid, 37 cm long, mid-green and purple, mottled, smooth, distally mealy. Lateral branches dendroid, ascending. Branch complement one or two or three or several. Culm-sheaths present, persistent, 7–10 cm long, coriaceous, hispid, auriculate, ciliate on shoulders, shoulders with straight hairs, shoulders with 2–4 mm long hairs. Culm-sheath ligule 1 mm

high. Culm-sheath blade linear or lanceolate, reflexed, 1.5–3.8 cm long, 1.5–3 mm wide, pubescent. Leaves 4–6 per branch. Leaf-sheaths 5.5–10 cm long, hispid. Leaf-sheath oral hairs setose, spreading, 2–5 mm long. Leaf-sheath auricles falcate. Ligule an eciliate membrane, 1 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.3–0.4 cm long, petiole pubescent. Leaf-blades lanceolate, 9–21 cm long, 10–25 mm wide, fleshy. Leaf-blade venation with 8–12 secondary veins, with obscure cross veins. Leaf-blade surface pubescent, hairy abaxially. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Yunnan.

Yushania punctulata T.P. Yi. *J. Bamboo Res.*, 5(1): 59 (1986).

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

TYPE from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Sichuan: Muchuan Xian, 1220–1500 m, 5 Dec. 1983, *T.P. Yi 83203* (HT: Herb. Forestry School of Sichuan Province).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 96).

Derivation (Clifford & Bostock 2007): *L. punctum*, small hole; *-ulus*, diminutive; *-ata*, possessing. Young culm surfaces marked with small purple blotches.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 100–180 cm long, 3–5 mm diam., woody. Culm-internodes terete, thick-walled or solid, 20–25 cm long, mid-green and purple, mottled, smooth, distally glabrous. Lateral branches suffrutescent. Bud complement 1. Branch complement one. Culm-sheaths present, persistent, 6–8 cm long, coriaceous, glabrous or hispid, with appressed hairs, without auricles, setose on shoulders. Culm-sheath ligule 0.5 mm high. Culm-sheath blade linear or lanceolate, reflexed, 0.8–1.3 cm long, 1–2 mm wide. Leaves 2–12 per branch. Leaf-sheaths 5–8 cm long. Leaf-sheath oral hairs scanty or lacking, erect, 1–6 mm long. Ligule an eciliate membrane, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.4–0.65 cm long. Leaf-blades lanceolate, 17–23 cm long, 15–27 mm wide, fleshy. Leaf-blade venation with 10–12 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Sichuan.

Yushania qiaojiaensis Hsueh & T.P. Yi. *J. Bamboo Res.*, 5(1): 35 (1986).

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

TYPE from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Quiaojia Xian, 3100 m, 1 April 1985, *Southwest Forestry College 85020* (HT: Herb. Forestry School of Sichuan Province).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 69 as *Yushania qiaojiaensis* var. *qiaojiaensis*).

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

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 30–60 cm long, 4 mm diam., woody. Culm-internodes terete, thick-walled, 11 cm long, striate, distally mealy. Lateral branches suffrutescent, erect. Branch complement several. Culm-sheaths present, deciduous, 6–7.2 cm long, chartaceous, hispid, with yellow hairs, without auricles, glabrous on shoulders. Culm-sheath ligule 0.5 mm high. Culm-sheath blade triangular, erect, 0.7 cm long, 1.5 mm wide, glabrous on surface. Leaves 2–3 per branch. Leaf-sheaths 1.2–3 cm long, glabrous on surface. Leaf-sheath oral hairs scanty, 1–2 mm long. Ligule an eciliate membrane, 0.5 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1 cm long. Leaf-blades lanceolate, 1–5 cm long, 3–6 mm wide, fleshy. Leaf-blade venation with 4–6 secondary veins, with distinct cross veins. Leaf-blade surface pilose, hairy adaxially. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. China South Central.
TDWG4. Yunnan.

Yushania rigidula (E.G. Camus) D.Ohrnberger. *Bamboos of the World Intro.* 4: 20: (1997).

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

TYPE from China. **Basionym or Replaced Name:** *Arundinaria rigidula* E.G.Camus, Lecomte, *Not. Syst.* 2: 243 (1912). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China, Tchen-keou-tu: Farges 943.

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

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

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms woody. Culm-internodes terete. Lateral branches dendroid. Culm-sheaths present. Leaf-sheaths reticulately veined. Ligule an eciliate membrane. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades deciduous at the ligule, lanceolate, 8–10 cm long, 15–20 mm wide. Leaf-blade venation with 8–10 secondary veins, with distinct cross veins. Leaf-blade margins scaberulous. Leaf-blade apex attenuate.

Inflorescence. Inflorescence a panicle. Panicle open. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, filiform, 2.5–10 mm long.

Fertile Spikelets. Spikelets comprising 3–4 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 6–15 mm long, breaking up at maturity, disarticulating below each fertile floret.

Glumes. Glumes two, persistent, similar, shorter than spikelet, similar to fertile lemma in texture. Lower glume ovate, herbaceous, without keels. Lower glume apex obtuse. Upper glume ovate, herbaceous, without keels, 3 -veined. Upper glume apex obtuse.

Florets. Fertile lemma lanceolate, 8–9 mm long, 2 mm wide, herbaceous, without keel, 7 -veined, more than 3-veined. Lemma margins ciliate. Lemma apex acuminate. Palea keels ciliolate. Apical sterile florets resembling fertile though underdeveloped.

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

Distribution (TDWG). Continent. Temperate Asia.

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

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

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

TYPE from India. **Basionym or Replaced Name:** *Arundinaria rolloana* Gamble, *Ann. Roy. Bot. Gard. (Calcutta)* 7: 24, t. 23 (1896). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Naga Hills: found by James Rollo in the Zullah Valley...in 1889, and by Sri Gopal Banerjee the same year, and sent by G. Mann, *Rollo s.n.* (HT: K).

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

Derivation (Clifford & Bostock 2007): *L. -ana*, indicating connection. In honor of James Rollo (fl. 1889) who collected in India.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, caespitose, clumped loosely. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 250–300 cm long, 5–7 mm diam., woody, rooting from lower nodes. Culm-internodes terete, thin-walled, 20–30 cm long. Culm-nodes swollen. Lateral branches suffrutescent. Culm-sheaths present, persistent, 10–15 cm long, 4 times as long as wide, coriaceous, hispid, with appressed hairs, hairy on margins, truncate at apex, auriculate, setose on shoulders. Culm-sheath blade linear or lanceolate, reflexed, 7.5–10 cm long. Leaf-sheaths striately veined, pilose. Leaf-sheath oral hairs ciliate. Leaf-sheath auricles falcate. Ligule an eciliate membrane, 0.5 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades lanceolate or oblong, 15–20 cm long, 15–40 mm wide, fleshy. Leaf-blade venation with 16–20 secondary veins, with distinct cross veins. Leaf-blade surface pubescent, sparsely hairy, hairy abaxially. Leaf-blade margins scabrous. Leaf-blade apex acute. Flowering specimens unknown.

Distribution (TDWG). Continent. Tropical Asia.
Country /Province /State. Indian Subcontinent. Assam.
TDWG4. Nagaland.

Yushania rugosa T.P. Yi. *J. Bamboo Res.*, 5(1): 61 (1986).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Guizhou: Wangmo Xian, 1500–1556 m, 26 Aug. 1981, *T.P. Yi 81118* (HT: Herb. Forestry School of Sichuan Province).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 95).

Derivation (Clifford & Bostock 2007): *L. ruga*, wrinkle; -osa, abundance. Usually with sculptured glumes.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 100–200 cm long, 5–8 mm diam., woody. Culm-internodes terete, thick-walled, 10–18 cm long, distally glabrous. Lateral branches dendroid, erect. Bud complement 1. Branch complement one. Culm-sheaths present, persistent, 4–6 cm long, coriaceous, glabrous or pilose, hairy at the base, without auricles, glabrous on shoulders or ciliate on shoulders, shoulders with 3–5 mm long hairs. Culm-sheath ligule 1 mm high. Culm-sheath blade lanceolate, reflexed, 0.5–2 cm long, 1.5–3 mm wide. Leaves 5–9 per branch. Leaf-sheaths 5.5–8.5 cm long. Leaf-sheath oral hairs scanty or lacking, 2–4 mm long. Ligule an eciliate membrane, 1–1.5 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.5–0.7 cm long. Leaf-blades lanceolate or oblong, 9–20 cm long, 30–50 mm wide, fleshy. Leaf-blade venation with 14–18 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. China South Central, China Southeast.

TDWG4. Guangxi. Guizhou.

Yushania straminea T.P. Yi. *J. Bamboo Res.*, 9(3): 37 (1990).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Yongshan Xian, 2300–2550 m, 2 Sept. 1988, *T.P. Yi 88165* (HT: Herb. Forestry School of Sichuan Province).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 87).

Derivation (Clifford & Bostock 2007): *L. straw-yellow*. Spikelets and attendant structures straw-colored.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, inclined at the tip, 200–400 cm long, 6–10 mm diam., woody. Culm-internodes terete, thick-walled, 18–20 cm long, distally mealy. Lateral branches dendroid, erect. Bud complement 1. Branch complement one or two or three. Culm-sheaths present, persistent, 0.3–0.4 length of internode, coriaceous, hispid, hairy above, with erect hairs, with grey hairs, hairy on margins, triangular at apex, auriculate, setose on shoulders, shoulders with curved hairs, shoulders with 6–20 mm long hairs. Culm-sheath ligule 1–2 mm high. Culm-sheath blade linear or lanceolate, spreading, 1.2–6 cm long, 3–12 mm wide. Leaves 3–9 per branch. Leaf-sheaths 2.2–8 cm long, glabrous on surface, outer margin glabrous. Leaf-sheath oral hairs setose, spreading. Leaf-sheath auricles falcate. Ligule an eciliate membrane, 1–2 mm long, obtuse. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades linear or lanceolate, 5.5–10 cm long, 10–26 mm wide, fleshy. Leaf-blade venation with 6–12 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Yunnan.

Yushania suijiangensis T.P. Yi. *J. Bamboo Res.*, 9(3): 40 (1990).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Suijiang Xian, 1300–1440 m, 23 Aug. 1988, *T.P. Yi 88153* (HT: Herb. Forestry School of Sichuan Province).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 87).

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

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 100–200 cm long, 3–6 mm diam., woody. Culm-internodes terete, solid, 14–17 cm long, striate, distally mealy. Culm-nodes flush with internodes or swollen. Lateral branches dendroid, erect or ascending. Bud complement 1. Branch complement one or two or three. Culm-sheaths present, persistent, 0.3–0.5 length of internode, coriaceous, hispid, with grey hairs or tawny hairs, hairy on margins, without auricles, glabrous on shoulders. Culm-sheath ligule 0.5 mm high. Culm-sheath blade linear or lanceolate, reflexed, 0.5–2 cm long, 1–1.5 mm wide. Leaves 3–11 per branch. Leaf-sheaths 4.5–6 cm long, glabrous on surface, outer margin hairy. Leaf-sheath oral hairs scanty or lacking. Ligule an eciliate membrane, 1 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 4.5–17 cm long, 10–28 mm wide, fleshy. Leaf-blade venation with 8–16 secondary veins, with obscure cross veins. Leaf-blade surface pubescent. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Yunnan.

Yushania tenuicaulis T.P. Yi & J.Y. Shi. *Bull. Bot. Res., Harbin.*

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Guizhou: Guiyang, Erguozhai, Guizhou Acad. Forestry Bamboo Garden, 1160 m, 4 Nov. 2006, *T.P. Yi 06089* (HT: SIFS = SAUD)

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

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, caespitose, clumped loosely. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, nodding at the tip, 100–150 cm long, 2.5–4 mm diam., woody. Culm-internodes terete, thick-walled, 12–17 cm long, distally glabrous. Lateral branches suffrutescent. Bud complement 1. Branch complement one, as thick as stem. Culm-sheaths present, persistent, 0.33–0.5 length of internode, coriaceous, purple, glabrous or puberulous, hairy on margins, without auricles, ciliate on shoulders, shoulders with 1–3 mm long hairs. Culm-sheath ligule 0.5 mm high, purple. Culm-sheath blade linear or lanceolate, erect or reflexed, 0.5–1.2 cm long, 1–2 mm wide. Leaves 4–5 per branch. Leaf-sheath oral hairs setose, 3–4 mm long. Leaf-sheath auricles absent. Ligule an eciliate membrane, 0.5 mm long, purple, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.2 cm long, petiole glabrous. Leaf-blades lanceolate, 12–15 cm long, 12–15 mm wide. Leaf-blade venation with 8–10 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

Guizhou.

Yushania tessellata (Holtum) S. Dransfield. *Kew Bull.*, 37(4): 678: (1983).

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

TYPE from Sabah. **Basionym or Replaced Name:** *Racemobambos tessellata* Holtum, *Gard. Bull. Straits Settle.* 26(2): 211 (1973). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *Holtum 46*, 17 Nov 1972, Borneo: Sabah: Mt. Kinabalu (K).

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

Derivation (Clifford & Bostock 2007): *L. tessella*, little tile; -ata, possessing. Pattern of veins tile-like on the leaf-sheath.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, caespitose, clumped loosely. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 200–300 cm long, 10–17 mm diam., woody, without nodal roots or with root thorns from the nodes. Culm-internodes terete, thin-walled, 30–40 cm long, yellow or light green, smooth, distally glabrous. Culm-nodes with distinct supra-nodal ridge. Lateral branches dendroid, intravaginal.

Branch complement several, in a horizontal line, with subequal branches. Culm-sheaths present, 8–18 cm long, 2–3 times as long as wide, green, smooth, glabrous or hispid, without auricles, ciliate on shoulders. Culm-sheath ligule 2–3 mm high, dentate. Culm-sheath blade lanceolate, erect or reflexed, 0.7–6 cm long, 3 mm wide, glabrous on surface or pubescent. Leaf-sheaths glabrous on surface. Leaf-sheath oral hairs ciliate. Ligule an eciliate membrane. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 10–16 cm long, 10–20 mm wide. Leaf-blade venation with distinct cross veins. Leaf-blade surface glabrous.

Inflorescence. Inflorescence a panicle. Panicle open, ovate, 7–15 cm long. Panicle axis glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 2–3 mm long.

Fertile Spikelets. Spikelets comprising 5–10 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets linear, laterally compressed, 20–50 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 5 mm long.

Glumes. Glumes persistent, similar, shorter than spikelet.

Florets. Fertile lemma ovate, 5 mm long, without keel, more than 3-veined. Lemma surface glabrous. Lemma margins ciliate. Palea keels ciliate. Apical sterile florets resembling fertile though underdeveloped.

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

Distribution (TDWG). Continent. Tropical Asia.

Country /Province /State. Malaysia. Borneo.

Yushania uniramosa Hsueh & T.P. Yi. *J. Bamboo Res.*, 5(1): 64 (1986).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Guizhou: Zunyi Xian, 1300–1600 m, 1 Aug. 1981, *T.P. Yi 81096* (HT: Herb. Forestry School of Sichuan Province).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 95).

Derivation (Clifford & Bostock 2007): L. unus, one; ramus, branch; -osa, abundance. Culms with one branch per node.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect or geniculately ascending, 60–160 cm long, 3–5 mm diam., woody. Culm-internodes terete, thick-walled or solid, 15 cm long, distally glabrous. Lateral branches suffrutescent. Bud complement 1. Branch complement one. Culm-sheaths present, persistent, 5–7 cm long, coriaceous, glabrous, without auricles, glabrous on shoulders. Culm-sheath ligule 0.5 mm high. Culm-sheath blade linear or lanceolate, reflexed, 0.4–2 cm long, 1–3 mm wide. Leaves 6–11 per branch. Leaf-sheaths 5.5–19 cm long, glabrous on surface. Leaf-sheath oral hairs lacking. Ligule an eciliate membrane, 0.5–1 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.2–0.4 cm long. Leaf-blades lanceolate, 11–22 cm long, 15–26 mm wide, fleshy. Leaf-blade venation with 10–14 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Guizhou.

Yushania varians T.P. Yi. *J. Bamboo Res.*, 5(1): 38 (1986).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Jiangxi: Lu Shan, 1400 m, 22 Dec. 1976, *D.B. Yi 76358* (HT: Herb. Forestry School of Sichuan Province).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 75).

Derivation (Clifford & Bostock 2007): L. vario, diversify. Variable in some respect.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 100–200 cm long, 3–8 mm diam., woody. Culm-internodes terete, thick-walled, 8–15 cm long, distally mealy. Lateral branches dendroid, erect or ascending. Bud complement 1. Branch complement one or two or three or several. Culm-sheaths present, persistent, 8–12 cm long, coriaceous, yellow or brown, hispid, with appressed hairs, with tawny hairs, without auricles, glabrous on shoulders. Culm-sheath ligule 1–1.5 mm high. Culm-sheath blade linear or lanceolate, erect, 0.8–2.1 cm long, 1.5–2.2 mm wide. Leaves 2–7 per branch.

Leaf-sheaths 2.5–4.2 cm long, glabrous on surface. Leaf-sheath oral hairs setose. Leaf-sheath auricles absent or erect. Ligule an eciliate membrane, 1 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.15–0.2 cm long. Leaf-blades linear or lanceolate, 6–11.5 cm long, 8–12 mm wide, fleshy. Leaf-blade venation with 6–10 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. China Southeast.

TDWG4. Jiangxi.

Yushania velutina Demoly. *Acta Bot. Gallica*153(3): 337 (2006).

TYPE from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Zhongdian, Haba Shan: Chapon.

Yushania vigens T.P. Yi. *J. Bamboo Res.*, 5(1): 40 (1986).

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

TYPE from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Baoshan Xian, 1950–2500 m, 10 Aug. 1983, *D.B. Yi 83133* (HT: Herb. Forestry School of Sichuan Province).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 65).

Derivation (Clifford & Bostock 2007): *L. vigeo*, thrive. Abundantly branching from lower culm nodes.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 250–550(–700) cm long, 12–30 mm diam., woody. Culm-internodes terete, solid, 28 cm long, distally glabrous. Lateral branches dendroid, ascending or spreading. Bud complement 1. Branch complement several. Culm-sheaths present, persistent, 16–34 cm long, 2 times as long as wide, coriaceous, yellow or brown, pubescent, with tawny hairs, auriculate, setose on shoulders. Culm-sheath blade linear or lanceolate, erect, 10 cm long, 3–4 mm wide. Leaves 3–5 per branch. Leaf-sheaths 3.8–4.7 cm long, glabrous on surface. Leaf-sheath oral hairs setose, 4–9 mm long. Ligule an eciliate membrane, 0.5 mm long, obtuse. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.2–0.3 cm long. Leaf-blades linear or lanceolate, 8.5–19 cm long, 10–16 mm wide, fleshy. Leaf-blade venation with 10 secondary veins, with obscure cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Yunnan.

Yushania violascens (Keng) T.P. Yi. *J. Bamboo Res.*, 5(1): 45 (1986).

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

TYPE from China. **Basionym or Replaced Name:** *Arundinaria violascens* Keng, *J. Wash. Acad. Sci.* 26(10): 396 (1936). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: mountains south of Likang, near Hochin and Chuiho, 25–28 May 1922, *J.F. Rock 4082* (HT: US-1214328).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 70).

Derivation (Clifford & Bostock 2007): *L. violesco*, become violet. Anthers, stigmas or glumes blue to purple.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Butt sheaths absent. Culms woody. Culm-internodes terete, 14 cm long. Lateral branches dendroid. Culm-sheaths present. Leaves 4–6 per branch. Leaf-sheaths glabrous on surface or puberulous. Leaf-sheath oral hairs ciliate. Ligule an eciliate membrane, 0.3–1 mm long, truncate. Leaf-blade base with a brief petiole-like connection to sheath. Leaf-blades lanceolate, involute, 2.5–5 cm long, 3–5 mm wide. Leaf-blade venation with distinct cross veins. Leaf-blade margins scaberulous.

Inflorescence. Inflorescence composed of racemes, subtended by a spatheole, embraced at base by subtending leaf. Racemes 1, single, 4–7 cm long, bearing 3–7 fertile spikelets on each. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 4–14 mm long, smooth.

Fertile Spikelets. Spikelets comprising 5–9 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets linear, laterally compressed, 27–40 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 4 mm long, pubescent, hairy above. Floret callus pilose. Floret callus hairs 1 mm long.

Glumes. Glumes persistent, similar, shorter than spikelet. Lower glume lanceolate, 5–7 mm long, chartaceous, without keels, 3–5 -veined. Lower glume surface glabrous or puberulous, hairy above. Lower glume apex acuminate. Upper glume lanceolate, 7–11 mm long, chartaceous, without keels, 7–9 -veined. Upper glume surface glabrous or puberulous, hairy above. Upper glume apex acuminate.

Florets. Fertile lemma lanceolate or oblong, 12–15 mm long, chartaceous, without keel, 9 -veined, more than 3-veined. Lemma lateral veins with cross-veins. Lemma surface puberulous. Lemma apex acuminate or attenuate. Palea 9–10 mm long. Palea keels ciliolate, adorned above. Palea surface puberulous. Palea apex dentate, 2 -fid. Apical sterile florets resembling fertile though underdeveloped.

Flower and Fruit. Lodicules 3, 2–2.5 mm long, veined, ciliate. Anthers 3, 5–6 mm long, yellow. Stigmas 3. Ovary glabrous. Caryopsis with adherent pericarp.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Sichuan, Yunnan.

Yushania wardii (Bor) D.Ohrnberger. *Bamboos of the World Intro.* 3: 15 (1996).

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

TYPE from Myanmar. **Basionym or Replaced Name:** *Arundinaria wardii* Bor, *Kew Bull.* 12(3): 418 (1958). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Burma: Hills east of the Nam Tamai, 27.50N 97.50 E, 2500–3000 m, 18 Aug 1937, *Kingdom-Ward 12966* (HT: BM).

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

Derivation (Clifford & Bostock 2007): in honor of Francis Kingdon-Ward (1885–1958) English botanist.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms 200–250 cm long, woody. Culm-internodes terete, solid, yellow. Lateral branches dendroid. Culm-sheaths present. Leaf-sheaths striately veined, smooth, glabrous on surface. Leaf-sheath oral hairs setose, 20–25 mm long. Leaf-sheath auricles falcate. Ligule an eciliate membrane. Leaf-blade base with a brief petiole-like connection to sheath, petiole pubescent. Leaf-blades deciduous at the ligule, lanceolate, 10–15 cm long, 9–18 mm wide, mid-green and glaucous, discolourous with last colour beneath. Leaf-blade venation with distinct cross veins. Leaf-blade surface smooth, glabrous. Leaf-blade margins scabrous. Leaf-blade apex attenuate, filiform.

Inflorescence. Inflorescence a panicle. Panicle open, ovate, 3–9 cm long, 4 cm wide. Panicle axis glabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

Fertile Spikelets. Spikelets comprising 2–3 fertile florets, with diminished florets at the apex. Spikelets of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets linear, laterally compressed, 20–25 mm long, breaking up at maturity, disarticulating below each fertile floret. Rhachilla internodes 2–6 mm long, pilose, hairy above.

Glumes. Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture. Lower glume linear, 2–5 mm long, herbaceous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume surface smooth, glabrous. Lower glume apex acuminate. Upper glume elliptic, 7–8 mm long, herbaceous, without keels, 3 -veined. Upper glume surface smooth, glabrous. Upper glume apex acuminate, awned, 1 -awned, awn 1–1.5 mm long.

