

**A TAXONOMIC REVISION OF DICHELACHNE ENDL. (GRAMINEAE)**  
**with some new combinations in *Stipa* L. and *Oryzopsis* Michx.**

J. F. VELDKAMP  
 Rijksherbarium, Leiden

*Dichelachne* was established by Endlicher in 1833 to accommodate a species collected by Ferd. Bauer in Norfolk I. Trinius and Ruprecht (1843) revised the genus, adding 6 more species, referring to previously published names, but giving new names as they had no access to the type materials of these. It has appeared that their specific concept was too narrow and in current literature only 4 species are accepted. This number has been reduced here to 3. Some other species have been placed in this genus now and then, but have proved to belong to different genera, as *Deyeuxia*, *Agrostis*, *Stipa*, and *Oryzopsis*.

This shifting of species between quite different genera reflects the instability of the opinion about the taxonomic place of the genus. Some, as Trinius (1836), Trinius & Ruprecht (1843), F. v. Mueller (1873), and Pilger (1954) have considered it as a *Stipea*, others such as R. Brown (1810), Bentham (1878), Bentham & Hooker f. (1883), C. E. Hubbard (1934), and Miss Vickery (1961) have regarded it as an *Agrostidea*. Terrell (1971) placed it, together with *Agrostis* and *Calamagrostis*, in the *Aveneae* because of the presence of liquid endosperm. Although there is an overall resemblance to *Stipa*, closer inspection shows that it is very closely related to *Deyeuxia* of the *Agrostideae* in view of the dorsal, unarticulated, and simple awn, the microscopic, but sometimes well-developed rachilla-process which in *Dichelachne crinita* sometimes bears up to 3 florets, and the punctiform hilum. The difference with *Deyeuxia* is very slight, and mainly regards the length of the awn and the callus-hairs, as may be observed from the table.

Zotov (1943) united *Deyeuxia* and *Dichelachne*, but for the time being it seems better to keep them separate.

Of interest is the presence of different numbers and types of anthers. A single plant has florets with either one or three anthers, two occurring sporadically in *Dichelachne crinita* in some florets, which caused Linné f. to place the latter species in *Anthoxanthum*. At the same time the plant is either chasmogamous or cleistogamous. In chasmogamous florets the anthers are always well-developed (L-type) and purple or variegated purple and yellow, in cleistogamous florets the anthers are usually much smaller (S-type) and always yellow, and can be found on top of the developed fruit, entangled with the stigmas. In *D. rara* ssp. *rara* two size-classes of small anthers are observed, and in *D. micrantha* both types of florets have either 1 or 3 anthers.

**DICHELACHNE**

*Dichelachne* Endl., Prodr. Fl. Ins. Norf. (1833) 20; Trin. & Rupr., Mém. Ac. Sc. St. Pétersb. VI, Sect. Nat. 5 (1843) 1. — *Stipa* L. sect. *Dichelachne* Trin., Mém. Ac. Sc. St. Pétersb. VI, Sect. Nat. 4 (1836) 36, excl. spp. — T y p e: *D. montana* Endl. (= *D. micrantha* Domin).

	<b>Deyeuxia</b>	<b>Dichelachne</b>	<b>Calamagrostis</b>	<b>Agrostis</b>
lemma	thinly chartaceous to indurated, usually scaberulous, acute.		membranaceous or very thin, smooth.	
	oblong to lanceolate	linear-lanceolate	acute,	obtuse to truncate and dentate,
	minute to less than $2 \times$ the lemma	well-developed, at least $2 \times$ the lemma	oblong to lanceolate	elliptic to lanceolate.
awn			absent to developed, always less than $2 \times$ the lemma	
callus-hairs	rarely as long as the lemma	very short	as long as to exceeding the lemma	absent to very short