Florets. Fertile lemma elliptic, 9–11 mm long, 3 mm wide, herbaceous, keeled, 5–7 -veined, more than 3-veined. Lemma midvein scabrous. Lemma lateral veins with cross-veins. Lemma surface puberulous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–1.5 mm long overall. Palea 1 length of lemma. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped.

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

Distribution (TDWG). Continent. Tropical Asia.

Country /Province /State. Indo-China. Myanmar.

Yushania weixiensis T.P. Yi. *J. Bamboo Res.*, 5(1): 42 (1986).

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

TYPE from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Yunnan: Weixi Xian, 2200–2300 m, 23 Oct. 1977, *D.B. Yi 77256* (HT: Herb. Forestry School of Sichuan Province).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 69).

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

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, caespitose. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 100–200 cm long, 3–10 mm diam., woody. Culm-internodes terete, thick-walled, 20–25 cm long, striate, distally pubescent. Lateral branches dendroid, erect. Branch complement several, thinner than stem. Culm-sheaths present, persistent, 6–11 cm long, coriaceous, glabrous or pubescent, without auricles, glabrous on shoulders. Culm-sheath ligule 0.5 mm high. Culm-sheath blade linear or lanceolate, reflexed, 3.5–25 cm long, 1–1.5 mm wide. Leaves 3–5 per branch. Leaf-sheaths 1.2–2.7 cm long, glabrous on surface. Leaf-sheath oral hairs ciliate, 1–2(–4) mm long. Leaf-sheath auricles falcate. Ligule an eciliate membrane, 1 mm long. Collar with external ligule. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole glabrous. Leaf-blades lanceolate, 3.4–7 cm long, 3–6 mm wide, fleshy. Leaf-blade venation with 4–6 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

TDWG4. Yunnan.

Yushania wuyishanensis Q.F. Zheng & K.F. Huang. *Acta Phytotax. Sin.*, 22(3): 219 (1984).

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

TYPE from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Fujian: Jianyang, Wuyi Shan, Zhumugang, 1780 m, *Z.J. Huang & J.Y. He, 123* (HT: FJFC).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 93).

Derivation (Clifford & Bostock 2007): *L. -ensis*, denoting origin. From Wuyi Shan, Fujian Province, China.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo, culms solitary. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 400 cm long, 10 mm diam., woody. Culm-internodes terete, thick-walled, 20–30 cm long, distally mealy. Culm-nodes swollen. Lateral branches dendroid. Branch complement several. Culm-sheaths present, persistent or tardily deciduous, coriaceous, yellow or purple, hispid, hairy at the base, with reflexed hairs, with purple hairs, hairy on margins, without auricles, setose on shoulders, shoulders with 3–5 mm long hairs. Culm-sheath ligule 1–1.5 mm high, ciliolate. Culm-sheath blade linear or lanceolate, erect, 1–1.5 cm long. Leaves 6–8 per branch. Leaf-sheath oral hairs setose, 5–7 mm long. Ligule an eciliate membrane, 1 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath. Leaf-blades lanceolate, 10–13 cm long, 11–12 mm wide, fleshy. Leaf-blade venation with 8–10 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. China South Central, China Southeast.

TDWG4. Fujian.

Yushania xizangensis T.P. Yi. *J. Bamboo Res.*, 2(2): 50 (1983).

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

TYPE from China. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: China: Xizang: Cona, about 2400 m, *Gu Luo 1* (HT: SFS).

Illustrations (Books): S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 80).

Derivation (Clifford & Bostock 2007): *L. -ensis*, denoting origin. From Xizang Xia, China.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 450 cm long, 10–20 mm diam., woody. Culm-internodes terete, thin-walled, 25–40 cm long, distally glabrous or pubescent. Culm-nodes flush with internodes. Lateral branches dendroid, erect. Branch complement many. Culm-sheaths present, persistent or tardily deciduous, 15–25 cm long, 4 times as long as

wide, coriaceous, hispid, with dark brown hairs, without auricles, setose on shoulders. Culm-sheath ligule 1 mm high. Culm-sheath blade linear or lanceolate, deciduous, reflexed. Leaves 2–4 per branch. Leaf-sheath oral hairs setose, curly, 2–4 mm long. Ligule an eciliate membrane, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole 0.1–0.15 cm long, petiole pubescent. Leaf-blades lanceolate, 3–11 cm long, 5–8 mm wide, fleshy. Leaf-blade venation with 6–8 secondary veins, with distinct cross veins. Leaf-blade surface scabrous, glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China. China South Central, Tibet, Xinjiang.

Yushania yadongensis T.P. Yi. *J. Bamboo Res.*, 4(2): 33 (1985).

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

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Xizang: Yadong Xian, forests, pastures, 19 May 1978, *Cidan Langjoe* 2 (HT: Herb. Forestry School, Sichuan Prov.).

Illustrations (Books): H.J. Noltie, *The Grasses of Bhutan* (2000) (508, Fig. 6), S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 71).

Derivation (Clifford & Bostock 2007): *L. -ensis*, denoting origin. From Yadong Xian, the place name of Xizang Autonomous Region, People's Republic of China.

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, 400 cm long, 10–20 mm diam., woody. Culm-internodes terete, thin-walled, 21–34 cm long, striate, distally mealy. Lateral branches dendroid. Branch complement several. Culm-sheaths present, tardily deciduous, 9–20 cm long, coriaceous, glabrous, without auricles, glabrous on shoulders. Culm-sheath ligule 0.5 mm high. Culm-sheath blade linear or lanceolate, reflexed, 1.2–5.5 cm long, 1.5–2.5 mm wide, glabrous on surface. Leaves 2–3 per branch. Leaf-sheaths pubescent. Leaf-sheath oral hairs setose, 3–4 mm long. Ligule an eciliate membrane, 0.5 mm long, truncate. Leaf-blade base cuneate, with a brief petiole-like connection to sheath, petiole pubescent. Leaf-blades lanceolate, 3.5–6 cm long, 5–8 mm wide, fleshy. Leaf-blade venation with 4 secondary veins, with distinct cross veins. Leaf-blade surface pilose. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

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

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

TDWG4. Bhutan, Sikkim.

Yushania yongdeensis T.P. Yi & J.Y. Shi. *Bull. Bot. Res., Harbin* 28(2): 129–130, f. 1. (2008).

TYPE from China. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: China: Yunnan: Yongde, Dagan Shan, Nature reserve management station, 2400–2600 m, 26 Sept. 2007, *T.P. Yi 07030* (HT: SIFS=SAUD).

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

Classification. Subfamily Bambusoideae. Tribe: Bambuseae.

Habit, Vegetative Morphology. Perennial, woody bamboo. Rhizomes short, pachymorph. Butt sheaths absent. Culms erect, erect at the tip, 500–800 cm long, 20–55 mm diam., woody. Culm-internodes terete, thick-walled, (15–)20–28(–30) cm long, smooth. Culm-nodes swollen, pubescent. Lateral branches dendroid. Bud complement 1. Branch complement several, in a horizontal line, with subequal branches. Culm-sheaths present, persistent, chartaceous, green and purple, distinctly mottled with last colour, hispid, with appressed hairs, with tawny hairs, hairy on margins, without auricles, setose on shoulders, shoulders with straight hairs, shoulders with 2–10 mm long hairs. Culm-sheath ligule 1–1.5 mm high, purple, entire. Culm-sheath blade linear or triangular, erect, 0.6–7.5 cm long, 1.3–4 mm wide, glabrous on surface. Leaves 3–5(–9) per branch. Leaf-sheaths 2.8–4 cm long, glabrous on surface. Leaf-sheath oral hairs setose, erect, 3–6 mm long. Ligule an eciliate membrane, 1 mm long, purple, truncate. Leaf-blade base with a brief petiole-like connection to sheath, petiole 0.1–0.2 cm long. Leaf-blades linear or lanceolate, (6–)9–16.5 cm long, 11–13 mm wide, fleshy, light green and dark green, discolorous with last colour beneath. Leaf-blade venation with 8–10 secondary veins, with distinct cross veins. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Flowering specimens unknown.

Distribution (TDWG). Continent. Temperate Asia.

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

Yvesia madagascariensis A.Camus. *Bull. Soc. Bot. France*, lxxiii. 690 (1927).

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

TYPE from Madagascar. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: ST: *Perrier de la Bathie 13010*, Madagascar occid: rocailles calcaires de Majunga ST: *Perrier de la Bathie 11055*, Madagascar: baie de Bombetoke.

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

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

Classification. Subfamily Panicoideae. Tribe: Paniceae. Subtribe MELINIDINAE.

Habit, Vegetative Morphology. Annual. Culms erect or geniculately ascending, 15–20 cm long. Ligule a fringe of hairs. Leaf-blades lanceolate, 1–2 cm long, 3 mm wide. Leaf-blade margins tuberculate-ciliate.

Inflorescence. Inflorescence composed of racemes. Racemes 3–5, digitate, flexuous, paucilateral, 1–2 cm long, bearing few fertile spikelets, bearing 5–6 fertile spikelets on each. Rhachis subterete. Spikelet packing adaxial, distant, irregular. Spikelets ascending, solitary. Fertile spikelets pedicelled. Pedicels present, oblong, 0.4–0.8 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 lanceolate, dorsally compressed, acute, 2.5 mm long, falling entire.

Glumes. Glumes one the lower absent or obscure, reaching apex of florets, thinner than fertile lemma. Upper glume lanceolate, 2.5 mm long, membranous, without keels. Upper glume surface pilose. Upper glume apex acute.

Florets. Basal sterile florets 1, barren, without significant palea. Lemma of lower sterile floret similar to upper glume, lanceolate, 2.5 mm long, 1 length of spikelet, membranous, pilose, acute. Fertile lemma oblong, 1.8–2 mm long, coriaceous, pallid, shiny, without keel. Lemma margins involute. Lemma apex acute, mucronate. Palea coriaceous.

Flower and Fruit. Anthers 3. Caryopsis with adherent pericarp, ellipsoid, 1.2 mm long.

Distribution (TDWG). Continent. Africa.

Country /Province /State. Western Indian ocean. Madagascar.

Zea diploperennis H.H. Iltis, J.F. Doebley & R. Guzman. *Science*, 203(4376): 186 (1979).

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

TYPE from Mexico. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *H.H. Iltis, Doebley, Guzman & Lasseigne 450*, 22 Sep 1978, Mexico: Jalisco: La Ventana, Sierra de Manantlán (IBUG; IT: B, BH, BM, CHAPA, ENCB, F, GH, ILL, K, L, LIL, MEXU, MICH, MO, NA, P, TAES, TEX, UC, UG-42348, US-3007419, US-3007420, W, WIS, XAL).

Illustrations (Books): M.E.Barkworth et al, *Flora of North America north of Mexico Vol 25 Poaceae*, part 2 (2003) (700).

Derivation (Clifford & Bostock 2007): Gk. diploos, double; L. perenne, perennial. Diploid with respect to chromosome complement and perennial with respect to habit.

Classification. Subfamily Panicoideae. Tribe: Andropogoneae. Subtribe Zea+ Tripsacum clade.

Habit, Vegetative Morphology. Perennial, caespitose. Rhizomes short (internodes 0.2–0.6cm), scaly. Culms erect, robust, 100–250 cm long, 10–20 mm diam. Culm-internodes solid. Leaves cauline. Ligule an eciliate membrane, 1–2 mm long. Leaf-blade base cordate. Leaf-blades linear or lanceolate, 40–80 cm long, 40–50 mm wide. Leaf-blade surface glabrous. Monoecious, with male and female spikelets in different inflorescences.

Inflorescence. Inflorescence composed of racemes, axillary, subtended by a spatheole, enclosed. Spatheole elliptic, herbaceous. Racemes 1, single, bilateral, bearing 5–10 fertile spikelets on each. Rhachis fragile at the nodes, subcylindrical and excavated. Rhachis internodes inflated, 6–8.2 mm long. Rhachis internode tip oblique, flat. Spikelets sunken, solitary. Fertile spikelets sessile. Male spikelets sessile or sessile and pedicelled, 2 in a cluster. Pedicels present, (male) 1.5–3 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 oblong, laterally compressed, 4–6 mm long, falling entire, deciduous with accessory branch structures.

Glumes. Glumes dissimilar, reaching apex of florets, firmer than fertile lemma. Lower glume oblong, 1 length of spikelet, indurate, without keels. Upper glume elliptic, membranous, without keels.

Florets. Basal sterile florets 1, barren, with palea or without significant palea. Lemma of lower sterile floret membranous. Fertile florets female. Fertile lemma elliptic, hyaline, without keel.

Flower and Fruit. Anthers 3. Stigmas 2, terminally exerted, papillose. Styles connate below. Caryopsis with adherent pericarp.

Male inflorescence terminal, unlike female, of subdigitate racemes or of racemes along a central axis. Male spikelets distinct from female, with free pedicels, 2 flowered, elliptic, 8.5–11.5 mm long. Male spikelet glumes 2, winged, muticous. Male spikelet lemma muticous.

$N = 10$ (2 refs TROPICOS). $2n = 20$ (1 ref TROPICOS).

Distribution (TDWG). Continent. North America, South America.

Country /Province /State. Hawaii (*). **Mexico.** Southwest Mexico. **Western South America.** Bolivia, Colombia.

TDWG4. Jalisco.

Zea luxurians (Durieu & Aschers.) R.M. Bird. *Taxon*, 27(4): 363 (1978).

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

TYPE from Guatemala. **Basionym or Replaced Name:** *Euchlaena luxurians* Durieu & Asch., *Sitzungsber. Ges. Naturf. Freunde Berlin* 1876: 164 (1876). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *Scweinfurth s.n.*, Guatemala (K; ILT: P). LT designated by Iltis & Doebly, *Amer. J. Bot.* 67: 1000 (1980).

Illustrations (Books): M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 25 *Poaceae*, part 2 (2003) (700).

Classification. Subfamily Panicoideae. Tribe: Andropogoneae. Subtribe Zea+ Tripsacum clade.

Habit, Vegetative Morphology. Annual. Culms erect, 200–300 cm long. Culm-internodes solid. Leaves cauline. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 3–3.5 mm long. Leaf-blades lanceolate, 20–80 cm long, 30–80 mm wide. Leaf-blade surface glabrous. Monoecious, with male and female spikelets in different inflorescences.

Inflorescence. Inflorescence composed of racemes, axillary, subtended by a spatheole, enclosed. Spatheole elliptic, herbaceous. Racemes 1, single, bilateral, 5–9 cm long. Rhachis fragile at the nodes, subcylindrical and excavated. Spikelet packing 2-rowed. Rhachis internodes inflated (trapezoidal), 6.5–10 mm long. Rhachis internode tip oblique, cupuliform. Spikelets sunken, solitary. Fertile spikelets sessile. Male spikelets sessile and pedicelled, 2 in a cluster. Pedicels present, (male) 3–5 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 oblong, laterally compressed, falling entire, deciduous with accessory branch structures.

Glumes. Glumes dissimilar, reaching apex of florets, firmer than fertile lemma, shiny. Lower glume oblong, 1 length of spikelet, coriaceous, without keels. Upper glume elliptic, membranous, without keels.

Florets. Basal sterile florets 1, barren, with palea or without significant palea. Lemma of lower sterile floret membranous. Fertile florets female. Fertile lemma elliptic, hyaline, without keel.

Flower and Fruit. Anthers 3. Stigmas 2, terminally exerted, papillose. Caryopsis with adherent pericarp.

Male inflorescence terminal, unlike female, of racemes along a central axis. Male spikelets distinct from female, with free pedicels, 2 flowered, elliptic, 8–10.5 mm long. Male spikelet glumes 2, winged (narrowly at apex), muticous. Male spikelet lemma muticous.

$2n = 20$ (1 ref TROPICOS).

Distribution (TDWG). Continent. North America, South America.

Country /Province /State. **Mexico.** Southeast Mexico. **Mesoamerica, Northern South America, Western South America.** Guatemala, Honduras, Nicaragua. French Guiana. Colombia.

Chiapas.

Zea mays L. *Sp. Pl.* 971. (1753).

Accepted by: R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), D.Sharp, D. & B.K.Simon, *AusGrass* (2002), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), J.F.Veldkamp, *Poaceae ms (Flora Malesiana)*, N.L.Bor, *Grasses of Burma, Ceylon, India and Pakistan* (1960), T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983), T.Koyama, *Grasses of Japan and its neighboring regions* (1987), W.D.Clayton & N.Snow, *Key to Pacific Grasses* (2010).

TYPE from America. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *Anon.*, America (LINN-1096.1). LT designated by Iltis & Doebly, *Amer. J. Bot.* 67: 1001 (1980).

Illustrations (Books): G.Hegi, *Flora von Mitteleuropa* 1 (1909), N.N.Tsvelev, *Grasses of the Soviet Union* (1983) (1039 (689), Pl.16), H.Jacques-Felix, *Les Graminees d'Afrique tropicale* (1962) (317, Fig. 254), L.K.A. Chippindall, *Grasses and Pastures of South Africa* (1955) (525, Fig. 420), S.Phillips, *Poaceae* (Gramineae) in I.Hedberg & S.Edwards, *Flora of Ethiopia and Eritrea* (1995) (367, Fig 153), N.L.Bor, *Gramineae* in *Flora of Iraq* (1968) (559, Pl. 215), C-C Hsu, *Flora of Taiwan*, Vol 5 (1978) (788), C-C Hsu, *Taiwan Grasses* (1975), K.M.Matthew, Further Illustrations on the *Flora of Tamilnadu Carnatic* (1988) (Pl. 834), H.J.Noltie, *The Grasses of Bhutan* (2000) (835, Fig. 64), H.Duistermaat, *Field Guide to the Grasses of Singapore* (2005) (137, Fig.143), M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 25 *Poaceae*, part 2 (2003) (702 as subspecies *mays* & *parviglumis* & *mexicana* & *huehuetenangensis*), E.G.Nicora, *Los Generos de Gramineas de America Austral* (1987) (564, Fig. 206), L.B. Smith, D.C. Wasshausen, R.M. Klein *Flora Illustrada Catarinensis Gramineas* (1981–1982) (1326, Fig. 263), A.Burkat, *Flora Illustrada de Entre Rios (Argentina)*, Pt II, Gramineas (1969) (510, Fig 214), B.Rosengurt, *Gramineas Uruguayas I* (1970) (275, Fig. 113), K.M.Matthew, Further Illustrations on the *Flora of Tamilnadu Carnatic* (1988) (pl.834), R.Pilger, *Die Natürlichen Pflanzenfamilien* 14e (1940) (106, Fig. 195), S-L Chen et al, *Flora of China*, Illustrations, *Poaceae* (2007) (Fig. 904).

Illustrations (Journals): *Ruizia* (13:461 Fig 62a-e (1993)).

Images: D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002);, L.Boulos, *Flora of Egypt* 4 (2005);.

Derivation (Clifford & Bostock 2007): a name of Caribbean origin for *Zea mays*.

Classification. Subfamily Panicoideae. Tribe: Andropogoneae. Subtribe Zea+ Tripsacum clade.

Habit, Vegetative Morphology. Annual. Culms erect, 200–300 cm long, with prop roots. Culm-internodes solid. Leaves cauline. Ligule an eciliate membrane. Leaf-blades linear or lanceolate, 25–100 cm long, 20–100 mm wide. Monoecious, with male and female spikelets in different inflorescences.

Inflorescence. Inflorescence composed of racemes, axillary, subtended by a spatheole, enclosed. Spatheole elliptic, herbaceous. Racemes 1, single, multilateral. Rhachis enlarged into a woody cob. Spikelet packing crowded, regular, 4–11 -rowed. Spikelets sunken, in pairs. Fertile spikelets sessile, 2 in the cluster.

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 obovate, dorsally compressed, persistent on plant.

Glumes. Glumes similar, reaching apex of florets, firmer than fertile lemma. Lower glume oblate, 1 length of spikelet, scarious, of similar consistency above, without keels, 0 -veined. Lower glume lateral veins absent. Lower glume margins ciliate. Upper glume oblate, scarious, of similar consistency above, without keels, 0 -veined. Upper glume lateral veins absent. Upper glume margins ciliate.

Florets. Basal sterile florets 1, barren, with palea or without significant palea. Lemma of lower sterile floret ovate, membranous, 0 -veined, without midvein, without lateral veins. Fertile florets female. Fertile lemma orbicular, membranous, without keel, 0 -veined, 0–3 -veined, without veins.

Flower and Fruit. Lodicules absent (female) or 2 (male). Anthers 3. Stigmas 2, terminally exerted, papillose. Styles connate below. Caryopsis with adherent pericarp, exposed between gaping lemma and palea at maturity.

Male inflorescence terminal, unlike female, of racemes along a central axis. Male spikelets distinct from female. Male spikelet glumes 2, wingless, muticous. Male spikelet lemma 3–5 -veined, muticous.

$N = 10$ (3 refs TROPICOS). $2n = 20$ (20 refs TROPICOS).

Distribution (TDWG). Continent. Europe, Africa, Temperate Asia, Tropical Asia, Australasia (+), Pacific, North America, South America.

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

Country /Province /State. : Great Britain (*). Belarus, Estonia, Latvia, Lithuania, Central European Russia, East European Russia, South European Russia, Northwest European Russia, Ukraine. **Northern Africa, Macaronesia, West tropical Africa, West-central tropical Africa, Northeast tropical Africa, East tropical Africa, South tropical Africa, Southern Africa, Western Indian ocean.** Egypt (+), Libya. Azores, Cape Verde. Rwanda, DRC. Chad, Ethiopia (inc. Eritrea), Somalia (+), Sudan. Angola (+). Aldabra (*), Mauritius (+), Madagascar (+), Rodrigues (+), Seychelles. Siberia, Russian far east, **Middle Asia, Caucasus, Western Asia, Arabian Peninsula, China** (+), **Eastern Asia.** Altay, Buryatiya, Chita, Irkutsk, Tuva. Amur, Primorye, Sakhalin. Kazakhstan, Kirgizistan, Turkmenistan, Tadjikistan, Uzbekistan. Oman. Japan, Nansei-Shoto, Taiwan. Japan Hokkaido, or Honshu, or Shikoku, or Kyushu. **Indian Subcontinent, Indo-China, Malesia** (cult.), **Papuasia.** Bangladesh, Eastern Himalaya, India, Sri Lanka. Andaman Is, Cambodia, Laos, Myanmar, Vietnam. Java, Singapore, Moluccas, Philippines. New Guinea. **Australia.** Western Australia (+), Queensland (+), New South Wales (+). **North-central Pacific.** Fiji (+), Niue (+), New Caledonia (+), Vanuatu (+). Pitcairn Is (+). Caroline Is (+), Marianas (+), Marshall Is (+), Wake Is (+). Hawaii (*). **Western Canada, Eastern Canada, Northwest USA, North-central USA, Northeast USA, Southwestern USA, South-central USA,**

Southeastern USA, Mexico. Central Mexico, Northeast Mexico, Gulf (Mexico), Pacific Is (Mexico), Northwest Mexico, Southwest Mexico, Southeast Mexico, Mexico. **Mesoamerica, Caribbean, Northern South America, Western South America, Brazil, Southern South America.** Belize, El Salvador, Guatemala, Honduras, Nicaragua, Panama. Jamaica (+), Windward Islands (+). French Guiana, Guyana, Surinam, Venezuela. Bolivia, Colombia, Ecuador, Galapagos, Peru. Brazil West Central, Brazil Northeast, Brazil North, Brazil Southeast, Brazil South. Argentina Northeast, Paraguay, Uruguay.