Tall erect perennials, forming small tussocks, only branched at base, culms few-noded, wiry. *Ligule* hyaline, short, truncate, margin ciliate. *Blades* stiff, ascending-erect, at least the margins often involute, upper surface smooth to scaberulous. *Peduncle* elongated and exerted, usually smooth, glabrous. *Panicle* loosely to very densely contracted. *Spikelets* solitary, variously pedicelled, laterally compressed, 1- (rarely 3-)flowered, awned. *Florets* chasmogamous or cleistogamous. *Glumes* slightly shorter to slightly longer than lemma (excl. awn), unequal to subequal, the upper usually longest, lanceolate, very acute to shortly mucronate, keeled at least in upper half, 1(-3)-nerved, midrib scaberulous. *Rachilla* articulated above the glumes, minute, rarely distinctly produced. *Callus* obtuse, stipe-like, short-pubescent. *Lemma* fusiform with strongly involute margins, glabrous, scaberulous, slightly indurated in fruit, faintly 5-nerved, apex acute, above insertion of awn fragile, then apparently bifid with slender acute teeth; awn subapical, simple, tortuous to wavy, sometimes somewhat geniculate. *Palea* oblong, acute, not indurate in fruit, narrowly longitudinally furrowed between the 2 approximate nerves, margin ciliate. *Lodiculae* 2, oblong, oblique-emarginate to -bidentate, unnerved, glabrous or with a few apical cilia. *Stamens* 1 or 3, rarely 2. *Ovary* glabrous, styles apical, free to base, in fruit persistent and forming a small beak, stigmata plumose. *Caryopsis* cylindrical, longitudinally grooved on the paleatic side, glabrous, freely enclosed between lemma and palea. Hilum punctiform, subbasal. Embryo minute.

**Distribution:** Three species in New Zealand, the Kermadec Is., Norfolk I., Tasmania, Australia, Malesia (New Guinea, Timor), Easter I.; introduced in Hawaii.

## KEY TO THE SPECIES

1. Panicle rather loose, only slightly contracted at anthesis, axis and branches distinctly visible. Awn up to 4 times as long as the lemma. Anthers 3 (1 in specimens from Timor)
  1. **D. rara**
  2. Culms  $\pm$  smooth and glabrous. Glumes acuminate, 3.25-6.5 mm long. Lemma 4-6.5 mm long. Callus hairs 0.5-1 mm. Anthers (L) 0.75-1.75 mm long.
    - a. **ssp. rara**
    2. Culms scabrid-puberulous. Glumes long-acuminate, 5-8.25 mm long. Lemma 5.25-8 mm long. Callus-hairs 1.25-1.75 mm. Anthers (L) 1.5-2.75 mm
      - b. **ssp. asperula**
  1. Panicle very dense and contracted at anthesis, sometimes lobed at base, axis and branches obscured by the spikelets and awns. Awn more than 3.5 times as long as the lemma. Anthers 1 or 3, exceptionally 2.
    3. Glumes acuminate, 3.25-5 mm long. Awn 0.8-1.75 cm, inserted 0.5-1 mm below the apex of the 2.75-4 mm long lemma. . . . . 2. **D. micrantha**
    3. Glumes long-acuminate, 4.75-11.5 mm long. Awn 2-4 cm, inserted 1-3 mm below the apex of the 3.75-8 mm long lemma. . . . . 3. **D. crinita**

1. *Dichelachne rara* (R. Br.) Vickerya. **ssp. rara**

*D. rara* (R. Br.) Vickery, Contr. N. S. Wales Nat. Herb. 1 (1951) 337, excl. specim. — *Agrostis rara* R. Br., Prodr. (1810) 170; Trin., Gram. Unifl. (1824) 193, sub *Muehlenbergia*, sine comb. — *Vilfa? rara* Beauv., Agrost. (1812) 16, 148, 182. — *Muehlenbergia rara* Nees in Hook., Lond. J. Bot. 2 (1843) 414, pro comb. — *D. micrantha* Domin var. *rara* Domin. Bibl. Bot. 85 (1915) 353. — Type: R. Brown 6212 (BM, holo; K) (see note).