TDWG4. Darjeeling, Bhutan, Sikkim. Entre Rios. Distrito Federal, Mexico State, Morelos, Puebla, Tlaxcala. Aguascalientes, Coahuila, Chihuahua, Durango, Guanajuato, Hidalgo, Neuvo Leon, Queretaro, San Luis Potosi, Tamaulipas, Zacatecas. Veracruz. Baja California, Baja California Sur, Sinaloa, Sonora. Colima, Guerrero, Jalisco, Michoacan, Nayarit, Oaxaca. Campeche, Chiapas, Quintana Roo, Tabasco, Yucatan.

Zea mexicana (Schrud.) Kuntze. *Lex. Gen. Phan.* :599 (1904).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), D.Sharp, D. & B.K.Simon, *AusGrass* (2002), N.L.Bor, *Grasses of Burma, Ceylon, India and Pakistan* (1960) (as *Euchlaena*).

TYPE from Mexico. **Basionym or Replaced Name:** *Euchlaena mexicana* Schrad., *Index Sem.* 1832: 3 (1832). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: (LE-TRIN-0001.01). "Probably Central Plateau Race or Chalco Race" H.H. Iltis. IT: *Muhlenfordt s.n.*, Mexico (US-727076 (fragm.)).

Illustrations (Books): C-C Hsu, *Flora of Taiwan*, Vol 5 (1978) (686 as *Euchlaena mexicana*), C-C Hsu, *Taiwan Grasses* (1975) (as *Euchlaena mexicana*), D.Sharp & B.K.Simon, *AusGrass*. *Grasses of Australia*. CD-Rom Version 1.0. (2002), L.B. Smith, D.C. Wasshausen, R.M. Klein *Flora Illustrada Catarinensis Gramineas* (1981–1982) (1312, Fig.259 as *Euchlaena*).

Derivation (Clifford & Bostock 2007): L. -ana, indicating origin. From Mexico.

Classification. Subfamily Panicoideae. Tribe: Andropogoneae. Subtribe Zea+ Tripsacum clade.

Habit, Vegetative Morphology. Annual. Culms erect, 200–400 cm long, with prop roots. Culm-internodes solid. Leaves cauline. Ligule an eciliate membrane. Leaf-blades linear or lanceolate, 60–120 cm long, 50–80 mm wide. Monoecious, with male and female spikelets in different inflorescences.

Inflorescence. Inflorescence composed of racemes, axillary, subtended by a spatheole, enclosed. Spatheole elliptic, herbaceous. Racemes 1, single, bilateral. Rhachis fragile at the nodes, subcylindrical and excavated. Rhachis internodes inflated, 6–10 mm long. Rhachis internode tip oblique, flat. Spikelets sunken, solitary. Fertile spikelets sessile. Male spikelets sessile and pedicelled, 2 in a cluster.

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 oblong, laterally compressed, 4–8 mm long, falling entire, deciduous with accessory branch structures.

Glumes. Glumes dissimilar, reaching apex of florets, firmer than fertile lemma. Lower glume oblong, 1 length of spikelet, indurate, without keels. Upper glume elliptic, membranous, without keels.

Florets. Basal sterile florets 1, barren, with palea or without significant palea. Lemma of lower sterile floret membranous. Fertile florets female. Fertile lemma elliptic, hyaline, without keel.

Flower and Fruit. Anthers 3. Stigmas 2, terminally exserted, papillose. Styles connate below. Caryopsis with adherent pericarp.

Male inflorescence terminal, unlike female, of racemes along a central axis. Male spikelets distinct from female, with free pedicels, 2 flowered, elliptic, 7.5–10.5 mm long. Male spikelet glumes 2, wingless, muticous. Male spikelet lemma muticous.

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

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

Country /Province /State. : GB Aliens (Ryves et al), Ireland, Norway. : Austria, Liechtenstein, Belgium, Luxembourg, Czechoslovakia, Germany, Hungary, Netherlands, Poland, Switzerland. : Balears, Corsica, Channel Islands, France, Monaco, Portugal, Sardinia, Andorra, Gibraltar, Spain, Azores. : Albania, Bulgaria, Greece, Italy, San Marino, Vatican, Crete, Romania, Malta, Sicily, Turkey Europe, Yugoslavia. Belarus, Estonia, Kaliningrad, Latvia, Lithuania, Krym, Central European Russia, East European Russia, South European Russia, Northwest European Russia, Moldova, Ukraine. **Northern Africa.** Egypt (+). **Eastern Asia.** Taiwan. **Indian Subcontinent** (+), **Indo-China** (+), **Malesia** (+). Java, Philippines. **Australia.** Queensland (*). **Southwestern USA, South-central USA, Southeastern USA, Mexico.** Central Mexico, Northeast Mexico, Gulf (Mexico), Northwest Mexico, Southwest Mexico, Southeast Mexico. **Brazil.** Brazil West Central.

TDWG4. West Bengal. North. Distrito Federal, Mexico State, Morelos, Puebla, Tlaxcala. Aguascalientes, Coahuila, Chihuahua, Durango, Guanajuato, Hidalgo, Neuvo Leon, Queretaro, San Luis Potosi, Tamaulipas,

Zacatecas. Veracruz. Baja California, Baja California Sur, Sinaloa, Sonora. Colima, Guerrero, Jalisco, Michoacan, Nayarit, Oaxaca. Campeche, Chiapas, Quintana Roo, Tabasco, Yucatan.

Zea nicaraguensis H.H. Iltis & B.F. Benz. *Novon*, 10(4): 382 (2000).

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 Nicaragua. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Nicaragua: Chinadega: Pacific coasta plain near Golfo de Fonseca, edge of now flooded [by mid-December, bone-dry] area between Estero Paimica and Estero Palo Blanco, at a place seasonally occupied by cattle herders known as El Rodeo (12°53'45"N, 86°59'W), ca. 4–5 km NNW of Apacunca (12°52'30"N, 86°57'–58'W), 18–20 km SW of Villa Nueva, alt. 9 m, 8 Oct 1991, *H. H. Iltis, B. F. Benz & A. Grijalva 30831* (HT: HNMN; IT: K, MEXU, MO, NY, US, WIS (2 sheets)).

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

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

Classification. Subfamily Panicoideae. Tribe: Andropogoneae. Subtribe Zea+ Tripsacum clade.

Habit, Vegetative Morphology. Annual. Culms erect, 200–500 cm long, with prop roots. Culm-internodes solid. Lateral branches lacking. Leaves cauline. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane. Leaf-blades lanceolate, 20–80 cm long, 30–80 mm wide. Leaf-blade surface glabrous. Monoecious, with male and female spikelets in different inflorescences.

Inflorescence. Inflorescence composed of racemes, axillary, subtended by a spatheole, enclosed. Spatheole elliptic, 6–10 cm long, herbaceous. Racemes 1, single, bilateral, 6–18 cm long, bearing 4–10 fertile spikelets on each. Rhachis fragile at the nodes, subcylindrical and excavated. Spikelet packing 2-rowed. Rhachis internodes inflated (trapezoidal), 7–10 mm long. Rhachis internode tip oblique, cupuliform. Spikelets sunken, solitary. Fertile spikelets sessile. Male spikelets sessile and pedicelled, 2 in a cluster. Pedicels present.

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 rhomboid, laterally compressed, falling entire, deciduous with accessory branch structures.

Glumes. Glumes dissimilar, reaching apex of florets, firmer than fertile lemma, shiny. Lower glume oblong, 1 length of spikelet, coriaceous, light brown or dark brown, without keels. Upper glume elliptic, membranous, without keels.

Florets. Basal sterile florets 1, barren, with palea or without significant palea. Lemma of lower sterile floret membranous. Fertile florets female. Fertile lemma elliptic, hyaline, without keel.

Flower and Fruit. Anthers 3. Stigmas 2, terminally exerted, papillose. Caryopsis with adherent pericarp.

Male inflorescence terminal, unlike female, of racemes along a central axis (23–32cm). Male spikelets distinct from female, with free pedicels, 2 flowered, elliptic, 9–11 mm long. Male spikelet glumes 2, muticous. Male spikelet lemma muticous.

Distribution (TDWG). Continent. South America.

Country /Province /State. Mesoamerica. Nicaragua.

Zea perennis (Hitchcock) Reeves & Mangelsd. *Amer. Journ. Bot.* xxix. 817 (1942).

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

TYPE from Mexico. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *A.S. Hitchcock 7146*, 22 Sep 1910, Mexico: Jalisco: in prairie along the railroad, about one mile south of the station, Zapotlán (Ciudad Guzman) (US-727077). IT: *Hitchcock, A.S. 7106*, 22–25 Sept 1910, Mexico: Jalisco: Zapotlan (Ciudad Guzman) (F-049626). Possible type..

Illustrations (Books): M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 25 *Poaceae*, part 2 (2003) (700), R.McVaugh, *Flora Nova-Galiciana* Vol.14 *Gramineae* (1983).

Derivation (Clifford & Bostock 2007): L. persisting for several years. Perennials.

Classification. Subfamily Panicoideae. Tribe: Andropogoneae. Subtribe Zea+ Tripsacum clade.

Habit, Vegetative Morphology. Perennial. Rhizomes elongated (internodes 1–6cm), scaly. Culms erect, of moderate stature, 100–200 cm long. Culm-internodes solid. Leaves cauline. Leaf-sheaths reticulately veined. Ligule an eciliate membrane, 1–2 mm long. Leaf-blade base cordate. Leaf-blades linear or lanceolate, 20–40 cm long, 10–30 mm wide. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Monoecious, with male and female spikelets in different inflorescences.

Inflorescence. Inflorescence composed of racemes, axillary, subtended by a spatheole, enclosed. Spatheole elliptic, herbaceous. Racemes 1, single, bilateral, 3–6 cm long. Rhachis fragile at the nodes, subcylindrical and

excavated. Rhachis internodes inflated, 6–8 mm long. Rhachis internode tip oblique, flat. Spikelets sunken, solitary. Fertile spikelets sessile. Male spikelets sessile and pedicelled, 2 in a cluster. Pedicels present, (male) 3–4 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 oblong, laterally compressed, 4–6 mm long, falling entire, deciduous with accessory branch structures.

Glumes. Glumes dissimilar, reaching apex of florets, firmer than fertile lemma. Lower glume oblong, 1 length of spikelet, indurate, without keels. Upper glume elliptic, membranous, without keels.

Florets. Basal sterile florets 1, barren, with palea or without significant palea. Lemma of lower sterile floret membranous. Fertile florets female. Fertile lemma elliptic, hyaline, without keel.

Flower and Fruit. Anthers 3. Stigmas 2, terminally exerted, papillose. Styles connate below. Caryopsis with adherent pericarp.

Male inflorescence terminal, unlike female, of subdigitate racemes or of racemes along a central axis. Male spikelets distinct from female, with free pedicels, 2 flowered, elliptic, 8–9 mm long. Male spikelet glumes 2, winged, muticous. Male spikelet lemma muticous.

$2n = 40$ (4 refs TROPICOS).

Distribution (TDWG). Continent. North America.

Country /Province /State. Mexico. Southwest Mexico.

TDWG4. Jalisco.

Zenkeria elegans Trin. *Linnaea*, xi. 150. t. 3. (1837).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), N.L.Bor, *Grasses of Burma, Ceylon, India and Pakistan* (1960).

TYPE from India. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: India, Nilgiri Hills: Coll?.

Illustrations (Books): K.M.Mathew, *Illustrations on the Flora of Tamilnadu Carnatic* (1982) (Pl. 957 & 958).

Illustrations (Journals): *Hooker's Icones Plantarum* (t.3597 (1962)).

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

Classification. Subfamily Arundinoideae. Tribe: Arundineae.

Habit, Vegetative Morphology. Perennial. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms 30–90 cm long. Ligule a fringe of hairs. Leaf-blades involute, 30–60 cm long, 6–8 mm wide. Leaf-blade surface pilose, sparsely hairy, hairy on both sides, with tubercle-based hairs. Leaf-blade apex attenuate.

Inflorescence. Inflorescence a panicle. Panicle open, elliptic, nodding, 15–25 cm long, 6–8 cm wide. Panicle branches capillary. 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, 4.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Floret callus pilose, obtuse.

Glumes. Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture, gaping. Lower glume lanceolate, 1.5 mm long, 0.75 length of upper glume, membranous, 1-keeled, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 2 mm long, 0.4 length of adjacent fertile lemma, membranous, 1-keeled, 1 -veined. Upper glume lateral veins absent. Upper glume apex acute.

Florets. Fertile lemma oblong, 4.5 mm long, membranous, keeled, keeled above, 7–9(–11) -veined, more than 3-veined. Lemma midvein scabrous. Lemma lateral veins ribbed. Lemma surface pilose, with tubercle-based hairs. Lemma apex acute. Palea surface pilose. Rhachilla extension 0.1 length of fertile floret.

Flower and Fruit. Lodicules 2, cuneate, fleshy. Anthers 2. Caryopsis with adherent pericarp, linear, isodiametric, biconvex. Embryo 0.5 length of caryopsis. Hilum punctiform.

Distribution (TDWG). Continent. Tropical Asia.

Country /Province /State. Indian Subcontinent. India.

TDWG4. Kerala. Tamilnadu.

Zenkeria jainii N.C. Nair, P.V. Sreekumar & V.J. Nair. *J. Bombay Nat. Hist. Soc.*, 78(2): 354 (1981).

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

TYPE from India. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: India, Kerala, Eravikulam: sreekumar 68419 (CAL holo, MH).

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

Derivation (Clifford & Bostock 2007): in honor of Sudhanshu Kumar Jain (1926-) Indian botanist.

Classification. Subfamily Arundinoideae. Tribe: Arundineae.

Habit, Vegetative Morphology. Perennial. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms decumbent, 45–60 cm long, rooting from lower nodes. Culm-internodes 5–14 cm long. Leaf-sheaths 8–16 cm long, glabrous on surface or pilose. Ligule a fringe of hairs. Leaf-blades linear or lanceolate, 15–50 cm long, fleshy. Leaf-blade surface pilose, sparsely hairy, hairy adaxially.

Inflorescence. Inflorescence a panicle. Panicle open, elliptic, dense, 14–18 cm long. Primary panicle branches spreading. Panicle branches capillary, villous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 0.5–1.5 mm long, ciliate.

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 ovate, laterally compressed, 5–5.5 mm long, breaking up at maturity, disarticulating above glumes but not between florets. Floret callus pilose, obtuse.

Glumes. Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture. Lower glume ovate, 3 mm long, 1 length of upper glume, membranous, 1-keeled, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute or acuminate. Upper glume ovate, 3 mm long, 0.6 length of adjacent fertile lemma, membranous, 1-keeled, 1 -veined. Upper glume lateral veins absent. Upper glume apex acute or acuminate.

Florets. Fertile lemma oblong, 5 mm long, membranous, keeled, 5 -veined, more than 3-veined. Lemma surface villous, hairy below. Lemma apex acuminate. Palea 4 mm long. Palea keels ciliate, adorned below.

Flower and Fruit. Lodicules 2, 0.7 mm long, veinless. Anthers 3, 2–2.5 mm long, purple.

Distribution (TDWG). Continent. Tropical Asia.

Country /Province /State. Indian Subcontinent. India.

TDWG4. Kerala.

Zenkeria obtusiflora (Thwaites) Benth. *Journ. Linn. Soc.* xix. 93. (1881).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), N.L.Bor, *Grasses of Burma, Ceylon, India and Pakistan* (1960).

TYPE from Sri Lanka. **Basionym or Replaced Name:** *Amphidonax obtusiflora* Thw., *Enum. Pl. Zeyl.* 370 (1864). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Sri Lanka, Tanapura: Thwaites CP3470 (K iso).

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

Derivation (Clifford & Bostock 2007): *L. obtusus*, blunt; flos, flower. Glume or lemma apices rounded.

Classification. Subfamily Arundinoideae. Tribe: Arundineae.

Habit, Vegetative Morphology. Perennial. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms 50–100 cm long. Ligule a fringe of hairs. Leaf-blades flat, 20–50 cm long, 15–25 mm wide. Leaf-blade surface glabrous. Leaf-blade apex attenuate.

Inflorescence. Inflorescence a panicle. Panicle open, ovate, 16 cm long, 14 cm wide. Primary panicle branches 10 cm long. Panicle branches capillary. 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, 2.5–3.25 mm long, breaking up at maturity, disarticulating below each fertile floret. Floret callus pilose, obtuse.

Glumes. Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture, gaping. Lower glume oblong, 2 mm long, 1 length of upper glume, membranous, 1-keeled, 1–3 -veined. Lower glume apex acute. Upper glume ovate, 2 mm long, 0.7 length of adjacent fertile lemma, membranous, 1-keeled, 1–3 -veined. Upper glume apex acute.

Florets. Fertile lemma oblong, 2.75 mm long, membranous, keeled, keeled above, 7 -veined, more than 3-veined. Lemma midvein scabrous. Lemma lateral veins ribbed. Lemma surface pilose, with tubercle-based hairs. Lemma apex obtuse. Palea surface pilose. Rhachilla extension 0.1 length of fertile floret.

Flower and Fruit. Lodicules 2, cuneate, fleshy. Anthers 2. Caryopsis with adherent pericarp, linear, isodiametric, biconvex. Embryo 0.5 length of caryopsis. Hilum punctiform.

Distribution (TDWG). Continent. Tropical Asia.

Country /Province /State. Indian Subcontinent. Sri Lanka.

Zenkeria sebastinei A.H. Henry & M. Chandrabose. *Bull. Bot. Surv. India*, 15(1–2): 142 (1976).

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

TYPE from India. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: India, Tamil Nadu, Agastyamalai: Henry 17325 (CAL holo, MH).

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

Derivation (Clifford & Bostock 2007): In honor of Kunju Mathew Sebastine (1918–1967) Indian botanist.

Classification. Subfamily Arundinoideae. Tribe: Arundineae.

Habit, Vegetative Morphology. Perennial. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms decumbent, 30–45 cm long, rooting from lower nodes. Culm-internodes 0.7–12 cm long. Culm-nodes glabrous. Leaf-sheaths 5–7 cm long, glabrous on surface. Ligule a fringe of hairs. Leaf-blades 5–17 cm long, 10–22 mm wide, fleshy, stiff. Leaf-blade surface glabrous. Leaf-blade margins cartilaginous, scabrous. Leaf-blade apex attenuate.

Inflorescence. Inflorescence a panicle. Panicle open, elliptic, dense, 8–15 cm long. Primary panicle branches spreading. Panicle branches capillary, villous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

Fertile Spikelets. Spikelets comprising 2 fertile florets, without rhachilla extension. 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, 4–4.5 mm long, breaking up at maturity, disarticulating above glumes but not between florets. Floret callus pilose, obtuse.

Glumes. Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture. Lower glume ovate, 2.5 mm long, 0.7 length of upper glume, membranous, 1-keeled, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute or acuminate. Upper glume ovate, 3.5 mm long, 0.75 length of adjacent fertile lemma, membranous, 1-keeled, 1 -veined. Upper glume lateral veins absent. Upper glume apex acute or acuminate.

Florets. Fertile lemma oblong, 4.5 mm long, membranous, keeled, 5 -veined, more than 3-veined. Lemma surface villous, hairy below. Lemma apex acuminate. Palea 3.7 mm long. Palea keels ciliate.

Flower and Fruit. Lodicules 2, 0.8 mm long. Anthers 3, 2–2.2 mm long.

Distribution (TDWG). Continent. Tropical Asia.

Country /Province /State. Indian Subcontinent. India.
Tamilnadu.

Zenkeria stapfii Henrard. Fedde, *Repert.* xvii. 396 (1921).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), N.L.Bor, *Grasses of Burma, Ceylon, India and Pakistan* (1960).

TYPE from India. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: India, Nilgiri Hills: Perrotet (L holo, K).

Illustrations (Books): K.M.Mathew, *Flora Palni Hills* (1996) (883, Pl 883).

Derivation (Clifford & Bostock 2007): in honor of Otto Stapf (1857–1933) Austrian-born English botanist.

Classification. Subfamily Arundinoideae. Tribe: Arundineae.

Habit, Vegetative Morphology. Perennial. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms 10–30 cm long. Ligule a fringe of hairs. Leaf-blades involute, 15–30 cm long, 12 mm wide. Leaf-blade surface pilose, sparsely hairy, hairy adaxially, with tubercle-based hairs. Leaf-blade apex attenuate.

Inflorescence. Inflorescence a panicle. Panicle open, elliptic, nodding, 15 cm long, 3–4 cm wide. Panicle branches capillary. 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, 3.5–4 mm long, breaking up at maturity, disarticulating below each fertile floret. Floret callus pilose, obtuse.

Glumes. Glumes persistent, similar, shorter than spikelet, similar to fertile lemma in texture, gaping. Lower glume oblong, 2.5 mm long, 0.8 length of upper glume, membranous, 1-keeled, 3–5 -veined. Lower glume apex acute. Upper glume oblong, 3 mm long, 0.75–0.8 length of adjacent fertile lemma, membranous, 1-keeled, 3–5 -veined. Upper glume apex acute.

Florets. Fertile lemma elliptic, 3.75–4 mm long, membranous, keeled, keeled above, 7–9 -veined, more than 3-veined. Lemma midvein scabrous. Lemma lateral veins ribbed. Lemma surface pilose, with tubercle-based hairs. Lemma apex acuminate. Palea surface pilose. Rhachilla extension 0.1 length of fertile floret.

Flower and Fruit. Lodicules 2, cuneate, fleshy. Anthers 2. Caryopsis with adherent pericarp, linear, isodiametric, biconvex. Embryo 0.5 length of caryopsis. Hilum punctiform.

Distribution (TDWG). Continent. Tropical Asia.

Country /Province /State. Indian Subcontinent. India, Sri Lanka.
TDWG4. Tamilnadu.

Zeugites americana Willd. *Sp. Pl.* iv. 204. (1806).

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 Jamaica. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *P. Browne s.n.*, Jamaica (LINN).

Illustrations (Books): A.S.Hitchcock, *Manual of the Grasses of the West Indies* (1936) (59, Fig. 32), S.A.Renvoize, *Gramineas de Bolivia* (1998) (259, Fig. 51), G.Harling & C.Persson, *Flora of Ecuador* (2006) (57: 10, Fig.1 (1997)).

Illustrations (Journals): *Ruizia* (13:220, Fig 24c-d (1993) as *Z. mecicana*).

Derivation (Clifford & Bostock 2007): L. -ana, indicating location. From North or South America.

Classification. Subfamily Panicoideae. Tribe: Zeugiteae.

Habit, Vegetative Morphology. Perennial. Rhizomes absent or elongated. Culms rambling, 100–200 cm long. Lateral branches ample. Leaf-sheaths glabrous on surface or hirsute. Ligule an eciliate membrane, 1–2 mm long, glabrous on abaxial surface or pilose on abaxial surface. Leaf-blade base broadly rounded, with a false petiole, petiole 0.7–1 cm long. Leaf-blades lanceolate, 2.5–4 cm long, 7–17 mm wide. Leaf-blade venation with distinct cross veins. Leaf-blade surface glabrous or pilose, sparsely hairy, hairy adaxially. Leaf-blade apex acute.

Inflorescence. Inflorescence a panicle. Peduncle 7–15 cm long, glabrous. Panicle open, oblong or pyramidal, 7–10 cm long. Primary panicle branches spreading. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, filiform.

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 oblong, laterally compressed, 6–8 mm long, falling entire, readily shedding apical florets (as a group).

Glumes. Glumes dissimilar, with lower wider than upper, shorter than spikelet, thinner than fertile lemma. Lower glume obovate, 2–3 mm long, 1 length of upper glume, membranous, 1-keeled, 5–7 -veined. Lower glume lateral veins with cross-veins. Lower glume apex truncate. Upper glume oblong, 2–3 mm long, 0.66 length of adjacent fertile lemma, membranous, 1-keeled, 3–5 -veined. Upper glume lateral veins with cross-veins. Upper glume apex obtuse.

Florets. Fertile florets female. Fertile lemma oblong, 3.5–4.5 mm long, cartilaginous, keeled, 9–11 -veined, more than 3-veined. Lemma apex erose, truncate. Palea 1.1 length of lemma. Apical sterile florets 1–2 in number, male, ovate, 3–3.5 mm long. Apical sterile lemmas acute.

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

Distribution (TDWG). Continent. North America, South America.

Country /Province /State. Mexico. Central Mexico, Northeast Mexico, Gulf (Mexico), Southwest Mexico, Southeast Mexico. **Mesoamerica, Caribbean, Northern South America, Western South America.** Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama. Cuba, Dominican Republic, Haiti, Jamaica. Venezuela. Bolivia, Colombia, Ecuador, Peru.

TDWG4. Puebla. Hidalgo, Neuvo Leon, Queretaro, San Luis Potosi, Tamaulipas. Veracruz. Colima, Guerrero, Jalisco, Michoacan, Nayarit, Oaxaca. Chiapas.

Zeugites capillaris (Hitchcock) Swallen. *Ann. Missouri Bot. Gard.* . 130 (1943).

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

TYPE from Mexico. **Basionym or Replaced Name:** *Senites capillaris* Hitchc., *Contr. U.S. Natl. Herb.* 17(3): 369 (1913). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: A.S. Hitchcock 7073, 21 Sep 1910, Mexico: Colima: Alzada (US-691234).

Illustrations (Books): R.McVaugh, *Flora Nova-Galiciana* Vol.14 *Gramineae* (1983).

Derivation (Clifford & Bostock 2007): L. capillis, a hair; -are, pertaining to. Inflorescence with filiform branches.

Classification. Subfamily Panicoideae. Tribe: Zeugiteae.

Habit, Vegetative Morphology. Perennial. Rhizomes short, woody. Culms erect, 100–200 cm long. Lateral branches sparse. Leaf-sheaths outer margin hairy. Leaf-sheath auricles erect. Ligule an eciliate membrane, 0.5–1 mm long, brown. Leaf-blade base broadly rounded, with a brief petiole-like connection to sheath, petiole 0.1–0.5 cm long, petiole pilose. Leaf-blades lanceolate or elliptic, 20–26 cm long, 40–60 mm wide. Leaf-blade

venation with distinct cross veins. Leaf-blade surface scaberulous, pubescent, hairy on both sides. Leaf-blade apex acuminate.

Inflorescence. Inflorescence a panicle. Panicle open, ovate or pyramidal, 15–25 cm long. Primary panicle branches ascending or spreading. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, filiform, 2–5 mm long, tip cupuliform.

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 oblong, laterally compressed, 8–9 mm long, falling entire. Rhachilla internodes elongated between glumes. Rhachilla elongation 0.5 mm long.

Glumes. Glumes dissimilar, with lower wider than upper, shorter than spikelet, thinner than fertile lemma. Lower glume obovate, 3–5 mm long, 1.5–2.5 length of upper glume, membranous, 1-keeled, 7–9 -veined. Lower glume surface pubescent, hairy above. Lower glume apex truncate. Upper glume obovate, gibbous, 2 mm long, 0.66 length of adjacent fertile lemma, membranous, 1-keeled, 7–9 -veined. Upper glume lateral veins with cross-veins. Upper glume surface pubescent, hairy above. Upper glume apex truncate.

Florets. Fertile florets female. Fertile lemma oblong, gibbous, 3–3.5 mm long, cartilaginous, keeled, more than 3-veined. Lemma apex rostrate. Palea 3 mm long. Apical sterile florets 3–8 in number, male, ovate, 3–5 mm long.

Flower and Fruit. Anthers 3, 2.5–3.5 mm long. Caryopsis with adherent pericarp, orbicular, 1.5 mm long.

Distribution (TDWG). Continent. North America.

Country /Province /State. Mexico. Central Mexico, Gulf (Mexico), Southwest Mexico.

TDWG4. Mexico State. Veracruz. Colima, Guerrero, Jalisco.

Zeugites hackelii Swallen. *Ann. Missouri Bot. Gard.* . 130 (1943).

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

TYPE from Mexico. **Basionym or Replaced Name:** *Zeugites pittieri* var. *pringlei* Hack..*Oesterr. Bot. Z.* 52(10): 373 (1902)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *C.G. Pringle 2322*, 12 Oct 1889, Mexico: Jalisco: Guadalajara (W; IT: US-825673, US-913303).

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

Derivation (Clifford & Bostock 2007): in honor of Eduard Hackel (1850–1926) Bohemian-born Austrian botanist with special interest in the grasses.

Classification. Subfamily Panicoideae. Tribe: Zeugiteae.

Habit, Vegetative Morphology. Perennial. Rhizomes short, woody. Culms erect, robust, 200–250 cm long, 5–10 mm diam. Culm-internodes distally glabrous. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 0.5 mm long, brown. Leaf-blade base broadly rounded, with a brief petiole-like connection to sheath, petiole 0.05–0.2 cm long, petiole glabrous or pubescent. Leaf-blades lanceolate or elliptic, 20–30 cm long, 65–80 mm wide. Leaf-blade venation with distinct cross veins. Leaf-blade surface scabrous, rough adaxially, pubescent, hairy on both sides. Leaf-blade apex acuminate.

Inflorescence. Inflorescence a panicle. Panicle open, ovate, 15–25 cm long, 15–20 cm wide. Panicle branches capillary. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, filiform.

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 oblong, laterally compressed, 9–13 mm long, falling entire. Rhachilla internodes brief up to lowest fertile floret.

Glumes. Glumes dissimilar, with lower wider than upper, shorter than spikelet, thinner than fertile lemma. Lower glume obovate, gibbous, 3–4 mm long, 1 length of upper glume, membranous, 1-keeled, 7–9 -veined. Lower glume lateral veins with cross-veins. Lower glume surface glabrous or pubescent, hairy above. Lower glume apex dentate, 7 -fid. Upper glume obovate, 3–4 mm long, 0.75 length of adjacent fertile lemma, membranous, 1-keeled, 3–5 -veined. Upper glume lateral veins with cross-veins. Upper glume surface glabrous or pubescent, hairy above. Upper glume apex truncate.

Florets. Fertile florets female. Fertile lemma oblong, gibbous, 4–4.5 mm long, cartilaginous, keeled, more than 3-veined. Lemma apex rostrate. Apical sterile florets 6–8(–11) in number, male, ovate, 3–3.5 mm long.

Flower and Fruit. Anthers 3, 1.8–2.5 mm long. Caryopsis with adherent pericarp.

Distribution (TDWG). Continent. North America.

Country /Province /State. Mexico. Northwest Mexico, Southwest Mexico.

TDWG4. Sinaloa. Jalisco.

Zeugites hintonii Hartley. *Kew Bull.* 1941, 22 (1941).

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

TYPE from Mexico. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *G.B. Hinton 4538*, 16 Aug 1933, Mexico: Temascaltepec: on a cliff at Nanchititla (K; IT: US-1823513).

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

Derivation (Clifford & Bostock 2007): in honor of George Bode Hinton (1882–1943) United States botanist.

Classification. Subfamily Panicoideae. Tribe: Zeugiteae.

Habit, Vegetative Morphology. Perennial. Culms erect, 100–200 cm long, 6 -noded. Culm-internodes distally pubescent (below nodes). Leaf-sheaths keeled, outer margin hairy. Ligule a ciliolate membrane. Leaf-blade base with a brief petiole-like connection to sheath, petiole 0.5 cm long, petiole pubescent. Leaf-blades lanceolate, 15–20 cm long, 40–50 mm wide. Leaf-blade venation with distinct cross veins. Leaf-blade surface pubescent. Leaf-blade margins scabrous.

Inflorescence. Inflorescence a panicle. Peduncle pubescent above. Panicle open, pyramidal, 12–15 cm long. Primary panicle branches 1–2 -nate. Panicle branches capillary. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, filiform, 2–6 mm long.

Fertile Spikelets. Spikelets comprising 1–2 fertile florets, with diminished florets at the apex. Spikelets of 1 fertile floret with or without additional sterile florets, or of 2 or more fertile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 7–9 mm long, 3–5 mm wide, falling entire.

Glumes. Glumes dissimilar, with lower wider than upper, shorter than spikelet, thinner than fertile lemma. Lower glume orbicular, 2.5 mm long, 1.2 length of upper glume, membranous, 1-keeled, 9–11 -veined. Lower glume lateral veins with cross-veins. Upper glume cuneate, gibbous, 2 mm long, 0.66 length of adjacent fertile lemma, membranous, 1-keeled, 9 -veined. Upper glume lateral veins with cross-veins. Upper glume apex truncate.

Florets. Fertile florets female. Fertile lemma oblate, gibbous, 3 mm long, cartilaginous, keeled, 11 -veined, more than 3-veined. Lemma lateral veins with cross-veins. Lemma surface smooth or asperulous, rough above. Lemma apex obtuse. Palea 2–2.5 mm long. Apical sterile florets 8–12 in number, male, with internodes 0.1 mm long between them, ovate, 3–4 mm long.

Flower and Fruit. Anthers 3, 2–2.5 mm long. Caryopsis with adherent pericarp.

Distribution (TDWG). Continent. North America.

Country /Province /State. Mexico. Central Mexico.

TDWG4. Mexico State.

Zeugites latifolia (Fourn.) Hemsl. *Biol. Centr. Am. Bot.* iii. 577. (1885).

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

TYPE from Mexico. **Basionym or Replaced Name:** *Krombholzia latifolia* E. Fourn., *Bull. Soc. Roy. Bot. Belgique* 15(3): 464 (1876). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: IT: *F.E. Liebmann 541*, Aug 1842, Mexico: Oaxaca: Dolores (209289).

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

Derivation (Clifford & Bostock 2007): *L. latus*, broad; folium, leaf. Leaf-blades broad or relatively broad with respect to related species.

Classification. Subfamily Panicoideae. Tribe: Zeugiteae.

Habit, Vegetative Morphology. Perennial. Culms erect, 100–200 cm long. Culm-nodes glabrous. Ligule an eciliate membrane. Leaf-blade base broadly rounded, with a brief petiole-like connection to sheath, petiole 0.1–0.2 cm long, petiole pubescent. Leaf-blades elliptic, 15–20 cm long, 40–60 mm wide. Leaf-blade venation with distinct cross veins. Leaf-blade apex acuminate, filiform.

Inflorescence. Inflorescence a panicle. Peduncle glabrous. Panicle open, ovate, dense, 13–20 cm long. Primary panicle branches ascending. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, filiform.

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 oblong, laterally compressed, 12–19 mm long, falling entire.

Glumes. Glumes dissimilar, with lower wider than upper, shorter than spikelet, thinner than fertile lemma. Lower glume obovate, 4 mm long, 1 length of upper glume, membranous, 1-keeled, 7 -veined. Lower glume lateral veins with cross-veins. Lower glume apex erose, truncate. Upper glume obovate, 4 mm long, 0.7–0.8 length of adjacent fertile lemma, membranous, 1-keeled, 7 -veined. Upper glume lateral veins with cross-veins. Upper glume apex erose, acute.

Florets. Fertile florets female. Fertile lemma ovate, gibbous, 5 mm long, cartilaginous, keeled, 9–11 -veined, more than 3-veined. Lemma lateral veins with cross-veins. Lemma apex acute. Apical sterile florets 7–10 in number, male, with internodes 1 mm long between them, elliptic, 4 mm long. Apical sterile lemmas acute.

Flower and Fruit. Anthers 3. Caryopsis with adherent pericarp.

Distribution (TDWG). Continent. North America.

Country /Province /State. Mexico. Southwest Mexico.

TDWG4. Oaxaca.

Zeugites munroana Hemsl. *Biol. Centr. Am. Bot.* iii. 577. (1885).

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

TYPE from Guatemala. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: ST: *Salvin & Godman 345*, Guatemala: Volcán de Agua (K). ST: *Salvin s.n.*, Guatemala: Volcán de Fuego, 8300 ft, ridge above Calderas (K).

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

Derivation (Clifford & Bostock 2007): L. -ana, indicating connection. As for *Munroa*.

Classification. Subfamily Panicoideae. Tribe: Zeugiteae.

Habit, Vegetative Morphology. Annual. Culms geniculately ascending or rambling, slender, 25–50 cm long, wiry. Ligule an eciliate membrane. Leaf-blade base broadly rounded, with a false petiole, petiole 0.5–1 cm long. Leaf-blades ovate, 2–6 cm long, 6–12 mm wide. Leaf-blade venation with distinct cross veins.

Inflorescence. Inflorescence a panicle. Panicle open, ovate, 1–4 cm long. Primary panicle branches ascending or reflexed. Panicle branches capillary. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, filiform.

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 oblong, laterally compressed, 5–8 mm long, falling entire.

Glumes. Glumes dissimilar, with lower wider than upper, shorter than spikelet or reaching apex of florets, thinner than fertile lemma. Lower glume obovate, 3–4 mm long, 1.1 length of upper glume, membranous, 1-keeled, 9 -veined. Lower glume lateral veins with cross-veins. Lower glume apex erose, truncate. Upper glume obovate, 3 mm long, 0.75 length of adjacent fertile lemma, membranous, 1-keeled, 7 -veined. Upper glume lateral veins with cross-veins. Upper glume apex erose, truncate.

Florets. Fertile florets female. Fertile lemma obovate, gibbous, 4 mm long, cartilaginous, keeled, 7 -veined, more than 3-veined. Lemma lateral veins with cross-veins. Lemma apex obtuse, pubescent. Apical sterile florets 1–3 in number, male, with internodes 0.7 mm long between them, ovate, 5 mm long. Apical sterile lemmas acute.

Flower and Fruit. Anthers 3. Caryopsis with adherent pericarp.

Distribution (TDWG). Continent. North America, South America.

Country /Province /State. Mexico. Southeast Mexico. **Mesoamerica.** El Salvador, Guatemala. Chiapas.

Zeugites panamensis Swallen. *Ann. Missouri Bot. Gard.* . :128 (1943).

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

TYPE from Panama. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *P.H. Allen 1318*, 23 Dec 1938, Panama: hills above Campana (US-2012404).

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

Derivation (Clifford & Bostock 2007): L. -ensis, denoting origin. From Panama.

Classification. Subfamily Panicoideae. Tribe: Zeugiteae.

Habit, Vegetative Morphology. Perennial. Culms erect, 100 cm long. Lateral branches sparse. Leaf-sheaths keeled, reticulately veined, glabrous on surface. Ligule an eciliate membrane, 1 mm long, erose. Leaf-blade base broadly rounded or cordate, with a false petiole, petiole 0.2–2 cm long. Leaf-blades elliptic or oblong, 9–21 cm long, 20–48 mm wide. Leaf-blade venation with distinct cross veins. Leaf-blade apex acuminate.

Inflorescence. Inflorescence a panicle. Panicle open, ovate, dense, 10–15 cm long, 10–12 cm wide. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, filiform, 2–10(–15) mm long.

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 oblong or ovate, laterally compressed, 8–12 mm long, falling entire.

Glumes. Glumes dissimilar, with lower wider than upper, shorter than spikelet, thinner than fertile lemma. Lower glume obovate, 5 mm long, 1 length of upper glume, membranous, 1-keeled, 7 -veined. Lower glume lateral veins with cross-veins. Lower glume apex obtuse. Upper glume obovate, 5 mm long, 0.7–0.8 length of adjacent fertile lemma, membranous, 1-keeled, 7 -veined. Upper glume lateral veins with cross-veins. Upper glume apex obtuse.

Florets. Fertile florets female. Fertile lemma oblong, gibbous, 6 mm long, cartilaginous, keeled, more than 3-veined. Lemma lateral veins with cross-veins. Lemma margins ciliolate. Lemma apex obtuse. Palea 1 length of lemma. Apical sterile florets 3–5 in number, male, with internodes 0.7 mm long between them, ovate, 5 mm long. Apical sterile lemmas obtuse.

Flower and Fruit. Anthers 3, 2 mm long. Caryopsis with adherent pericarp.

Distribution (TDWG). Continent. South America.

Country /Province /State. Mesoamerica. Panama.

Zeugites pittieri Hack. *Oesterr. Bot. Zeitschr.* 1902, 373. (1902).

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

TYPE from Costa Rica. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *Pittier 1617*, 28 Dec 1887, Costa Rica: in silvis ad Alto del Rodeo, 1100 m (US-913304; ILT: W). LT designated by Swallen, *Fieldiana, Bot.* 24(2): 376 (1955), but without indicating the specific sheet.

ST: *Pittier 3328*, 28 Dec 1887, Costa Rica: ad Rodeo de Pucuca, 900 m (US-471518, W).

Illustrations (Books): W.Burger, *Flora Costaricensis* 15, Gramineae: *Fieldiana Botany New Series* 4 (1980) (593, Fig. 223).

Derivation (Clifford & Bostock 2007): in honor of Henry Frangois de Fabrega Pittier (1857–1950) Swiss botanist and civil engineer.

Classification. Subfamily Panicoideae. Tribe: Zeugiteae.

Habit, Vegetative Morphology. Perennial, caespitose. Rootstock evident. Culms erect or geniculately ascending, 200–400 cm long, 5–10 mm diam. Culm-nodes glabrous. Lateral branches ample. Leaf-sheaths 15–25 cm long, ribbed, puberulous. Leaf-sheath auricles erect. Ligule an eciliate membrane. Leaf-blade base with a false petiole, petiole 0.3–0.7 cm long, petiole pilose. Leaf-blades ovate, 25–45 cm long, 45–70 mm wide. Leaf-blade venation with distinct cross veins. Leaf-blade apex acute.

Inflorescence. Inflorescence a panicle, terminal and axillary. Peduncle 4–10 cm long. Panicle open, ovate, dense, 20–30 cm long. Primary panicle branches bearing spikelets almost to the base. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, filiform.

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 elliptic, laterally compressed, 12–20 mm long, falling entire, readily shedding apical florets (as a group). Floret callus pubescent.

Glumes. Glumes dissimilar, with lower wider than upper, shorter than spikelet, thinner than fertile lemma. Lower glume oblong, 4.5–5.5 mm long, 1.1 length of upper glume, membranous, 1-keeled, 9–11 -veined. Lower glume lateral veins with cross-veins. Lower glume margins ciliolate (apex & base). Upper glume oblong, 4–5 mm long, 1 length of adjacent fertile lemma, membranous, 1-keeled, 7–8 -veined. Upper glume lateral veins with cross-veins.

Florets. Fertile florets female. Fertile lemma ovate, gibbous, 5 mm long, cartilaginous, shiny, keeled, 7–13 -veined, more than 3-veined. Lemma apex emarginate or acute, pubescent, muticous or mucronate. Palea 0.9 length of lemma. Apical sterile florets 6–14 in number, male, ovate, 3.5–5 mm long. Apical sterile lemmas muticous or mucronate.

Flower and Fruit. Lodicules 2, veined. Anthers 3, 2.5 mm long, yellow.

$2n = 48$ (1 ref TROPICOS).

Distribution (TDWG). Continent. North America, South America.

Country /Province /State. Mexico. Southeast Mexico. **Mesoamerica.** Costa Rica, El Salvador, Guatemala, Honduras, Panama.

Chiapas.

Zeugites sagittata Hartley. *Kew Bull.* 1941, 22 (1941).

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

TYPE from Mexico. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *G.B. Hinton 4793*, 23 Sep 1933, Mexico: Temascaltepec District: near the bridge at Acatitlan (K; IT: NY-312162, US-1823514).

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

Classification. Subfamily Panicoideae. Tribe: Zeugiteae.

Habit, Vegetative Morphology. Perennial. Culms erect, 100 cm long, 8–10 -noded. Lateral branches lacking. Leaf-sheaths keeled. Ligule an eciliate membrane, 1.5 mm long. Leaf-blade base cordate or sagittate, with a false petiole, petiole 0.5–2.5 cm long, petiole pilose (at apex). Leaf-blades lanceolate or oblong, 15–20 cm long, 40–60 mm wide. Leaf-blade venation with distinct cross veins. Leaf-blade margins scabrous. Leaf-blade apex acuminate.

Inflorescence. Inflorescence a panicle. Panicle open, pyramidal, 20 cm long. Panicle branches capillary. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, filiform, 2–6 mm long.

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 ovate, laterally compressed, 7–10 mm long, 6–7 mm wide, falling entire.

Glumes. Glumes dissimilar, with lower wider than upper, reaching apex of florets, thinner than fertile lemma. Lower glume obovate, 3 mm long, 1.5 length of upper glume, membranous, 1-keeled, 9–11 -veined. Lower glume lateral veins with cross-veins. Lower glume surface pubescent. Lower glume margins ciliate. Lower glume apex truncate. Upper glume cuneate, gibbous, 2 mm long, 0.66 length of adjacent fertile lemma, membranous, 1-keeled, 7–11 -veined. Upper glume lateral veins with cross-veins. Upper glume surface puberulous. Upper glume apex truncate.

Florets. Fertile florets female. Fertile lemma ovate, gibbous, 3 mm long, cartilaginous, keeled, 9 -veined, more than 3-veined. Lemma lateral veins with cross-veins. Lemma surface asperulous, puberulous, hairy above. Lemma apex obtuse. Palea 2.5 mm long. Apical sterile florets 8–12 in number, male, with internodes 0.1 mm long between them, ovate, 3–4 mm long.

Flower and Fruit. Anthers 3, 2.5 mm long. Caryopsis with adherent pericarp.

Distribution (TDWG). Continent. North America.

Country /Province /State. Mexico. Central Mexico, Southwest Mexico.

TDWG4. Mexico State. Guerrero, Michoacan.

Zeugites smilacifolia Scribn. *Coult. Bot. Gaz.* xxi. 134. (1896).

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

TYPE from Mexico. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *C.G. Pringle 5961*, 20 Nov 1895, Mexico: Morelos: near Cuernavaca (US-748579; IT: US-277313).

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

Derivation (Clifford & Bostock 2007): *L. folium*, leaf. Leaf-blades similar to those of *Smilax*.

Classification. Subfamily Panicoideae. Tribe: Zeugiteae.

Habit, Vegetative Morphology. Perennial, culms solitary or caespitose. Culms erect, robust, 100–250 cm long. Culm-internodes distally glabrous. Lateral branches sparse. Ligule an eciliate membrane, 3–8 mm long. Leaf-blade base broadly rounded, with a false petiole, petiole 1.5–3.5 cm long. Leaf-blades ovate, 5–12 cm long, 25–60 mm wide. Leaf-blade venation with distinct cross veins. Leaf-blade apex acuminate.

Inflorescence. Inflorescence a panicle. Panicle open, ovate, 10–15 cm long, 8–12 cm wide. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, filiform, 0.5–15 mm long.