*Stipa micrantha* auct. non Cav.: Nees, Flora 11 (1828) 299. — *D. sieberiana* Trin. & Rupr., Mém. Ac. Sc. St. Pétersb. VI, Sect. Nat. 5 (1843) 2, excl. synonym. R. Br., Cav., incl. var. *anomala*? Steud., Syn. 1 (1854) 120. — T y p e: Sieber *Agrost.* 63 (LE, holo, n.v.; BM, K, L, P).

? *Muehlenbergia rara* Nees var. *macrostachya* Nees in Hook., Lond. J. Bot. 2 (1843) 414. — T y p e: Everett s.n. (n.v.).

*D. sciurea* Hook. f. var. *setifolia* Benth., Fl. Austr. 7 (1878) 575. — *D. micrantha* Domin var. *setifolia* Domin, Bibl. Bot. 85 (1915) 353. — T y p e: Woolls s.n. (K, holo; L).

*D. sciurea* auct. non Hook. f.: Benth., Fl. Austr. 7 (1878) 574. p.p.; Hitchc., Brittonia 2 (1936) 117.

*Muehlenbergia novoguineensis* Pilg., Bot. Jahrb. 62 (1929) 457. — *D. novoguineensis* Pilg., Bot. Jahrb. 69 (1938) 254; Borgmann, Zeitschr. Bot. 52 (1964) 142; Henty, Bot. Bull. Lae 1 (1969) 72, pl. 22a. — T y p e: Keyser s.n. (B, holo, n.v.; BM).

Caespitose perennial, up to 130 cm high. Culms erect, ± simple, ± smooth and glabrous. Ligule 1—3 mm long. Blades 10—17(—25) cm by 1—4.5 mm. Peduncle up to 55 cm long. Panicle rather loose, slightly contracted at anthesis, axis and branches distinctly visible, up to 23 by 8 cm. Glumes 4—6.5 mm long. Lemma (3.5—) 4—6.5(—7) mm long, incl. the 0.25—0.5 mm long callus, callus-hairs 0.5—1 mm long, apex above awn 0.3—1.25 mm long; awn 1—2 cm long, often purplish, 2—4 times as long as the lemma. Palea 3—5 mm long. Lodicules 0.5—0.75 mm long, glabrous. Anthers (cleistogamous) yellowish, rarely 1 (Timor), usually 3, 0.25—0.5(—0.6) mm or 0.5—1(—1.3) mm long, or (chasmogamous) 3, purplish, 0.75—1.75 mm long. Caryopsis 2.5—3 by 0.6 mm, beak 0.5 mm long.

Distribution: Malesia (Papua and New Guinea, once in the Baliem Valley, W. Irian; Timor), Australia (Queensland, N.S. Wales), and New Zealand.

Ecology: In Malesia on the higher mountains from 1750 m upwards, in subalpine grasslands, clearings, and open places. Values of pH 4.9—5.2 have been measured for the soil (ANU 2226, 2504).

Chromosome number:  $2n = 56$  (Borgmann, 1964).

Notes: Miss Vickery (1951) erroneously quoted *R. Brown 6212* as the type of *Dichelachne sciurea* R. Br.; this is *R. Brown 6211* instead.

Two subtypes of the shorter anthers may be distinguished.

Sofar Timor is the only place where one-anthered, cleistogamous forms occur exclusively (3 collections seen).

### b. *ssp. asperula* Veldk., *ssp. nov.*

Differt a subspecie typica in culmis scabridulis vel puberulis, spiculis in omnibus partibus majoribus. — T y p u s: Gunn 989 (L, holo; BM, K, P).

Most of the references in literature to *D. rara* and many of *D. sciurea* Hook. f. belong here. Mentioned may be the following: *Muehlenbergia rara* auct. non Nees: Nees in Hook., Lond. J. Bot. 2 (1843) 414, *pro specim.*

*Agrostis sciura* auct. non R. Br.: Hook. f., Fl. Tasm. 2 (1859) pl. 158 A.