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 oblong, laterally compressed, 9–15 mm long, falling entire. Rhachilla internodes elongated between glumes. Rhachilla elongation 0.5–0.7 mm long.

Glumes. Glumes dissimilar, with lower wider than upper, shorter than spikelet, thinner than fertile lemma. Lower glume obovate, 2–3 mm long, 1 length of upper glume, membranous, 1-keeled, 7–9 -veined. Lower glume lateral veins with cross-veins. Lower glume apex dentate, 3–5 -fid. Upper glume oblong, 2–3 mm long, 0.66–0.75 length of adjacent fertile lemma, membranous, 1-keeled, 3–5 -veined. Upper glume lateral veins with cross-veins. Upper glume apex erose, truncate.

Florets. Fertile florets female. Fertile lemma oblong, gibbous, 3–4.2 mm long, cartilaginous, keeled, more than 3-veined. Lemma apex erose, truncate. Palea 3.5–5 mm long. Palea keels ciliate. Apical sterile florets 2–3(–5) in number, male, ovate, 4–5 mm long. Apical sterile lemmas glabrous or pubescent, adorned on margins.

Flower and Fruit. Anthers 3, 2.7–3.6 mm long. Caryopsis with adherent pericarp, fusiform, 2 mm long, yellow.

Distribution (TDWG). Continent. North America.

Country /Province /State. Mexico. Central Mexico, Southwest Mexico.
TDWG4. Mexico State, Morelos. Guerrero, Jalisco, Michoacan.

Zeugites sylvaticus (Soderstr. & H.F. Decker) A.M. Soriano & Dávila. *Syst. Bot.* 32(4): 728 (2007).

Accepted by: R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online (as *Calderonella*), W.D.Clayton & K.Harman, *GrassBase* (2008) and online (as *Calderonella*).

TYPE from Panama. **Basionym or Replaced Name:** *Calderonella sylvatica* Soderstr. & H.F. Decker, *Ann. Missouri Bot. Gard.* 60(2): 427–432, f. 2–3, 5 (1973). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Robert L. Dressler 3511*, 24 May 1968, Panama: Colsn: Santa Rita lumber road, bracts white, frequent (US-2576190; IT: BAA, K, MO-2354738, MO-2242464, US-2828316, P).

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

Derivation (Clifford & Bostock 2007): *L. silva*, wood; -ica, belonging to. Growing in woodlands.

Classification. Subfamily Panicoideae. Tribe: Zeugiteae.

Habit, Vegetative Morphology. Perennial, caespitose. Rhizomes short. Culms erect, 30–60 cm long. Ligule an eciliate membrane, 0.1–0.2 mm long. Leaf-blade base with a false petiole. Leaf-blades lanceolate, 8–20 cm long, 10–15 mm wide. Leaf-blade venation with distinct cross veins. Leaf-blade surface papillose, rough adaxially. Leaf-blade apex acute.

Inflorescence. Inflorescence composed of racemes. Racemes 1, single, paucilateral, 3–5 cm long, bearing few fertile spikelets, bearing 6–7 fertile spikelets on each. Rhachis subterete. Spikelet packing broadside to rhachis, lax. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, oblong, 1–2 mm long.

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 or cuneate (at maturity), laterally compressed, gibbous, truncate (at maturity) or acute, 8 mm long, falling entire.

Glumes. Glumes dissimilar, shorter than spikelet. Lower glume elliptic, 6.5 mm long, 1.4 length of upper glume, herbaceous, without keels, 15–16 -veined. Lower glume lateral veins ribbed, with cross-veins. Lower glume surface pilose, hairy between veins. Lower glume margins ciliate. Lower glume apex obtuse. Upper glume ovate, 4.5–5 mm long, 1 length of adjacent fertile lemma, herbaceous, without keels, 10–11 -veined. Upper glume lateral veins ribbed, with cross-veins. Upper glume surface pilose, hairy between veins. Upper glume margins ciliate. Upper glume apex obtuse.

Florets. Fertile florets female. Fertile lemma oblate, gibbous, 5 mm long, herbaceous, without keel, 15–19 -veined, more than 3-veined. Lemma lateral veins ribbed, with cross-veins. Lemma surface pilose, hairy between veins. Lemma margins connate below. Lemma apex obtuse. Palea 2 -veined. Palea keels winged. Palea apex ciliate. Apical sterile florets 2–4 in number, male, separate, lanceolate, 2.7 mm long.

Flower and Fruit. Lodicules 2, cuneate, 0.5–1.2 mm long, fleshy, veined. Anthers 3. Caryopsis with adherent pericarp, oblong, laterally compressed, 2.3 mm long. Hilum punctiform.

Distribution (TDWG). Continent. South America.

Country /Province /State. Mesoamerica, Western South America. Panama. Colombia.

Zingeria biebersteiniana (Claus) P. Smirn. *Bull. Soc. Nat. Mosc., Biol.*, n. s., li. *Livr.* 2, 67 (1946).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983).

TYPE from Russia. **Basionym or Replaced Name:** *Agrostis biebersteiniana* Claus, *Beitr. Pflanzenk. Russ. Reiches* 8: 264 (1851). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *K.Claus s.n.*, 1850, European Russia: [Volga region]: near Sarepta (LE; IT: LE).

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

Derivation (Clifford & Bostock 2007): *L. -ana*, indicating connection. In honor of Friedrich August Marschall von Bieberstein (1768–1826) German-born Russian botanist.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Annual. Culms erect, 8–38 cm long, 3 -noded. Ligule an eciliate membrane, 0.9–3.5 mm long, obtuse. Leaf-blades flat or convolute, 0.8–7 cm long, 0.4–2 mm wide. Leaf-blade apex acuminate.

Inflorescence. Inflorescence a panicle. Panicle open, elliptic, effuse, 4–15 cm long, 3–18 cm wide. Primary panicle branches 2–3 -nate, 1.5–10 cm long. Panicle branches capillary. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, cuneate, 5–13 mm long, glabrous.

Fertile Spikelets. Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile

or the upper sterile. Spikelets elliptic, dorsally compressed, 1.3–2 mm long, breaking up at maturity, disarticulating below each fertile floret.

Glumes. Glumes persistent, similar, reaching apex of florets or shorter than spikelet. Lower glume elliptic, 1.3–2 mm long, 1 length of upper glume, membranous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex obtuse or acute. Upper glume elliptic, 1.3–2 mm long, 0.9–1 length of adjacent fertile lemma, membranous, without keels, 3 -veined. Upper glume apex obtuse or acute.

Florets. Fertile lemma elliptic, 1.3–2 mm long, membranous or chartaceous, without keel, 3 -veined, 0–3 -veined. Lemma surface pubescent, with clavate hairs. Lemma apex obtuse. Palea 0.9 length of lemma, 2 -veined. Palea surface pubescent, hairy on back, with turgid hairs.

Flower and Fruit. Anthers 3, 0.5–0.7 mm long. Caryopsis with adherent pericarp, oblong, dorsally compressed, pitted. Embryo 0.2 length of caryopsis. Hilum elliptic.

$2n = 4$ (5 refs TROPICOS).

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

Region. Northern Europe (*), Eastern Europe.

Country /Province /State. : GB Aliens (Ryves et al). Krym, East European Russia, South European Russia. Caucasus, Western Asia. North Caucasus. Turkey.

TDWG4.

Zingeria kochii (Mez) Tzvelev. *Bot. Journ., URSS*, 1. 1318 (1965).

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 Armenia. **Basionym or Replaced Name:** *Milium kochii* Mez, *Repert. Spec. Nov. Regni Veg.* 17(13–18): 211 (1921)

. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *Koch 507*, 1837, Armenia: pr. Etschmadsin (LE). ST: *C. Koch Herb. J. Klinge*, 1838, see sp. # 1 (LE). ST: *Koch 507, Herb. C. A. Meyer*, 1837/1838, [Caucasus]: Armenia: Etschmadsin (LE).

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

Derivation (Clifford & Bostock 2007): in honor of Karl Heinrich Emil Koch (1809–1879) German physician, botanist and traveller.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Annual. Culms erect, 10–25 cm long. Culm-internodes smooth, distally glabrous. Lateral branches lacking. Leaf-sheaths longer than adjacent culm internode, glabrous on surface. Ligule an eciliate membrane. Leaf-blades 3–5 cm long, 1–2 mm wide.

Inflorescence. Inflorescence a panicle. Panicle open, elliptic, effuse, 3–15 cm long, 0.25–0.33 of culm length. Primary panicle branches ascending, 3–4 -nate, 2–5 cm long. Panicle branches capillary, smooth, with prominent pulvini. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, filiform, 0.5–3 mm long, glabrous.

Fertile Spikelets. Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, dorsally compressed, 2–2.6 mm long, breaking up at maturity, disarticulating below each fertile floret.

Glumes. Glumes persistent, similar, reaching apex of florets. Lower glume lanceolate, 2–2.6 mm long, 1 length of upper glume, membranous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume lanceolate, 2–2.6 mm long, 1 length of adjacent fertile lemma, membranous, without keels, 3 -veined. Upper glume apex acute.

Florets. Fertile lemma elliptic, 2–2.3 mm long, chartaceous, without keel, 3 -veined, 0–3 -veined. Lemma surface pubescent, with clavate hairs. Lemma apex obtuse. Palea 2 -veined. Palea surface pubescent, hairy on back, with turgid hairs.

Flower and Fruit. Anthers 3, 0.8–1.3 mm long. Caryopsis with adherent pericarp. Hilum elliptic.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. Caucasus. Transcaucasus.

TDWG4.

Zingeria pisidica (Boiss.) T.G. Tutin. *Bot. J. Linn. Soc.*, 76(4): 365 (1978).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980).

TYPE from Turkey. **Basionym or Replaced Name:** *Agrostis pisidica* Boiss., *Ann. Sci. Nat., Bot., ser. 4*, 2: 255 (1854). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Turkey, Pisidia: *Tchihatcheff* (G holo).

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

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

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Annual, culms solitary or caespitose. Culms erect, slender, 4–41 cm long, 2–3 -noded. Culm-internodes smooth, distally glabrous. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 1–3 mm long, obtuse. Leaf-blades 2–14 cm long, 1–3 mm wide. Leaf-blade apex acuminate.

Inflorescence. Inflorescence a panicle. Panicle open, elliptic, effuse, 2–16 cm long, 2–7 cm wide. Primary panicle branches ascending, 1.5–10 cm long. Panicle branches capillary. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, cuneate, 0.8–8 mm long, glabrous.

Fertile Spikelets. Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, dorsally compressed, 1.5–2.3 mm long, breaking up at maturity, disarticulating below each fertile floret.

Glumes. Glumes persistent, similar, reaching apex of florets. Lower glume ovate, 1.5–2.3 mm long, 1 length of upper glume, membranous, much thinner on margins, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 1.5–2.3 mm long, 1 length of adjacent fertile lemma, membranous, with hyaline margins, without keels, 3 -veined. Upper glume apex acute.

Florets. Fertile lemma elliptic, 1.5–2.3 mm long, membranous, without keel, 3 -veined, 0–3 -veined. Lemma apex obtuse. Palea 2 -veined.

Flower and Fruit. Anthers 3, 0.5–0.8 mm long. Caryopsis with adherent pericarp, ellipsoid or ovoid, dorsally compressed, 1.5–1.6 mm long. Hilum elliptic.

Distribution (TDWG). Continent. Europe.

Region. Northern Europe (*), Southeastern Europe.

Country /Province /State. : GB Aliens (Ryves et al). : Romania.

Zingeria trichopoda (Boiss.) P. Smirn. *Bull. Soc. Nat. Mosc., Biol.*, n. s., li. *Livr.* 2, 67 (1946).

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 Mesopotamia. **Basionym or Replaced Name:** *Milium trichopodum* Boiss., *Diagn. Pl. Orient.* 2(13): 45 (1853) [1854]. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Hab. in palude exsiccata spongiosa herbida Antilibani inter Rascheya et Damascum, legi quoque in Antilibano supra Zebdani, in Mesopotamia inter Orfa et Suerek Kotchy No. 41.", *Kotchy 41*.

Illustrations (Books): N.L.Bor, *Gramineae* in K.H.Rechinger, *Flora Iranica*. No. 70/30 (1970) (Tab. 40), N.L.Bor, *Gramineae* in *Flora of Iraq* (1968) (281, Pl. 99).

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Annual. Culms erect, 10–20 cm long. Ligule an eciliate membrane. Leaf-blades 3–10 cm long, 1–2 mm wide.

Inflorescence. Inflorescence a panicle. Panicle open, ovate, effuse, 4–15 cm long, 3–10 cm wide. Panicle branches capillary. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, filiform, glabrous.

Fertile Spikelets. Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, dorsally compressed, 1.5–1.8 mm long, breaking up at maturity, disarticulating below each fertile floret.

Glumes. Glumes persistent, similar, reaching apex of florets or exceeding apex of florets. Lower glume ovate, 1.5–1.8 mm long, 1 length of upper glume, membranous, without keels, 1 -veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume ovate, 1.5–1.8 mm long, 1–1.5 length of adjacent fertile lemma, membranous, without keels, 3 -veined. Upper glume apex acute.

Florets. Fertile lemma elliptic, 1.5 mm long, chartaceous, without keel, 3 -veined, 0–3 -veined. Lemma surface pubescent, with clavate hairs. Lemma apex obtuse. Palea 2 -veined. Palea surface pubescent, hairy on back, with turgid hairs.

Flower and Fruit. Anthers 3. Caryopsis with adherent pericarp, oblong, dorsally compressed. Embryo 0.2 length of caryopsis. Hilum elliptic.

$2n = 8$ (1 ref TROPICOS).

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. Caucasus, Western Asia. Iran, Iraq.

TDWG4.

Zingeria verticillata (Boiss. & Balansa) Chrtek. *Novit. Bot. & Del. Scm. Hort. Bot. Univ. Carol. Prog.* 1963, 3 (1963).

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

TYPE from Turkey. **Basionym or Replaced Name:** *Milium verticillatum* Boiss. & Balansa, *Bull. Soc. Bot. France* 5: 169 (1858). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *B. Balansa 1330*, 3 June 1857, Turkey: Ouchak, 1,200 m (L).

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

Derivation (Clifford & Bostock 2007): L. whorl; -ata, possessing. Primary inflorescence branches whorled.

Classification. Subfamily Pooideae. Tribe: Poeae.

Habit, Vegetative Morphology. Annual, caespitose. Culms erect, 11–28 cm long, 2-noded. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 1.5–4 mm long, acute. Leaf-blades 0.8–4 cm long, 1–2 mm wide. Leaf-blade apex acuminate.

Inflorescence. Inflorescence a panicle. Panicle open, pyramidal, effuse, 2–12 cm long, 0.2–7.5 cm wide. Primary panicle branches 3–17-nate, whorled at most nodes, 1.2–5 cm long. Panicle branches capillary. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, filiform, 4–23 mm long, glabrous.

Fertile Spikelets. Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, dorsally compressed, 1.8–2(–2.2) mm long, breaking up at maturity, disarticulating below each fertile floret.

Glumes. Glumes persistent, dissimilar, shorter than spikelet. Lower glume lanceolate, 1.3–1.5 mm long, 0.8 length of upper glume, membranous, without keels, 1-veined. Lower glume lateral veins absent. Lower glume apex acute. Upper glume oblong or ovate, 1.6–1.8 mm long, 0.8–0.9 length of adjacent fertile lemma, membranous, without keels, 3-veined. Upper glume apex acute, mucronate.

Florets. Fertile lemma oblong or ovate, 1.8–2(–2.2) mm long, membranous or chartaceous, without keel, 3-veined, 0–3-veined. Lemma surface pubescent, with clavate hairs. Lemma apex obtuse. Palea 1 length of lemma, 2-veined. Palea surface pubescent, hairy on back, with turgid hairs.

Flower and Fruit. Anthers 3, 0.6–0.7 mm long. Caryopsis with adherent pericarp, ovoid, 1.3 mm long. Hilum elliptic.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. Western Asia. Turkey.

Zizania aquatica L. *Sp. Pl.* 991. (1753).

Accepted by: R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983).

TYPE from USA. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *Anon.*, (LINN-1119.1). LT designated by Reveal, *Phytologia* 72: 6 (1992).

Illustrations (Books): M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (49, & as var. *aquatica*, var. *brevis*).

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

Derivation (Clifford & Bostock 2007): L. aqua, water; -ica, belonging to. Growing in or close to water.

Classification. Subfamily Ehrhartoideae. Tribe: Zizaniinae.

Habit, Vegetative Morphology. Annual or perennial, short-lived. Culms erect, reed-like, 90–300 cm long, spongy. Ligule an eciliate membrane, 0.3–20 mm long. Leaf-blades 10–40 mm wide. Leaf-blade surface scaberulous, glabrous. Monoecious, with male and female spikelets in the same inflorescence.

Inflorescence. Inflorescence a panicle. Panicle open, ovate, 30–50 cm long. Primary panicle branches 15–20 cm long. Sexes segregated, on unisexual branches, with male below. Spikelets solitary. Fertile spikelets pedicelled. Male spikelets pedicelled. Pedicels present, bearing a few hairs, tip cupuliform.

Fertile Spikelets. Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 20 mm long, falling entire.

Glumes. Glumes both absent or obscure.

Florets. Fertile florets female. Fertile lemma lanceolate, 20 mm long, chartaceous, pallid, without keel, 3-veined, 0–3-veined. Lemma surface scaberulous, rough generally. Lemma margins interlocking with palea margins. Lemma apex acuminate, awned, 1-awned. Principal lemma awn 10–20 mm long overall. Palea 1 length of lemma, 3-veined, without keels.

Flower and Fruit. Lodicules 2. Anthers 6. Caryopsis with adherent pericarp, linear.

Male spikelets distinct from female, linear (1–1.4mm wide), 7–9 mm long. Male spikelet glumes absent. Male spikelet lemma 5 -veined, muticous.

$N = 15$ (1 ref TROPICOS). $2n = 30$ (1 ref TROPICOS).

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

Region. Eastern Europe.

Country /Province /State. Belarus, Baltic States, Central European Russia, East European Russia, South European Russia, Northwest European Russia. **Caucasus, China.** China Southeast. **Western Canada, Eastern Canada, Northwest USA, North-central USA, Northeast USA, Southwestern USA, Southeastern USA.** Alberta, British Columbia, Manitoba, Saskatchewan. Ontario. Montana, Wyoming. New York. California, Utah. Florida, Louisiana, Maryland, Mississippi, North Carolina, South Carolina, Virginia.

TDWG4. Jianguo.

Zizania latifolia (Griseb.) Turcz. ex Stapf. *Kew Bull.* 1909, 385 (1909).

Accepted by: R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), E.Edgar, & H.Connor, *Flora of New Zealand Gramineae* 5 (2000), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), J.F.Veldkamp, Poaceae ms (*Flora Malesiana*), N.L.Bor, Grasses of Burma, Ceylon, India and Pakistan (1960), T.G.Tutin et al, *Flora Europaea* 5 (1980), N.Tsvelev, *Grasses of the Soviet Union* (1983), T.Koyama, *Grasses of Japan and its neighboring regions* (1987), W.D.Clayton & N.Snow, Key to Pacific Grasses (2010).

TYPE from Russia. **Basionym or Replaced Name:** *Hydropyrum latifolium* Griseb., *Fl. Ross.* 4(14): 466 (1853). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *N.S. Turczaninow s.n.*, 1833, USSR (L, US-1504540).

Recent Synonyms: *Zizania caduciflora* (Turcz. ex Trin.) Hand.-Mazz., *Symbolae Sinicae* 7 (5): 1278–1279 (1936).

Illustrations (Books): T.Koyama, *Grasses of Japan and its neighbouring regions* (1987) (30, Fig 5), C-C Hsu, *Flora of Taiwan*, Vol 5 (1978) (222), C-C Hsu, *Taiwan Grasses* (1975), H.Duistermaat, *Field Guide to the Grasses of Singapore* (2005) (139, Fig.148), E.Edgar. & H.E.Connor, *Flora of New Zealand* 5, *Gramineae* (2000) (59, Fig. 3), M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007), S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 252).

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

Derivation (Clifford & Bostock 2007): L. latus, broad; folium, leaf. Leaf-blades broad or relatively broad with respect to related species.

Classification. Subfamily Ehrhartoideae. Tribe: Zizaniinae.

Habit, Vegetative Morphology. Perennial. Stolons present. Culms 100–150 cm long, spongy. Ligule an eciliate membrane, 12–20 mm long. Leaf-blades 30–100 cm long, 20–30 mm wide, coriaceous. Leaf-blade surface scaberulous, rough on both sides. Leaf-blade margins cartilaginous, scabrous. Leaf-blade apex attenuate. Monoecious, with male and female spikelets in the same inflorescence.

Inflorescence. Inflorescence a panicle. Panicle open, lanceolate, 35–50 cm long. Sexes segregated, on unisexual branches, with male below. Spikelets appressed, solitary. Fertile spikelets pedicelled. Male spikelets pedicelled (pendulous). Pedicels present, 3 mm long, pubescent, tip cupuliform.

Fertile Spikelets. Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 15–17 mm long, falling entire.

Glumes. Glumes both absent or obscure.

Florets. Fertile florets female. Fertile lemma oblong, 15–17 mm long, chartaceous, without keel, 3 -veined, 0–3 -veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 15–50 mm long overall. Palea 1 length of lemma, 2 -veined, without keels.

Flower and Fruit. Lodicules 2. Anthers 6, 5–8 mm long. Caryopsis with adherent pericarp, linear, 10–20 mm long.

Male spikelets distinct from female, 8–12 mm long. Male spikelet glumes absent. Male spikelet lemma 5 -veined, awned (8–10mm).

$N = 17$ (1 ref TROPICOS). $2n = 20$ (1 ref TROPICOS), or 34 (2 refs TROPICOS).

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

Region. Eastern Europe.

Country /Province /State. Belarus, Estonia, Latvia, Lithuania, Central European Russia, East European Russia, Northwest European Russia, Ukraine. Siberia, Russian far east, **China, Eastern Asia.** Buryatiya, Chita. Amur, Khabarovsk, Primorye. China South Central, Hainan, Manchuria, China North-Central, China Southeast. Japan, Nansei-Shoto, Taiwan. Japan Hokkaido, or Honshu, or Shikoku, or Kyushu. **Indian Subcontinent, Indo-**

China, Malesia. Myanmar, Vietnam. Java, Malaya, Singapore. **New Zealand** (*). New Zealand North I. **North-central Pacific.** Hawaii (*).

TDWG4. Hebei, Shaanxi, Shandong. Anhui, Fujian, Guangdong, Guangxi, Henan, Hunan, Jiangsu, Jiangxi, Zhejiang. Guizhou, Hubei, Sichuan, Yunnan. Manipur, Meghalaya.

Zizania palustris L. *Mant.* ii. 295 (1771).

Accepted by: R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), E.Edgar, & H.Connor, *Flora of New Zealand Gramineae* 5 (2000).

TYPE from USA. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *Anon.*, Garden plant grown at Uppsala (LINN-1119.2). LT designated by Reveal, *Phytologia* 72: 7 (1992).

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

Derivation (Clifford & Bostock 2007): L. swampy place. Growing in swampy places.

Classification. Subfamily Ehrhartoideae. Tribe: Zizaniinae.

Habit, Vegetative Morphology. Annual. Culms erect, reed-like, 60–240 cm long, spongy. Ligule an eciliate membrane, 3–15 mm long. Leaf-blades 4–40 mm wide. Leaf-blade surface scaberulous, glabrous. Monoecious, with male and female spikelets in the same inflorescence.