*Dichelachne rara* auct. non Vickery: Vickery, Contr. N.S. Wales Nat. Herb. 1 (1951) 337, *pro specim.*

Culms scabridly to softly puberulous with retrorse hairs. Upper glume 6—8.25 mm long, long-acuminate. Lemma 5.25—8 mm long, incl. the 0.5 mm long callus, callus-hairs 1.25—1.75 mm long; apex above awn 0.75—2 mm long; awn 1.5—2.5 cm long, 2.5—3.5 times as long as the lemma. Palea 4—6.25 mm long, occasionally 4-nerved. Anthers three, (cleistogamous) 0.5—1 mm long, yellow, or (chasmogamous) 1.5—2.75 mm long, purple. Caryopsis ca. 3.25 mm long, beak 0.5—0.75 mm long.

Distribution: Australia (N.S. Wales, Victoria, Tasmania) and New Zealand.

Ecology: On dry hill-sides and in open sclerophyll-forest, around Canberra between 650 and 1370 m.

2. *Dichelachne micrantha* (Cav.) Domin

- D. micrantha* (Cav.) Domin, *Bibl. Bot.* 85 (1915) 353; A. Camus in Guill., *Bull. Mus. Nat. Hist. Nat.* II, 8 (1936) 555. — *Stipa micrantha* Cav., *Icon.* 5 (1799) 42, fig. 467; F. v. M., *Fragm. Phyt. Austr.* 8 (1873) 105; *J. Bot.* 16 (1878) 327; non R. Br., 1810, Benth., 1878, et al. — T y p e: *Née s.n.* (MA, holo, see note). *Agrostis sciurea* R. Br., *Prodr.* (1810) 171. — *Vilfa? sciurea* Beauv., *Agrost.* (1812) 16, 148, 182. — *Muehlenbergia sciurea* Trin., *Mém. Ac. Sc. St Pétersb.* VI, *Sect. Nat.* 6 (1841) 308 (61 in *ed. alt.*) et non prior. — *D. sciurea* Hook. f., *Fl. Nov. Zel.* 1 (1853) 293; *Fl. Tasm.* 2 (1859) 111, excl. fig.; *Handb. Fl. New Zeal.* (1864) 325; Benth., *Fl. Austr.* 7 (1878) 574; Turner, *Austr. Grasses* 1 (1895) 22, fig.; Maiden, *Manual Grasses N.S. Wales* (1898) 119; Bailey, *Queensl. Fl.* 6 (1902) 1885; Rodway, *Tasm. Fl.* (1903) 263; Cheeseman, *Manual New Zeal. Fl.* (1906) 874; Laing, *Trans. & Proc. New Zeal. Inst.* 47 (1915) 18; Cheeseman, *Manual New Zeal. Fl. ed. 2* (1925) 164; Ewart, *Fl. Vict.* (1930) 172; Black, *Fl. S. Austr. ed. 2*, 1 (1948) 100; Gardner, *Fl. W. Austr.* 1 (1952) 151; Willis, *Handb. Pl. Vict.* 1 (1962) 138; Burbidge, *Austr. Grasses* 1 (1966) 78, fig. 25; Burbidge & Gray, *Fl. A.C.T.* (1970) 47, fig. 38. — T y p e: R. Brown 6211 (BM, holo; K) (see note under *D. rara* ssp. *rara*).
- D. montana* Endl., *Prodr. Fl. Norf.* (1833) 20; Trin. & Rupr., *Mém. Ac. Sc. St Pétersb.* VI, *Sect. Nat.* 5 (1843) 2; Rotar, *Grasses Hawaii* (1969) 65, 319. — *Stipa dichelachne* Steud., *Nomencl. ed. 2*, 1 (1840) 502; 2 (1841) 643, *nom. superfl.* — T y p e: F. Bauer s.n. (W, holo, n.v.; K), *Icon. ined.* 310 (BM).
- D. vulgaris* Trin. & Rupr., *Mém. Ac. Sc. St Pétersb.* VI, *Sect. Nat.* 5 (1843) 3. — L e c t o t y p e: Sieber *Agrost.* 70 (LE, holo, n.v.; BM, K, L, P).
- D. sciurea* Hook. f. var. *inaequiglumis* Hack. ex Cheeseman, *Manual New Zeal. Fl.* (1906) 874; ed. 2 (1925) 164. — *D. micrantha* Domin, var. *inaequiglumis* Domin, *Bibl. Bot.* 85 (1915) 353. — T y p e: W. Townson s.n. (W, holo, n.v.; CHR, n.v.).
- Deyeuxia conspicua* auct. non Stapf: Zotov, *Trans. Proc. Roy. Soc. New Zeal.* 73 (1943) 234, excl. basion. — *Cortaderia conspicua* auct. non Conert: Conert, *Syst. & Anat. Arund.* (1961) 106, p.p.