Inflorescence. Inflorescence a panicle. Panicle open, ovate, 30–50 cm long. Primary panicle branches 15–20 cm long. Sexes segregated, on unisexual branches, with male below. Spikelets solitary. Fertile spikelets pedicelled. Male spikelets pedicelled. Pedicels present, bearing a few hairs, tip cupuliform.

Fertile Spikelets. Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 20 mm long, falling entire.

Glumes. Glumes both absent or obscure.

Florets. Fertile florets female. Fertile lemma lanceolate, 20 mm long, scarious, yellow or purple, suffused with last colour, without keel, 3 -veined, 0–3 -veined. Lemma surface scaberulous, rough in lines. Lemma margins interlocking with palea margins. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 10–20 mm long overall. Palea 1 length of lemma, 3 -veined, without keels.

Flower and Fruit. Lodicules 2. Anthers 6. Caryopsis with adherent pericarp, linear.

Male spikelets distinct from female, lanceolate (1.5–2mm wide), 7–9 mm long. Male spikelet glumes absent. Male spikelet lemma 5 -veined, muticous.

$N = 15$ (1 ref TROPICOS). $2n = 30$ (1 ref TROPICOS).

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

Country /Province/State. **China, Eastern Asia.** China Southeast. Taiwan. **Eastern Canada, Northwest USA, North-central USA, Northeast USA, Southwestern USA, South-central USA, Southeastern USA.** Wyoming. Illinois, Missouri, North Dakota, Nebraska, South Dakota, Wisconsin. Maine, Massachusetts, New Hampshire, New York. California, Utah. Kentucky.

TDWG4. Jiangsu.

Zizania texana Hitchcock. *Journ. Wash. Acad. Sc.* xxiii. 454. (1933).

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

TYPE from USA. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *W.A. Silveus* 518, Apr 1932, USA: Texas: Hays Co: San Marcos River near San Marcos (US-1537174; IT: K, US-1720531).

Illustrations (Books): M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (51), F.W.Gould, *The Grasses of Texas* (1975) (48, Fig. 13).

Derivation (Clifford & Bostock 2007): L. -ana, indicating location. From Texas, USA.

Classification. Subfamily Ehrhartoideae. Tribe: Zizaniinae.

Habit, Vegetative Morphology. Annual. Stolons absent or present. Culms decumbent, 100–170 cm long, spongy, rooting from lower nodes. Ligule an eciliate membrane, 5–15 mm long. Leaf-blades 10–40 mm wide. Leaf-blade surface scaberulous, glabrous. Monoecious, with male and female spikelets in the same inflorescence.

Inflorescence. Inflorescence a panicle. Panicle open, elliptic, 20–30 cm long. Primary panicle branches ascending, 5–10 cm long. Sexes segregated, on unisexual branches, with male below. Spikelets solitary. Fertile spikelets pedicelled. Male spikelets pedicelled. Pedicels present, bearing a few hairs, tip cupuliform.

Fertile Spikelets. Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 10 mm long, falling entire.

Glumes. Glumes both absent or obscure.

Florets. Fertile florets female. Fertile lemma linear, 10 mm long, chartaceous, without keel, 3 -veined, 0–3 -veined. Lemma margins interlocking with palea margins. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 10–20 mm long overall. Palea 1 length of lemma, 3 -veined, without keels.

Flower and Fruit. Lodicules 2. Anthers 6. Caryopsis with adherent pericarp, linear.

Male spikelets distinct from female, linear, 7–9 mm long. Male spikelet glumes absent. Male spikelet lemma 5 -veined, muticous.

Distribution (TDWG). Continent. North America.

Country /Province /State. South-central USA. Texas.

Zizaniopsis bonariensis (Bal. & Poitr.) Speg. *An. Mus. Nac. Buenos Aires*, vii. 183 (1902).

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

TYPE from Argentina. **Basionym or Replaced Name:** *Zizania bonariensis* Balansa & Poitr., *Bull. Soc. Hist. Nat. Toulouse* 12: 228, t. 3 (1878). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Hab. République argentine: bords des Marais à Buéno-Ayres, cultivée dans un des bassins de Paséo, Julio,.

Illustrations (Books): E.G.Nicora, *Los Generos de Gramineas de America Austral* (1987) (162, Fig. 41), A.Burkat, *Flora Ilustrada de Entre Rios (Argentina)*, Pt II, Gramineas (1969) (44, Fig. 8), A.L.Cabrera, *Flora de la Provincia de Buenos Aires, IV Pt 2 Gramineas* (1970) (46, Fig. 9).

Derivation (Clifford & Bostock 2007): L. -ensis, denoting origin. From Provincia de Buenos Aries, Argentina.

Classification. Subfamily Ehrhartoideae. Tribe: Zizaniinae.

Habit, Vegetative Morphology. Perennial. Rhizomes elongated. Culms reed-like, 150–300 cm long, spongy. Ligule an eciliate membrane, 15–40 mm long. Leaf-blades erect, 85–130 cm long, 7–13 mm wide, stiff. Leaf-blade midrib prominent beneath. Leaf-blade surface scabrous. Monoecious, with male and female spikelets in the same inflorescence.

Inflorescence. Inflorescence a panicle. Panicle open, lanceolate, 90–100 cm long. Primary panicle branches whorled at most nodes. Sexes segregated, on bisexual branches, with male below. Spikelets solitary. Fertile spikelets pedicelled. Male spikelets pedicelled. Pedicels present, tip cupuliform.

Fertile Spikelets. Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 10–16 mm long, falling entire.

Glumes. Glumes both absent or obscure.

Florets. Fertile florets female. Fertile lemma lanceolate, 10–16 mm long, chartaceous, without keel, 7 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 7–50 mm long overall. Palea 1 length of lemma, chartaceous, 3 -veined, without keels.

Flower and Fruit. Lodicules 2. Anthers 6, 5–7 mm long. Stigmas 2. Caryopsis with free brittle pericarp, ovoid, isodiametric, 6–7 mm long, apex rostrate. Hilum linear.

Male spikelets distinct from female, 1 flowered, separately deciduous, lanceolate, 8–13 mm long. Male spikelet glumes absent. Male spikelet lemma 7 -veined, muticous.

Distribution (TDWG). Continent. South America.

Country /Province /State. Brazil, Southern South America. Brazil South. Argentina Northeast, Uruguay.

TDWG4. Catarina, Rio Grande do Sul. Buenos Aires, Corrientes, Entre Rios.

Zizaniopsis killipii Swallen. *Contrib. U. S. Nat. Herb.* xxix. 273 (1948).

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

TYPE from Colombia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *E.P. Killip & J. Cuatrecasas* 39099, 13 Jun 1944, Colombia: Chocó (US-1856268, US-1856269).

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

Derivation (Clifford & Bostock 2007): in honor of Ellsworth Paine Killip (1890–1968) United States botanist.

Classification. Subfamily Ehrhartoideae. Tribe: Zizaniinae.

Habit, Vegetative Morphology. Annual. Culms 200 cm long, spongy. Leaf-sheaths glabrous on surface. Ligule an eciliate membrane, 15 mm long. Leaf-blades 100 cm long, 35–50 mm wide. Leaf-blade surface glabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Monoecious, with male and female spikelets in the same inflorescence.

Inflorescence. Inflorescence a panicle. Panicle open, oblong, 75 cm long, 30 cm wide. Primary panicle branches ascending, whorled at most nodes, 15–25 cm long. Panicle branches scabrous. Sexes segregated, on bisexual branches, with male below. Spikelets solitary. Fertile spikelets pedicelled. Male spikelets pedicelled. Pedicels present, tip rectangular.

Fertile Spikelets. Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 5–6 mm long, falling entire.

Glumes. Glumes both absent or obscure.

Florets. Fertile florets female. Fertile lemma ovate, 5–6 mm long, chartaceous, without keel, 5 -veined, more than 3-veined. Lemma midvein scaberulous. Lemma apex acuminate, awned, 1 -awned. Principal lemma awn 4–6 mm long overall. Palea 1 length of lemma, chartaceous, without keels. Palea apex acuminate.

Flower and Fruit. Caryopsis with free brittle pericarp.

Male spikelets distinct from female, 1 flowered, separately deciduous, lanceolate, 3.5 mm long. Male spikelet glumes absent. Male spikelet lemma 5 -veined, awned, with 1.5 mm long awn.

Distribution (TDWG). Continent. South America.

Country /Province /State. Western South America. Colombia.

Zizaniopsis microstachya (Nees) Doell & Aschers. *Mart. Fl. Bras.* 2. (2) 12. t. 13 (1877).

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:** *Zizania microstachya* Nees ex Trin., *Mem. Acad. Imp. Sci. Saint-Petersbourg, Ser. 6, Sci. Math., Seconde Pt. Sci. Nat.* 5,3(4): 183 (1839 [1840]). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Brasilia,.

Illustrations (Books): S.A.Renvoize, *The Grasses of Bahia*, 1984 (48, Fig.16), L.B. Smith, D.C. Wasshausen, R.M. Klein *Flora Illustrada Catarinensis Gramineas* (1981–1982) (593, 129).

Derivation (Clifford & Bostock 2007): Gk. mikros, small; stachys, ear of corn. Inflorescences or spikelets small.

Classification. Subfamily Ehrhartoideae. Tribe: Zizaniinae.

Habit, Vegetative Morphology. Perennial. Rhizomes elongated. Culms reed-like, 170–250 cm long, spongy. Ligule an eciliate membrane. Leaf-blades 50–100 cm long, 14–18 mm wide. Leaf-blade margins scabrous. Leaf-blade apex acuminate. Monoecious, with male and female spikelets in the same inflorescence.

Inflorescence. Inflorescence a panicle. Panicle open, oblong, 60–90 cm long. Primary panicle branches whorled at most nodes. Sexes segregated, on bisexual branches, with male below. Spikelets solitary. Fertile spikelets pedicelled. Male spikelets pedicelled. Pedicels present, tip cupuliform.

Fertile Spikelets. Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 4–5 mm long, falling entire.

Glumes. Glumes both absent or obscure.

Florets. Fertile florets female. Fertile lemma ovate, 4–5 mm long, chartaceous, without keel, 7 -veined, more than 3-veined. Lemma midvein scaberulous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 1–4 mm long overall. Palea 1 length of lemma, chartaceous, 3 -veined, without keels.

Flower and Fruit. Lodicules 2. Anthers 6. Stigmas 2. Caryopsis with free brittle pericarp, ovoid, isodiametric, apex rostrate. Hilum linear.

Male spikelets distinct from female, 1 flowered, separately deciduous, lanceolate, 4–5 mm long. Male spikelet glumes absent. Male spikelet lemma 7 -veined, awned, with 1–4 mm long awn.

Distribution (TDWG). Continent. South America.

Country /Province /State. Brazil. Brazil Northeast, Brazil Southeast, Brazil South.

TDWG4. Bahia, Minas Gerais, Rio de Janeiro, Espirito Santo, Sao Paulo Parana, Catarina, Rio Grande do Sul.

Zizaniopsis miliacea (Michx.) Doell & Aschers. *Mart., Fl. Bras.* 2,2:13 (1877).

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

TYPE from USA. **Basionym or Replaced Name:** *Zizania miliacea* Michx., *Fl. Bor.-Amer.* 1: 74–75 (1803). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Hab. in aquis Americanae septentrionalis.

Illustrations (Books): M.E.Barkworth et al, *Flora of North America north of Mexico* Vol 24 *Poaceae*, part 1 (2007) (53), F.W.Gould, *The Grasses of Texas* (1975) (50, Fig. 14).

Derivation (Clifford & Bostock 2007): L. -acea, resembling. Resembling *Milium*.

Classification. Subfamily Ehrhartoideae. Tribe: Zizaniinae.

Habit, Vegetative Morphology. Perennial. Rhizomes elongated. Culms 200–300 cm long. Ligule an eciliate membrane, 6–20 mm long. Leaf-blades 50–150 cm long, 8–22 mm wide. Leaf-blade margins serrulate. Monoecious, with male and female spikelets in the same inflorescence.

Inflorescence. Inflorescence a panicle. Panicle open, lanceolate to ovate, 30–60 cm long. Sexes segregated, on bisexual branches, with male below. Spikelets solitary. Fertile spikelets pedicelled. Male spikelets pedicelled. Pedicels present.

Fertile Spikelets. Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 6–8 mm long, falling entire.

Glumes. Glumes both absent or obscure.

Florets. Fertile florets female. Fertile lemma ovate, 6–8 mm long, chartaceous, without keel, 7 -veined, more than 3-veined. Lemma apex acute, awned, 1 -awned. Principal lemma awn 2–3 mm long overall. Palea 1 length of lemma, chartaceous, 3 -veined, 1-keeled.

Flower and Fruit. Lodicules 2. Anthers 6. Stigmas 2. Caryopsis with free brittle pericarp, orbicular, isodiametric, 3 mm long, apex rostrate. Embryo 0.33 length of caryopsis.

Male spikelets distinct from female, 1 flowered, separately deciduous, ovate, 6–8 mm long. Male spikelet glumes absent. Male spikelet lemma 7 -veined, muticous.

N = 12 (1 ref TROPICOS).

Distribution (TDWG). Continent. North America.

Country /Province /State. North-central USA, South-central USA, Southeastern USA, Mexico. Illinois, Iowa, Missouri, Oklahoma. Texas. Alabama, Arkansas, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia. Gulf (Mexico), Southwest Mexico, Southeast Mexico.

TDWG4. Veracruz. Jalisco. Chiapas.

Zizaniopsis villanensis C.L.Quarin. *Hickenia*, 1(8): 40 (1976).

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

TYPE from Argentina. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: C.L. Quarin 2943, 19 Jan 1975, Argentina: Santa Fe: General Obligado Dept. (CTES; IT: BAA, SI, K, US-2769136).

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

Derivation (Clifford & Bostock 2007): L. -ensis, denoting origin. From Villa Ana, Santa Fe Province, Argentina.

Classification. Subfamily Ehrhartoideae. Tribe: Zizaniinae.

Habit, Vegetative Morphology. Perennial. Rhizomes elongated. Culms reed-like, 120 cm long, spongy. Ligule an eciliate membrane, 35–80 mm long. Leaf-blades erect, 50–90 cm long, 7–12 mm wide. Leaf-blade surface scabrous, rough adaxially. Leaf-blade margins scabrous. Monoecious, with male and female spikelets in the same inflorescence.

Inflorescence. Inflorescence a panicle, embraced at base by subtending leaf. Panicle open, lanceolate, 50–60 cm long. Primary panicle branches appressed or ascending, whorled at most nodes. Sexes segregated, on bisexual branches or unisexual branches, with male below (when bisexual) or above (upper half of panicle mostly male). Spikelets solitary. Fertile spikelets pedicelled. Male spikelets pedicelled. Pedicels present, tip cupuliform.

Fertile Spikelets. Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 5–6 mm long, falling entire.

Glumes. Glumes both absent or obscure.

Florets. Fertile florets female. Fertile lemma elliptic, 5–6 mm long, chartaceous, yellow or purple, without keel, 7 -veined, more than 3-veined. Lemma surface scabrous. Lemma apex acute, awned, 1 -awned. Principal lemma awn 20–30 mm long overall. Palea 1 length of lemma, chartaceous, 3 -veined, without keels.

Flower and Fruit. Lodicules 2. Anthers 6, 3 mm long. Stigmas 2. Caryopsis with free brittle pericarp, ovoid, isodiametric, apex rostrate. Hilum linear.

Male spikelets distinct from female, 1 flowered, separately deciduous, elliptic, 4–5 mm long. Male spikelet glumes absent. Male spikelet lemma 7 -veined, awned, with 1–6 mm long awn.

Distribution (TDWG). Continent. South America.

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

TDWG4. Chaco, Corrientes, Santa Fe.

Zonotriche brunnea (J.B. Phipps) Clayton. *Kew Bull.* 26(1): 119. 1971.

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

TYPE from DRC. **Basionym or Replaced Name:** *Mitwabachloa brunnea* J.B. Phipps, *Bol. Soc. Bror., Ser.* 2, 41: 200 (1967). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Congo-Kinshasa: Mitwaba, Plateau des Kibara, steppe ` 1W. de la route de Mukana, alt. env. 1550 m, 18 Oct 1958, *M. Lukuesa* 495 (HT: EBV; IT: SRGH, UWO (fragm., photo)).

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

Derivation (Clifford & Bostock 2007): L. dull brown. Spikelets dull-brown.

Classification. Subfamily Panicoideae. Tribe: Tristachyideae.

Habit, Vegetative Morphology. Perennial, caespitose. Culms erect, 40 cm long, 3 -noded. Culm-nodes glabrous. Ligule a fringe of hairs. Leaf-blades 3–4 mm wide. Leaf-blade surface pilose, with tubercle-based hairs.

Inflorescence. Inflorescence a panicle, comprising 6–12 fertile spikelets. Panicle open, ovate, 2–3 cm long, bearing few spikelets (2–4 triads). Primary panicle branches simple. Panicle axis bearing deciduous spikelet clusters. Panicle branches capillary, abruptly recurved near tip. Spikelets in threes. Fertile spikelets pedicelled, 3 in the cluster, subequal. Pedicels present, fused to each other, united wholly.

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, 13 mm long, falling entire, deciduous in a cluster with fused pedicels, readily shedding fertile florets, pedicel base hooked. Floret callus evident, obtuse.

Glumes. Glumes shorter than spikelet. Lower glume lanceolate, 0.8 length of upper glume, coriaceous, much thinner above, dark brown, without keels, 3 -veined. Lower glume surface hispid, hairy on veins, with tubercle-based hairs. Lower glume apex acuminate. Upper glume lanceolate, 10 mm long, 0.9 length of spikelet, chartaceous, without keels, 3 -veined. Upper glume surface glabrous. Upper glume apex acuminate.

Florets. Basal sterile florets 1, male, with palea. Lemma of lower sterile floret similar to upper glume, lanceolate, 11 mm long, chartaceous, 5 -veined, pilose, with tubercle-based hairs, acuminate. Fertile lemma oblong, 7 mm long, coriaceous, without keel, 9 -veined, more than 3-veined. Lemma surface pubescent, with a transverse row of hair tufts, bearing 8 hair tufts in all. Lemma apex lobed, 2 -fid, with lanceolate lobes, with lobes 1.5 mm long, incised 0.2 of lemma length, awned, 1 -awned. Principal lemma awn from a sinus, geniculate, flat below, 9 mm long overall, with twisted column. Lateral lemma awns absent. Palea 6 mm long, 2 -veined. Palea keels thickened, winged, narrowly winged. Palea surface pubescent.

Flower and Fruit. Anthers 3. Ovary glabrous. Caryopsis with adherent pericarp, glabrous. Hilum linear.

Distribution (TDWG). Continent. Africa.

Country /Province /State. West-central tropical Africa. DRC.

Zonotriche decora (Stapf) J.B. Phipps. *Kirkia* 4: 113. 1964.

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

TYPE from Zambia. **Basionym or Replaced Name:** *Tristachya decora* Stapf, *Kew Bull.* 75. (1895). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Zambia, Fwambo: Carson 36 (K holo).

Illustrations (Books): R.M.Polhill, F.T.E.A., *Gramineae* (2(1974):430, Fig.116), G.V.Pope et al., *Flora Zambesiaca* 10 (3(1989):212, t. 58).

Illustrations (Journals): *Hooker's Icones Plantarum* (t.3446 (1947) as *Tristachya*).

Derivation (Clifford & Bostock 2007): L. decor, elegance. Attractive, usually with respect to habit.

Classification. Subfamily Panicoideae. Tribe: Tristachyideae.

Habit, Vegetative Morphology. Perennial, caespitose. Culms erect, 60–120 cm long. Ligule a fringe of hairs. Leaf-blades 15–25 cm long, 5–10 mm wide.

Inflorescence. Inflorescence a panicle. Panicle open, elliptic, 10–20 cm long. Primary panicle branches simple. Panicle axis bearing deciduous spikelet clusters. Panicle branches capillary, abruptly recurved near tip, villous (towards the tip), with tubercle-based hairs, bearded in axils. Spikelets in threes. Fertile spikelets

pedicelled, 3 in the cluster, subequal. Pedicels present, fused to each other, united wholly, 5–10 mm long, villous.

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 lanceolate, laterally compressed, 15–28 mm long, falling entire, deciduous in a cluster with fused pedicels, readily shedding fertile florets, pedicel base hooked. Floret callus evident, 0.5–1 mm long, bearded, obtuse. Floret callus hairs 0.4 length of lemma.

Glumes. Glumes exceeding apex of florets or reaching apex of florets. Lower glume lanceolate, 1 length of upper glume, coriaceous, much thinner above, dark brown, without keels, 3 -veined. Lower glume surface hispid, hairy on veins, with tubercle-based hairs. Lower glume hairs white. Lower glume apex setaceously acuminate. Upper glume lanceolate, 15–28 mm long, chartaceous, without keels, 3 -veined. Upper glume surface glabrous. Upper glume apex setaceously acuminate.

Florets. Basal sterile florets 1, male, with palea. Lemma of lower sterile floret similar to upper glume, lanceolate, 12–14 mm long, chartaceous, 5–7 -veined, glabrous or hispid, acute. Fertile lemma oblong, 8–10 mm long, coriaceous, without keel, 7–9 -veined, more than 3-veined. Lemma surface glabrous, with a transverse row of hair tufts, bearing 6–8 hair tufts in all. Lemma apex lobed, 2 -fid, with lanceolate lobes, incised 0.15 of lemma length, acuminate to setaceously acuminate, awned, 1 -awned. Principal lemma awn from a sinus, geniculate, flat below, 15–25 mm long overall, with twisted column. Lateral lemma awns absent. Palea 2 -veined. Palea keels thickened, winged, narrowly winged. Palea surface pubescent.

Flower and Fruit. Anthers 3, 4–6 mm long. Ovary glabrous. Caryopsis with adherent pericarp, linear, glabrous. Hilum linear.

Distribution (TDWG). Continent. Africa.

Country /Province /State. West-central tropical Africa, East tropical Africa, South tropical Africa. DRC. Tanzania. Angola, Zambia.

Zonotriche inamoena (K. Schum.) Clayton. *Kew Bull* xxi. 124 (1967).

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

TYPE from Malawi. **Basionym or Replaced Name:** *Tristachya inamoena* K. Schum., *Pflanzenw. Ost-Afrikas* 109 (1895). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Buchanan 49*, Malawi: Shire highlands (B).

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

Derivation (Clifford & Bostock 2007): L. in-, not; amoena, beautiful. Appearance unattractive in comparison with related species.

Classification. Subfamily Panicoideae. Tribe: Tristachyidae.

Habit, Vegetative Morphology. Perennial, caespitose. Culms erect, 60–150 cm long. Ligule a fringe of hairs. Leaf-blades 20–60 cm long, 3–11 mm wide.

Inflorescence. Inflorescence a panicle. Panicle open, linear to lanceolate, 10–25 cm long. Primary panicle branches simple. Panicle axis bearing deciduous spikelet clusters. Panicle branches capillary, abruptly recurved near tip, villous (towards the tip), bearded in axils. Spikelets in threes. Fertile spikelets pedicelled, 3 in the cluster, subequal. Pedicels present, fused to each other, united wholly, 2–3 mm long, villous.

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 lanceolate, laterally compressed, 10–15(–19) mm long, falling entire, deciduous in a cluster with fused pedicels, readily shedding fertile florets, pedicel base hooked. Floret callus evident, 0.5–1 mm long, pilose, obtuse.

Glumes. Glumes exceeding apex of florets or reaching apex of florets. Lower glume lanceolate, 0.7–1 length of upper glume, coriaceous, dark brown, without keels, 3–5 -veined. Lower glume surface hispid, hairy on veins, with tubercle-based hairs. Lower glume hairs yellow or dark brown. Lower glume apex acuminate. Upper glume lanceolate, 10–15(–19) mm long, chartaceous, without keels, 3–5 -veined. Upper glume surface glabrous or pubescent. Upper glume apex acuminate.

Florets. Basal sterile florets 1, male, with palea. Lemma of lower sterile floret similar to upper glume, lanceolate, 7–8 mm long, chartaceous, 5–9 -veined, glabrous or hispid, acute. Fertile lemma oblong, 5–7 mm long, coriaceous, without keel, 7–9 -veined, more than 3-veined. Lemma surface glabrous or pilose, without hair tufts. Lemma margins eciliate or ciliate. Lemma apex lobed, 2 -fid, with lanceolate lobes, incised 0.15 of lemma length, acuminate, awned, 3 -awned. Principal lemma awn from a sinus, geniculate, flat below, 9–18 mm long overall, with twisted column. Lateral lemma awns present, arising on apex of lobes, 1–3(–6) mm long, shorter than principal. Palea 2 -veined.

Flower and Fruit. Anthers 3, 3–5 mm long. Ovary pubescent on apex. Caryopsis with adherent pericarp, linear, hairy at apex. Hilum linear.

Distribution (TDWG). Continent. Africa.

Country /Province /State. West-central tropical Africa, East tropical Africa, South tropical Africa. DRC. Tanzania. Angola, Malawi, Mozambique, Zambia, Zimbabwe.

Zotovia acicularis Edgar & Conn. *New Zealand J. Bot.* 36(4): 569 (1998).

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online (as *Ehrharta*), 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, Lyall Bay: Metcalf (CHR holo).

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

Derivation (Clifford & Bostock 2007): *L. acus*, needle; *-ulus*, diminutive; *-are*, pertaining to.

Classification. Subfamily Ehrhartoideae. Tribe: Ehrharteae.

Habit, Vegetative Morphology. Perennial, mat forming. Rhizomes elongated. Basal innovations intravaginal. Culms 3–13 cm long. Leaf-sheaths wider than blade at the collar, keeled, glabrous on surface. Ligule a ciliolate membrane, 0.5 mm long, acute. Leaf-blades aciculate, involute, 1–2.6 cm long, 0.5 mm wide. Leaf-blade surface glabrous. Leaf-blade margins scaberulous. Leaf-blade apex hardened.

Inflorescence. Inflorescence composed of racemes. Peduncle pubescent above. Racemes 1, single, bearing few fertile spikelets, bearing 3–6 fertile spikelets on each. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, scabrous.

Fertile Spikelets. Spikelets comprising 2 basal sterile florets, 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 5–7.5 mm long, breaking up at maturity, disarticulating below each fertile floret. Floret callus pilose. Floret callus hairs 1–2 mm long.

Glumes. Glumes persistent, similar, shorter than spikelet, thinner than fertile lemma. Lower glume lanceolate, 2–3.5 mm long, 1 length of upper glume, 0.5 length of spikelet, chartaceous, without keels, keel-less except near apex, 1 -veined. Lower glume apex acute. Upper glume lanceolate, 2–3.5 mm long, 0.5 length of spikelet, chartaceous, without keels, keel-less except near apex, 3 -veined. Upper glume apex acute.

Florets. Basal sterile florets 2 or more, similar, barren, without significant palea, attached to and deciduous with the fertile. Lemma of lower sterile floret lanceolate, 5–5.5 mm long, 0.7–0.9 length of spikelet, coriaceous, 1-keeled, 5 -veined, scaberulous, rough on midvein, scaberulous on margins, acuminate. Lemma of upper sterile floret lanceolate, 6–6.8 mm long, 1.2 length of lower sterile floret, coriaceous, acuminate. Fertile lemma elliptic, 3–4 mm long, cartilaginous, keeled. Lemma surface with conspicuous apical hairs. Lemma apex erose, truncate. Palea 2.5–2.75 mm long. Palea apex ciliate.

Flower and Fruit. Lodicules 2, cuneate, 0.75 mm long, membranous. Anthers 2, 1.1–1.5 mm long.

Distribution (TDWG). Continent. Australasia.

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

Zotovia colensoi (Hook. f.) Edgar & Connor. *New Zealand J. Bot.* 36: 571–573, f. 4. 1998.

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), E.Edgar, & H.Connor, *Flora of New Zealand Gramineae* 5 (2000).

TYPE from New Zealand. **Basionym or Replaced Name:** *Ehrharta colensoi* Hook. f., *Fl. N. Zel.* 1: 288. t. 65 a. (1853). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *Colenso 1568*, 1846, New Zealand: dry short grass, growing in tufts near top of Ruahine Range (K; IT: WELT-21964).

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

Derivation (Clifford & Bostock 2007): in honor of William Colenso (1811–1899), English-born New Zealand cleric and botanist.

Classification. Subfamily Ehrhartoideae. Tribe: Ehrharteae.

Habit, Vegetative Morphology. Perennial, caespitose. Culms 15–45 cm long. Ligule an eciliate membrane. Leaf-blades 10–15 cm long, 3–5 mm wide.

Inflorescence. Inflorescence a panicle. Panicle spiciform, linear, continuous or interrupted, 3–10 cm long. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

Fertile Spikelets. Spikelets comprising 2 basal sterile florets, 1 fertile florets, without rhachilla extension or with a barren rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6–7 mm long, breaking up at maturity, disarticulating below each fertile floret. Floret callus pilose. Floret callus hairs 1.5 length of lemma.

Glumes. Glumes persistent, similar, shorter than spikelet, thinner than fertile lemma. Lower glume ovate, 2.3 mm long, 0.9 length of upper glume, chartaceous, without keels, 3–5 -veined. Lower glume apex obtuse, mucronate. Upper glume ovate, 2.5 mm long, 0.33 length of spikelet, chartaceous, without keels, 3–5 -veined. Upper glume apex obtuse, mucronate.

Florets. Basal sterile florets 2 or more, similar, barren, without significant palea, attached to and deciduous with the fertile. Lemma of lower sterile floret elliptic, 5–6 mm long, 0.8–0.9 length of spikelet, coriaceous, 1-keeled, 5–7 -veined, smooth, acuminate, awned. Awn of lower sterile floret 1 mm long. Lemma of upper sterile floret lanceolate, 6–7 mm long, 1.2 length of lower sterile floret, coriaceous, acuminate, awned. Awn of upper sterile floret 1.5–2 mm long. Fertile lemma elliptic, 5–6 mm long, cartilaginous, keeled, 5 -veined, more than 3-veined. Lemma apex acute.

Flower and Fruit. Lodicules 2, membranous. Anthers 2.

Distribution (TDWG). Continent. Australasia.

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

Zotovia thomsonii (Petrie) Edgar & Connor. *New Zealand J. Bot.* 36: 573–575, f. 3. 1998.

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), E.Edgar, & H.Connor, *Flora of New Zealand Gramineae* 5 (2000) (as *Petriella*).

TYPE from New Zealand. **Basionym or Replaced Name:** *Ehrharta thomsonii* Petrie, *Trans. N. Z. Inst.* 12: 356. (1880). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: LT: *D. Petrie s.n.*, 1878, New Zealand: Frazer Peaks, Port Pegasus, Stewart Island (WELT-76439A; IT: AK-1301, CHR-6805A, CHR-6805, CHR-42790, WELT-76439B). LT designated by Edgar & Zotov, *New Zealand J. Bot.* 36: 573 (1998).

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

Derivation (Clifford & Bostock 2007): in honor of George Malcolm Thomson (1849–1933) New Zealand educator and amateur botanist.

Classification. Subfamily Ehrhartoideae. Tribe: Ehrharteae.

Habit, Vegetative Morphology. Perennial, cushion forming. Culms 2–12 cm long. Ligule an eciliate membrane. Leaf-blades lanceolate, 0.5–1 cm long, 0.5–1 mm wide. Leaf-blade surface ribbed. Leaf-blade apex acute.

Inflorescence. Inflorescence a panicle, comprising 3–5 fertile spikelets. Panicle capitate, ovate, 0.5 cm long, bearing few spikelets. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present.

Fertile Spikelets. Spikelets comprising 2 basal sterile florets, 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 3–4 mm long, breaking up at maturity, disarticulating below each fertile floret. Floret callus pilose.

Glumes. Glumes persistent, similar, shorter than spikelet, thinner than fertile lemma. Lower glume oblong, 1.2 mm long, 0.75 length of upper glume, chartaceous, without keels, 3 -veined. Lower glume apex obtuse. Upper glume oblong, 1.5 mm long, 0.33–0.5 length of spikelet, chartaceous, without keels, 5 -veined. Upper glume apex obtuse.

Florets. Basal sterile florets 2 or more, similar, barren, without significant palea, attached to and deciduous with the fertile. Lemma of lower sterile floret lanceolate, 3–4 mm long, 1 length of spikelet, cartilaginous, 1-keeled, 5 -veined, smooth, acuminate. Lemma of upper sterile floret elliptic, 3–4 mm long, 1 length of lower sterile floret, cartilaginous, acuminate, awned. Awn of upper sterile floret 1 mm long. Fertile lemma elliptic, 3.5 mm long, cartilaginous, keeled, 3–5 -veined, 0–3 -veined or more than 3-veined. Lemma apex acute.

Flower and Fruit. Lodicules 2, membranous. Anthers 2.

Distribution (TDWG). Continent. Australasia.

Country /Province /State. New Zealand. Antipodes Is, New Zealand South I.

Zoysia japonica Steud. *Syn. Pl. Glumac.* 1: 414. 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), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), N.L.Bor, *Grasses of Burma, Ceylon, India and Pakistan* (1960), N.Tsvelev, *Grasses of the Soviet Union* (1983), T.Koyama, *Grasses of Japan and its neighboring regions* (1987), W.D.Clayton & N.Snow, *Key to Pacific Grasses* (2010).

TYPE from Japan. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: *P.F. von Siebold s.n.*, Japan (L).

Illustrations (Books): L.K.A. Chippindall, *Grasses and Pastures of South Africa* (1955) (104, Fig. 74), T.Koyama, *Grasses of Japan and its neighbouring regions* (1987) (290, Fig. 112), C-C Hsu, *Flora of Taiwan*, Vol 5 (1978) (448), C-C Hsu, *Taiwan Grasses* (1975) (507, Pl. 1413), M.E.Barkworth et al, *Flora of North*

America north of Mexico Vol 25 *Poaceae*, part 2 (2003) (284), S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 703).

Derivation (Clifford & Bostock 2007): L. -ica, belonging to; Japan, a modified spelling Zhapan introduced into Europe by Marco Polo as a transliteration for the Chinese name for the large islands to the east of that country. From Japan.

Classification. Subfamily Chloridoideae. Tribe: Zoysieae.

Habit, Vegetative Morphology. Perennial, mat forming. Rhizomes elongated. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms 5–15 cm long, 0.2–0.3 mm diam., 3–6 -noded. Culm-internodes 1.5–3 cm long. Leaf-sheaths longer than adjacent culm internode. Ligule a fringe of hairs. Leaf-blades linear or lanceolate, 2.5–6 cm long, 2–5 mm wide. Leaf-blade surface glabrous or pilose, sparsely hairy, hairy adaxially. Leaf-blade apex acuminate.

Inflorescence. Inflorescence composed of racemes. Racemes 1, single, linear, multilateral, 2–8 cm long, 3–5 mm wide. Spikelet packing crowded. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, curved, 3–4 mm long.

Fertile Spikelets. Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets ovate, laterally compressed, 2.5–3.5 mm long, 1.2–1.5 mm wide, falling entire.

Glumes. Glumes one the lower absent or obscure, exceeding apex of florets, firmer than fertile lemma, shiny. Upper glume ovate, 1 length of spikelet, coriaceous, without keels. Upper glume apex acute.

Florets. Fertile lemma elliptic or oblong, 2.5–3 mm long, hyaline, without keel, 1 -veined, 0–3 -veined, one-veined. Palea without keels.

Flower and Fruit. Anthers 3, 1.5 mm long.

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

Country /Province /State. Russian far east, **China, Eastern Asia.** Primorye. Manchuria, China North-Central, China Southeast. Japan, Korea, Ogasawara-shoto, Taiwan. Japan Hokkaido, or Honshu, or Shikoku, or Kyushu. Fiji (*). Marianas. **North-central USA, Northeast USA, Southwestern USA, South-central USA, Southeastern USA.** Kansas, Oklahoma, Wisconsin. New York, Pennsylvania. Arizona. New Mexico, Texas. Arkansas, Florida, Mississippi. **Brazil.** Brazil West Central.

TDWG4. Hebei, Shandong. Hong Kong, Jiangsu, Jiangxi, Zhejiang.

Zoysia macrantha Desv. *Mem. Soc. Agric. Angers* 1: 158. 1831.

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), D.Sharp, D. & B.K.Simon, *AusGrass* (2002), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006).

TYPE from Nova Hollandia. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: *Crescit* in Nova-Hollandia, iso:NSW.

Illustrations (Books): J.P.Jessop, G.R.M. Dashorst & F.M.James, *Grasses of South Australia* (2006) (408, Fig. 338 as subsp. *walshii*), N.Walsh & T.Entwistle, *Flora of Victoria* Vol 2 (1994) (581, Fig. 117), S.W.L.Jacobs, R.D.B.Whalley & D.J.B.Wheeler, *Grasses of New South Wales*, 4th edn (2008) (402), J.C.Tothill, & J.B.Hacker. *The grasses of southern Queensland* (1983) (438), T.D.Stanley & E.Ross, *Flora of South East Queensland, Gramineae* (1989) (190, Fig. 29), K.O.Mallett (ed.), *Flora of Australia*, Vol 44B. *Poaceae* (2004) (as subsp. *walshii*), D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002).

Illustrations (Journals): *Hooker's Icones Plantarum* (t. 3264 (1935) as *Zoysia macrantha*).

Images: D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002);

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

Classification. Subfamily Chloridoideae. Tribe: Zoysieae.

Habit, Vegetative Morphology. Perennial. Rhizomes elongated. Culms decumbent, 5–25 cm long. Lateral branches lacking or sparse. Leaves cauline. Ligule a fringe of hairs. Leaf-blades flat or involute, 4–10 cm long, 1–2 mm wide, stiff. Leaf-blade apex pungent.

Inflorescence. Inflorescence composed of racemes. Racemes 1, single, multilateral, 2–5 cm long. Spikelets appressed, solitary. Fertile spikelets pedicelled. Pedicels present, linear, flattened, 1–2 mm long.

Fertile Spikelets. Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 4 mm long, falling entire.

Glumes. Glumes one the lower absent or obscure, exceeding apex of florets, firmer than fertile lemma, shiny. Upper glume ovate, 4 mm long, 1.1 length of adjacent fertile lemma, coriaceous, dark brown or purple, without keels, 1 -veined. Upper glume lateral veins absent. Upper glume apex obtuse.

Florets. Fertile lemma elliptic, 3.5 mm long, hyaline, without keel, 1 -veined, 0–3 -veined, one-veined. Lemma apex obtuse, mucronate. Palea linear, 3 mm long, 0.9 length of lemma, hyaline, 0 -veined. Palea apex obtuse.

Flower and Fruit. Anthers 3, 3 mm long.

Distribution (TDWG). Continent. Australasia.

Country /Province /State. Australia. Queensland, New South Wales, Victoria, Tasmania.

TDWG4. Southern. Central, South East. Coast.

Zoysia macrostachya Franch. & Sav. *Enum. Pl. Jap.* 2: 608. 1879.

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), T.Koyama, *Grasses of Japan and its neighboring regions* (1987).

Illustrations (Books): T.Koyama, *Grasses of Japan and its neighbouring regions* (1987) (288, Fig. 111), S-L Chen et al, *Flora of China*, Poaceae (2007) (Fig. 702).

Derivation (Clifford & Bostock 2007): Gk. makros, large; stachys, ear of corn. Inflorescence large.

Classification. Subfamily Chloridoideae. Tribe: Zoysieae.

Habit, Vegetative Morphology. Perennial, mat forming. Rhizomes elongated. Culms 12–40 cm long, 1–1.2 mm diam., 10–17 -noded. Culm-internodes 1–6 cm long. Leaf-sheaths longer than adjacent culm internode. Leaf-sheath oral hairs bearded, 2–3 mm long. Ligule a fringe of hairs. Leaf-blades linear or lanceolate, involute, 2–7 cm long, 3–5 mm wide, stiff, glaucous. Leaf-blade surface glabrous or puberulous, hairy abaxially. Leaf-blade apex acuminate.

Inflorescence. Inflorescence composed of racemes, subtended by an inflated leaf-sheath, embraced at base by subtending leaf. Racemes 1, single, lanceolate, multilateral, 2–3.5 cm long, 5–9 mm wide. Spikelet packing crowded. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 1–2 mm long.

Fertile Spikelets. Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets oblong, laterally compressed, 6–8 mm long, 1.8–2.2 mm wide, falling entire.

Glumes. Glumes one the lower absent or obscure, exceeding apex of florets, firmer than fertile lemma, shiny. Upper glume lanceolate or elliptic, 1 length of spikelet, coriaceous, without keels. Upper glume surface puberulous, hairy at apex. Upper glume margins ciliolate. Upper glume apex acute, mucous or mucronate.

Florets. Fertile lemma lanceolate, 3.8–4.2 mm long, hyaline, without keel, 1 -veined, 0–3 -veined, one-veined. Palea without keels.

Flower and Fruit. Anthers 3, 2–2.5 mm long. Caryopsis with adherent pericarp, ellipsoid, 1.8–2 mm long.

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China, Eastern Asia. China North-Central, China Southeast. Japan, Korea, Nansei-Shoto. Japan Hokkaido, or Honshu, or Shikoku, or Kyushu.

TDWG4. Shandong, Anhui, Fujian, Jiangsu, Zhejiang.

Zoysia matrella (L.) Merr. *Philipp. Journ. Sc., Bot.* vii. 230 (1912).

Accepted by: R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), J.F.Veldkamp, Poaceae ms (*Flora Malesiana*), N.L.Bor, *Grasses of Burma, Ceylon, India and Pakistan* (1960), T.Koyama, *Grasses of Japan and its neighboring regions* (1987), W.D.Clayton & N.Snow, *Key to Pacific Grasses* (2010).

TYPE from Sri Lanka. **Basionym or Replaced Name:** *Agrostis matrella* L., *Mant. Pl.* 2: 185 (1771). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *Koenig 56*, Sri Lanka ? (LINN-84.11; ILT: L). LT designated by Goudswaard, *Blumea* 26: ? (1980).

Recent Synonyms: *Zoysia pacifica* (Goudswaard) M. Hotta & S. Kuroki, *Acta Phytotax. Geobot.* 45(1): 71 (1994). *Zoysia tenuifolia* Willd. ex Thiele, *Mem. Acad. Petersb. Ser.* 6 iv. Sc. Nat. ii. 96 (1836).

Illustrations (Books): L.K.A. Chippindall, *Grasses and Pastures of South Africa* (1955) (105, Fig 76), J.Bosser, *Graminees des Paturage et des Cultures a Madagascar* (1969) (111, Fig. 33), C-C Hsu, *Flora of Taiwan*, Vol 5 (1978) (450), C-C Hsu, *Taiwan Grasses* (1975) (509, Pl. 1414), K.M.Matthew, *Illustrations on the Flora of Tamilnadu Carnatic* (1982) (Pl. 959 & 960), H.B.Gilliland, *Grasses of Malaya* (1971) (110, Fig. 19), H.Duistermaat, *Field Guide to the Grasses of Singapore* (2005), S.W.L.Jacobs, R.D.B.Whalley & D.J.B.Wheeler., *Grasses of New South Wales*, 4th edn (2008) (402), M.E.Barkworth et al, *Flora of North America north of Mexico Vol 25 Poaceae*, part 2 (2003) (284), L.B. Smith, D.C. Wasshausen, R.M. Klein *Flora Illustrada Catarinensis Gramineas* (1981–1982) (301, Fig. 67 & 316, Fig. 71a), G.Harling & C.Persson, *Flora of Ecuador* (2006) (68: 121, Fig. 18 (2001) as var. *pacifica*), R.Pilger, *Die Natürlichen Pflanzenfamilien* 14d (1956) (132, Fig. 33), E.Hafliger & E.Schultz, *Grass Weeds*, CIBA-GEIGY (2:137(1980)).

Images: H.Duistermaat, *Field Guide to the Grasses of Singapore* (2005);, H.B.Gilliland et al., *Flora of Malaya Vol. 3 Grasses* (1971);

Derivation (Clifford & Bostock 2007): *L. mater*, mother; -ella, diminutive. Reason for choice of name is uncertain.

Classification. Subfamily Chloridoideae. Tribe: Zoysieae.

Habit, Vegetative Morphology. Perennial, mat forming. Rhizomes elongated. Stolons present. Culms prostrate, 5–25 cm long, wiry. Leaf-sheaths longer than adjacent culm internode, glabrous on surface. Ligule a ciliate membrane. Leaf-blades filiform or linear, flat or involute, 2–10 cm long, 1–3 mm wide.

Inflorescence. Inflorescence composed of racemes. Racemes 1, single, multilateral, 0.6–3.5 cm long. Spikelets ascending, solitary. Fertile spikelets pedicelled. Pedicels present, 0.3–1 mm long.

Fertile Spikelets. Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate to ovate, laterally compressed, 2–3.5 mm long, falling entire.

Glumes. Glumes one the lower absent or obscure, exceeding apex of florets, firmer than fertile lemma, shiny. Upper glume lanceolate to ovate, 1 length of spikelet, coriaceous, without keels, 3 -veined. Upper glume apex acute, muticous or awned, 1 -awned, awn 0–1 mm long.

Florets. Fertile lemma oblong, 2–2.5 mm long, hyaline, without keel, 1 -veined, 0–3 -veined, one-veined. Lemma apex emarginate. Palea 0.5 length of lemma, hyaline, without keels.

Flower and Fruit. Anthers 3, 1.4 mm long.

Distribution (TDWG). Continent. Africa, Temperate Asia, Tropical Asia, Australasia, Pacific, North America, South America.

Country /Province /State. West tropical Africa, Western Indian ocean. Nigeria, Togo, Madagascar, Reunion, Rodrigues. **China, Eastern Asia.** Hainan, China Southeast. Japan, Kazan-retto, Nansei-Shoto, Ogosawara-shoto, Taiwan. Japan Honshu, or Shikoku, or Kyushu. **Indian Subcontinent, Indo-China, Malesia, Papuasia.** Bangladesh, India, Sri Lanka. Andaman Is, Myanmar, Thailand, Vietnam. Borneo, Cocos (Keeling) Is, Java, Lesser Sunda Is, Malaya, Singapore, Moluccas, Philippines, Sulawesi, Sumatra, Christmas I. New Guinea West Papua (Irian Jaya). New Guinea, Solomon Is. **Australia.** Queensland. **Southwestern Pacific, South-central Pacific, Northwestern Pacific, North-central Pacific.** Fiji, New Caledonia, Marquesas, Society Is, Tubuai Is. Caroline Is, Marianas, Marshall Is, Wake Is. Hawaii. **Northeast USA, South-central USA, Southeastern USA.** Pennsylvania. New Mexico, Texas. Florida. **Mesoamerica, Caribbean, Western South America, Brazil.** Costa Rica, El Salvador, Honduras, Nicaragua. Puerto Rico (*). Colombia. Brazil West Central, Brazil Southeast.

TDWG4. Guangdong, Andhra Pradesh, Diu, Daman, Kerala. Orissa, Tamilnadu, West Bengal.

Zoysia minima (Colenso) Zotov. *Trans. & Proc. Roy. Soc. N. Z.* lxxiii. 237 (1943).

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:** *Gaimardia minima* Colenso, *Trans. Proc. New Zeal. Inst.* 22:491 (1890). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: LT: *K. Hill s.n.*, 1889, New Zealand: Mount Tongariro, dry open grounds (K). LT designated by Zotov, *New Zealand J. Bot.* 9: 640 (1971).

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

Derivation (Clifford & Bostock 2007): *L. least*. Smallest of the known species.

Classification. Subfamily Chloridoideae. Tribe: Zoysieae.

Habit, Vegetative Morphology. Perennial, mat forming. Stolons present. Culms 1.5–10 cm long. Ligule a ciliate membrane. Leaf-blades filiform, convolute, 0.5–6 cm long, 0.5–1 mm wide.

Inflorescence. Inflorescence comprising only a few spikelets, comprising 1–2(–3) fertile spikelets, shorter than basal leaves. Spikelets ascending, solitary. Fertile spikelets pedicelled. Pedicels present, cuneate.

Fertile Spikelets. Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 3.5–4 mm long, falling entire.

Glumes. Glumes one the lower absent or obscure, reaching apex of florets, firmer than fertile lemma. Upper glume ovate, 3.5–4 mm long, 1 length of adjacent fertile lemma, coriaceous, without keels. Upper glume apex acute.

Florets. Fertile lemma oblong, 3.5–4 mm long, hyaline, without keel, 1 -veined, 0–3 -veined, one-veined. Lemma apex emarginate. Palea hyaline.

Flower and Fruit. Anthers 3.

Distribution (TDWG). Continent. Australasia.

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

Zoysia pacifica (Goudswaard) M. Hotta & S. Kuroki. *Acta Phytotax. Geobot.*, 45(1): 71: (1994).

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

TYPE from Japan. **Basionym or Replaced Name:** *Zoysia matrella* var. *pacifica* Goudswaard, *Blumea* 26: 172, 174, Map 1. (1980). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Japan: Ryukyu Islands: Yonakuni Island, *Hatusima* 24127 (HT: L; IT: FU).

Illustrations (Books): M.E.Barkworth et al, *Flora of North America north of Mexico Vol 25 Poaceae*, part 2 (2003) (284), S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 703).

Derivation (Clifford & Bostock 2007): of the Pacific Ocean. From islands in the Pacific.

Classification. Subfamily Chloridoideae. Tribe: Zoysieae.

Habit, Vegetative Morphology. Perennial, mat forming, clumped densely. Stolons present. Culms prostrate, 5–10 cm long, wiry. Lateral branches ample. Leaf-sheaths glabrous on surface. Leaf-sheath oral hairs ciliate, 2–5 mm long. Ligule a ciliate membrane. Leaf-blades filiform, 4–6 cm long, 1 mm wide.

Inflorescence. Inflorescence composed of racemes. Racemes 1, single, multilateral, 1–1.5 cm long, bearing 6–12 fertile spikelets on each. Spikelet packing lax. Spikelets ascending, solitary. Fertile spikelets pedicelled. Pedicels present, 1–1.6 mm long, scabrous, tip widened.

Fertile Spikelets. Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 2–3 mm long, 0.6 mm wide, falling entire.

Glumes. Glumes one the lower absent or obscure, exceeding apex of florets, firmer than fertile lemma, shiny. Upper glume lanceolate, 2–3 mm long, 1 length of spikelet, coriaceous, without keels, 5 -veined. Upper glume primary vein obscure. Upper glume apex acute, mucous or mucronate.

Florets. Fertile lemma oblong, 2–2.5 mm long, hyaline, without keel, 1 -veined, 0–3 -veined, one-veined. Palea absent or minute.

Flower and Fruit. Anthers 3, 0.6–0.8 mm long.

Distribution (TDWG). Continent. Temperate Asia, Tropical Asia, Pacific, and North America.

Country /Province /State. **Eastern Asia.** Japan, Ogasawara-shoto, Taiwan. Japan Kyushu. **Indo-China, Malesia,** and **Papuasiasia.** South China Sea. Philippines. Solomon Is. **South-central Pacific** and **Northwestern Pacific.** New Caledonia, Samoa. Caroline Is, Marianas. Hawaii. **Southwestern USA, Southeastern USA.** California. Florida.

TDWG4.

Zoysia pauciflora Mez. *Repert. Spec. Nov. Regni Veg.* 17(8–12): 145. 1921.

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

TYPE from New Zealand. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: LT: *D. Petrie s.n. [herb. L. Cockayne 2315]*, 1903, New Zealand: Opotiki (WELT-68500). LT designated by Edgar & Connor, *Fl. New Zealand* 5: 517 (2000). LT: *D. Petrie 2315*, New Zealand (B; ILT: US-1127205 (fragm.), US-91044 (fragm.)). LT designated by Chase & Niles, *Ind. Grass Sp.* 3: ? (1962).

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

Derivation (Clifford & Bostock 2007): *L. paucus*, few; flos, flower. Spikelets few per inflorescence.

Classification. Subfamily Chloridoideae. Tribe: Zoysieae.

Habit, Vegetative Morphology. Perennial, mat forming. Rhizomes elongated. Culms 4–10 cm long. Culm-internodes 2–5 cm long. Leaf-sheaths 1–3 cm long, glabrous on surface. Ligule a fringe of hairs, 0.2–0.5 mm long. Leaf-blades filiform, flat or conduplicate, 3–7 cm long, 0.8–1.5 mm wide. Leaf-blade surface glabrous.

Inflorescence. Inflorescence composed of racemes or comprising only a few spikelets, comprising 3–5 fertile spikelets. Peduncle 2–5 cm long. Racemes 1, single, linear, multilateral, 0.7–1.2 cm long, bearing few fertile spikelets, bearing 3–5 fertile spikelets on each. Rhachis scabrous on surface. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 0.5–1 mm long, scaberulous.

Fertile Spikelets. Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 4 mm long, falling entire.

Glumes. Glumes one the lower absent or obscure, exceeding apex of florets, firmer than fertile lemma, shiny. Upper glume ovate, 1 length of spikelet, coriaceous, without keels, 7 -veined. Upper glume lateral veins obscure. Upper glume surface puberulous, hairy above. Upper glume margins ciliolate. Upper glume apex acute, mucous or mucronate or awned, 1 -awned, awn 0–5 mm long.

Florets. Fertile lemma lanceolate or ovate, 3.5 mm long, hyaline, without keel, 1 -veined, 0–3 -veined, one-veined. Palea without keels.

Flower and Fruit. Anthers 3, 2 mm long.

Distribution (TDWG). Continent. Australasia.
Country /Province /State. New Zealand. New Zealand North I.

Zoysia planifolia Zotov. *New Zealand J. Bot.* 9(4): 641. 1971.

Regarded by K as a synonym (*Z. pauciflora*).

Accepted by: U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), E.Edgar, & H.Connor, *Flora of New Zealand Gramineae* 5 (2000).

TYPE from New Zealand. T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: HT: T.J.M. Wordley 68413, 14 Nov 1949, New Zealand: Northern Wairoa, Northland, hillside (CHR-68413; IT: MO-2362005).

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

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

Classification. Subfamily Chloridoideae. Tribe: Zoysieae.

Habit, Vegetative Morphology. Perennial, mat forming. Rhizomes elongated. Culms 8–15 cm long. Culm-internodes 4–7 cm long. Leaf-sheaths 1–3 cm long, glabrous on surface. Ligule a fringe of hairs, 0.3–0.5 mm long. Leaf-blades linear, flat, 2–5 cm long, 2–3 mm wide. Leaf-blade surface glabrous.

Inflorescence. Inflorescence composed of racemes. Peduncle 4–7 cm long. Racemes 1, single, linear, multilateral, 0.8–1.6 cm long, bearing few fertile spikelets, bearing 6–12 fertile spikelets on each. Rhachis scabrous on surface. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 0.5–1 mm long, scaberulous.

Fertile Spikelets. Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 4 mm long, falling entire.

Glumes. Glumes one the lower absent or obscure, exceeding apex of florets, firmer than fertile lemma, shiny. Upper glume ovate, 1 length of spikelet, coriaceous, without keels, 7 -veined. Upper glume lateral veins obscure. Upper glume surface puberulous, hairy above. Upper glume margins ciliolate. Upper glume apex acute.

Florets. Fertile lemma lanceolate or ovate, 3.5 mm long, hyaline, without keel, 1 -veined, 0–3 -veined, one-veined. Palea without keels.

Flower and Fruit. Anthers 3, 2 mm long.

Distribution (TDWG). Continent. Australasia.

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

Zoysia seslerioides (Bal.) Clayton & F.R. Richardson. *Kew Bull.* 28(1): 41. 1973.

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

TYPE from Vietnam. **Basionym or Replaced Name:** *Brousemichea seslerioides* Bal., *Morot, Journ. de Bot.* 4: 163 (1890). T:<Type of Basionym>: *vide* TROPICOS and Kew Synonymy Database: ILT: *B. Balansa s.n.*, 28 Oct 1886, Viet Nam (L; ST: L (27 Oct 1886)).

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

Derivation (Clifford & Bostock 2007): Gk. -oides, resembling. Similar to *Sesleria* usually with respect to habit or inflorescence.

Classification. Subfamily Chloridoideae. Tribe: Zoysieae.

Habit, Vegetative Morphology. Perennial, caespitose. Stolons present. Culms 40–50 cm long. Ligule a fringe of hairs. Leaf-blades convolute, 25–30 cm long, 6–7 mm wide, coriaceous, stiff. Leaf-blade surface ribbed. Leaf-blade apex pungent.

Inflorescence. Inflorescence composed of racemes. Racemes 1, single, multilateral, 8–15 cm long. Spikelets ascending, solitary. Fertile spikelets pedicelled. Pedicels present, oblong.

Fertile Spikelets. Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets elliptic, laterally compressed, 4 mm long, falling entire.

Glumes. Glumes one the lower absent or obscure, exceeding apex of florets, firmer than fertile lemma. Upper glume elliptic, 3.5–4 mm long, 1.1–1.4 length of adjacent fertile lemma, chartaceous, 1-keeled, 3 -veined. Upper glume surface asperulous. Upper glume apex erose, obtuse.

Florets. Fertile lemma oblong, 2.5–3.5 mm long, membranous, keeled, 1 -veined, 0–3 -veined, one-veined. Lemma apex erose, emarginate. Palea hyaline, 0 -veined, without keels.

Flower and Fruit. Lodicules absent. Anthers 3, 2 mm long.

Distribution (TDWG). Continent. Tropical Asia.

Country /Province /State. Indo-China. Vietnam.

Zoysia sinica Hance. *J. Bot.*7(79): 168. 1869.

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), S-L Chen et al, *Flora of China* 22 (Poaceae) (2006), T.Koyama, *Grasses of Japan and its neighboring regions* (1987).

TYPE from Malaysia & Sabah. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: IT: *H.F. Hance s.n.*, 10 May 1866, Malaysia/Sabah: Borneo, Sandakan, Pitas, Kampong (L).

Illustrations (Books): C-C Hsu, *Flora of Taiwan*, Vol 5 (1978) (452), C-C Hsu, *Taiwan Grasses* (1975), S-L Chen et al, *Flora of China*, Illustrations, Poaceae (2007) (Fig. 702).

Derivation (Clifford & Bostock 2007): *L. -ica*, belonging to. From Sina, now China.

Classification. Subfamily Chloridoideae. Tribe: Zoysieae.

Habit, Vegetative Morphology. Perennial, mat forming. Rhizomes elongated. Butt sheaths persistent and investing base of culm, with fibrous dead sheaths. Culms 5–25 cm long, 0.3–0.7 mm diam., 3–5 -noded. Leaf-sheaths longer than adjacent culm internode. Ligule a fringe of hairs. Leaf-blades flat or involute, 2–7 cm long, 2–3 mm wide.

Inflorescence. Inflorescence composed of racemes. Racemes 1, single, linear or lanceolate, multilateral, 3–5 cm long, 4–7 mm wide. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 1.5–3 mm long.

Fertile Spikelets. Spikelets comprising 1 fertile florets, without rhachilla extension. Spikelets of 1 fertile floret with or without additional sterile florets. Spikelets one-many-flowered - if two-flowered then both fertile or the upper sterile. Spikelets lanceolate, laterally compressed, 4–5 mm long, 1.3–1.7 mm wide, falling entire.

Glumes. Glumes one the lower absent or obscure, exceeding apex of florets, firmer than fertile lemma, shiny. Upper glume lanceolate, 1 length of spikelet, coriaceous, without keels. Upper glume apex acute.

Florets. Fertile lemma oblong, 3–4 mm long, hyaline, without keel, 1 -veined, 0–3 -veined, one-veined. Palea without keels.

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

Distribution (TDWG). Continent. Temperate Asia.

Country /Province /State. China, Eastern Asia. China South Central, Manchuria, China North-Central, China Southeast. Japan, Korea, Nansei-Shoto, Taiwan. Japan Honshu, or Shikoku, or Kyushu.

TDWG4. Shandong, Anhui, Fujian, Guangdong, Guangxi, Jiangsu, Zhejiang. Hubei.

Zoysia tenuifolia Willd. ex Thiele. *Mem. Acad. Petersb. Ser. VI. iv. Sc. Nat. ii.* 96 (1836).

Regarded by K as a synonym (*Z. matrella*).

Accepted by: R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), N.L.Bor, *Grasses of Burma, Ceylon, India and Pakistan* (1960).

TYPE from Mauritius. T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: V: *F.W. Sieber 142*, Mauritius (L). Possible type..

LT: *Sieber Maurit. II, no. 40 [40a]*, Mauritius (B (destroyed); ILT: BM, L, LE-TRIN-0397.01 (upper rt plants), MO!). LT cited by P.C. Goudswaard in *Blumea* 26: 171 (1980).

ST: *Bory de St. Vincent*, Mauritius und Isle aux toneliers im Sande des Strandes (B-WILLD 1515; IST: LE-TRIN-0397.01 (mid- lft pl.)).

Illustrations (Books): C-C Hsu, *Flora of Taiwan*, Vol 5 (1978), C-C Hsu, *Taiwan Grasses* (1975) (454), W.Burger, *Flora Costaricensis* 15, Gramineae: *Fieldiana Botany New Series* 4 (1980) (594, Fig. 224).

Illustrations (Journals): *Ruizia* (13:289, Fig 351-m (1993)).

Derivation (Clifford & Bostock 2007): *L. tenuis*, slender; folium, leaf. Leaf-blades narrow.

Classification. Subfamily Chloridoideae. Tribe: Zoysieae.

Distribution (TDWG). Continent. Australasia, South America.

Country /Province /State. Australia. Queensland. Easter Is. **Western South America.** Colombia, Ecuador.

Zuloagaea bulbosa (Kunth) Bess. *Syst. Bot.* 31: 666 (2006).

Accepted by: R.J.Soreng et al., *Catalogue of New World Grasses* (2000–2003) and online (as *Panicum*), W.D.Clayton & K.Harman, *GrassBase* (2008) and online (as *Panicum*), D.Sharp, D. & B.K.Simon, *AusGrass* (2002) (as *Panicum*).

TYPE from Mexico. **Basionym or Replaced Name:** *Panicum bulbosum* H. B. & K., *Nov. Gen. et Sp.* 1: 99 (1815). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: HT: *F.W.H.A. von Humboldt & A.J.A. Bonpland 4250*, Sep, Mexico: Guanajuato: Santa Rosa (P-Bonpl.; IT: US-2907467 (fragm. & photo ex P)).

Illustrations (Books): S.W.L.Jacobs, R.D.B.Whalley & D.J.B.Wheeler., *Grasses of New South Wales*, 4th edn (2008) (314, as *Panicum*), M.E.Barkworth et al, *Flora of North America north of Mexico Vol 25 Poaceae*, part 2 (2003) (483), F.W.Gould, *The Grasses of Texas* (1975) (468, Fig. 250).

Illustrations (Journals): *Systematic Botany* (31 : 667 (2006)).

Images: D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002);

Derivation (Clifford & Bostock 2007): L. bulbos, onion; -osa, abundance. Culm-bases swollen.

Classification. Subfamily Panicoideae. Tribe: Paniceae. Subtribe SETARIINAE.

Habit, Vegetative Morphology. Perennial, caespitose. Butt sheaths glabrous or pubescent. Culms erect, 30–80 cm long, swollen at the base, forming an ovoid corm. Culm-nodes glabrous. Leaf-sheaths smooth or antrorsely scabrous. Ligule a ciliolate membrane, 0.5–1 mm long. Leaf-blades 25–60 cm long, 3–12 mm wide. Leaf-blade surface scabrous, rough adaxially.

Inflorescence. Inflorescence a panicle. Panicle open, ovate, 20–50 cm long. Primary panicle branches ascending, 10–25 cm long. Panicle branches flexuous, scabrous. Spikelets solitary. Fertile spikelets pedicelled. Pedicels present, 0.5–5 mm long, scabrous, tip cupuliform.

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 oblong, dorsally compressed, compressed slightly, obtuse, 3.5–4.2 mm long, 1.2–1.4 mm wide, falling entire.

Glumes. Glumes shorter than spikelet, thinner than fertile lemma. Lower glume ovate, 0.5–0.66 length of spikelet, membranous, without keels, 3 -veined. Lower glume apex obtuse. Upper glume ovate, 0.9 length of spikelet, membranous, without keels, 5 -veined. Upper glume apex obtuse.

Florets. Basal sterile florets 1, male or barren, with palea. Lemma of lower sterile floret similar to upper glume, ovate, 1 length of spikelet, membranous, 5 -veined, acute. Palea of lower sterile floret 1 length of lemma. Fertile lemma oblong or ovate, dorsally compressed, 3.2–4 mm long, indurate, without keel. Lemma surface rugulose. Lemma margins involute. Lemma apex acute, pubescent. Palea involute, indurate.

Flower and Fruit. Anthers 3, 2 mm long. Caryopsis with adherent pericarp.

Distribution (TDWG). Continent. Australasia (*), North America, South America.

Country /Province /State. **Australia.** New South Wales (*). **Southwestern USA, South-central USA, Mexico.** Arizona, Nevada, New Mexico, Texas. Central Mexico, Northeast Mexico, Gulf (Mexico), Northwest Mexico, Southwest Mexico, Southeast Mexico. **Mesoamerica, Western South America.** Guatemala, Honduras, Nicaragua. Colombia, Ecuador.

TDWG4. Coast, Tablelands, Western Slopes, Western Plains. Distrito Federal, Mexico State, Puebla, Tlaxcala. Aguascalientes, Coahuila, Chihuahua, Durango, Guanajuato, Hidalgo, Neuvo Leon, Queretaro, San Luis Potosi, Tamaulipas, Zacatecas. Veracruz. Baja California, Sinaloa, Sonora. Colima, Jalisco, Michoacan, Nayarit, Oaxaca. Chiapas.

Zygochloa paradoxa (R.Br.) S.T.Blake. *Univ. Queensland Dept. Biol. Pap.* 1(19): 7–8, t. 3. 1941.

Accepted by: W.D.Clayton & K.Harman, *GrassBase* (2008) and online, U.Quattrocchi, *CRC World Dictionary of Grasses* (2006), D.Sharp, D. & B.K.Simon, *AusGrass* (2002).

TYPE from Australia: loc. nulla indicatio loci V. stationalis, *Sturt s.n.*. **Basionym or Replaced Name:** *Neurachne paradoxa* R.Br., *Exped. Centr. Austral.* 2: App. 89 (1849). T:<Type of Basionym>: *fide* TROPICOS and Kew Synonymy Database: Australia: loc. nulla indicatio loci V. stationalis, *Sturt s.n.*.

Illustrations (Books): J.P.Jessop, G.R.M. Dashorst & F.M.James, *Grasses of South Australia* (2006) (498, Fig. 428), S.W.L.Jacobs, R.D.B.Whalley & D.J.B.Wheeler., *Grasses of New South Wales*, 4th edn (2008) (403), J.C.Tothill, & J.B.Hacker. *The grasses of southern Queensland* (1983) (440), D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002).

Illustrations (Journals): *Hooker's Icones Plantarum* (t.1243 & 1244 (1877) as *Spinifex*), *Univ. Queensland Dept. Biol. Pap.* (1(19); 12, Pl.3 (1941)).

Images: D.Sharp & B.K.Simon, *AusGrass*. Grasses of Australia. CD-Rom Version 1.0. (2002);, K.O.Mallett (ed.). *Flora of Australia*, Vol 44 A (2002) & Vol 44B (2004). *Poaceae*;

Derivation (Clifford & Bostock 2007): Gk. *para*, irregular; *doxa*, opinion. Different from the expected in regard to related species.

Classification. Subfamily Panicoideae. Tribe: Paniceae. Subtribe SETARIINAE.

Habit, Vegetative Morphology. Perennial, caespitose. Rhizomes elongated. Culms geniculately ascending, 100–150 cm long, 4–8 mm diam., woody. Lateral branches suffrutescent. Ligule a fringe of hairs, 0.5–1 mm long. Leaf-blades 3–30 cm long, 2–10 mm wide. Dioecious.

Inflorescence. Synflorescence compound, globose, 2.5–3.5 cm long.

Inflorescence comprising only a few spikelets, comprising 1 fertile spikelets, terminal and axillary, deciduous as a whole, subtended by a spatheole, enclosed. Spatheole expanded (3 bracts), ovate (toothed), 1–2

cm long, scarios. Peduncle disarticulating, disarticulating below uppermost sheaths. Spikelets solitary. Fertile spikelets sessile. Male spikelets sessile.

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, acute or acuminate, 6–10 mm long, falling entire, deciduous with accessory branch structures.

Glumes. Glumes similar, reaching apex of florets, thinner than fertile lemma. Lower glume ovate, 1 length of spikelet, chartaceous, without keels, 7–9 -veined. Lower glume apex acute. Upper glume ovate, chartaceous, without keels, 7–9 -veined. Upper glume apex acute.

Florets. Basal sterile florets 1, barren, with palea. Lemma of lower sterile floret similar to upper glume, ovate, 1 length of spikelet, chartaceous, 5 -veined, acute. Fertile florets female. Fertile lemma ovate, 6–10 mm long, indurate, yellow, shiny, 5 -veined, more than 3-veined. Lemma margins involute. Lemma apex acute. Palea indurate.

Flower and Fruit. Anthers 3, 4–4.5 mm long. Caryopsis with adherent pericarp, ovoid, 3 mm long.

Male inflorescence similar to female, a spathate compound head. Male spikelets similar to female but less developed, 2 flowered, lanceolate, 7–8 mm long. Male spikelet glumes 2.

Distribution (TDWG). Continent. Australasia.

Country /Province /State. Australia. Northern Territory, South Australia, Queensland, New South Wales.

TDWG4. Central Australia. NW & Lake Eyre, Southern. Central, Inland. Western Plains.