Caespitose perennial, up to 110 cm high, glabrous, culms smooth to somewhat scaberulous. *Ligule* 0.3—1(—2.5) mm long. *Blades* up to 23 cm by 5 mm. *Peduncle* up to 45 cm. *Panicle* dense, spiciform, sometimes lobed at base, up to 19 by 3.5 cm, axis and branches obscured by the many spikelets. *Glumes* 3—5 mm long. *Lemma* 2.25—4.25 mm long, incl. the 0.2—0.5 mm long callus, callus-hairs 0.35—0.75 mm long, apex above awn 0.5—1 mm long; awn 1—1.75 cm long, 3.5—5 times as long as the lemma. *Palea* 2.25—3 mm long. *Lodicules* 0.2—0.6 mm long, glabrous or apically ciliate. *Anthers* (short type) 0.4—0.7 (—1 ?) mm long, or (long type) 1—1.75 mm long, whitish to yellow to purple at anthesis. *Caryopsis* 2.25—4.25 mm long, beak ca. 0.5 mm long.

**Distribution:** New Zealand, Kermadec Is., Norfolk I., Australia, Easter I.; introduced in Hawaii.

**Ecology:** Dry sclerophyll forest on sandstone and granite, near Canberra up to 1500 m.

**Note:** There has been some confusion about the correct name for this species, caused by the crude drawing given by Cavanilles (1799). The drawing of the spikelet shows a distinctly geniculate awn and a lemma with a coronula, as is found in many species of *Stipa*, but never in *Dichelachne*. It is therefore not surprising that Bentham (1878) equated it with *Stipa verticillata* Spreng., and although F. v. Mueller (1878) stated he had seen part of the type and that it was a *Dichelachne*, Bentham's opinion has been followed since. I am greatly obliged to Miss Paunero who kindly studied the type in Madrid again and informed me that F. v. Mueller was correct.

Studying *Stipa micrantha* in Bentham's circumscription it appeared that there are actually two species involved, which can be distinguished as follows:

1. Lemma ca. 2.25 mm long, glabrous, without coronula; callus-hairs 0.25 mm long; awn 1.4—1.6 cm long; anthers apically with a seta. . . . . *S. ramosissima*
1. Lemma 2.65—2.85 mm long, appressed pubescent; coronula minute; callus-hairs 0.5 mm long; awn 2.3—3.7 cm long; anthers apically with a tuft of cilia. . . . . *S. verticillata*

These species were already distinguished by Trinius (1830) and recently by Beadle et al. (1962), but generally Bentham's opinion has been followed. The following synonymy can be given:

*Stipa ramosissima* (Trin.) Nees, Flora 11 (1828) 301. — *Urachne ramosissima* Trin., Gram. Unif. (1824) 173. — *Streptachne ramosissima* Trin. & Rupr., Mém. Ac. Sc. St Pétersb. VI, Sect. Nat. 5 (1843) 7. — Type: Sieber *Agrost.* 82 (LE, holo, n.v.; BM, K, L, P).

*Stipa micrantha auct. non Cav.*: Benth., Fl. Austr. 7 (1878) 566, *quoad descr.*, p. p.

*Stipa verticillata* Nees ex Spreng., Syst. Veg. 4, 2 (1827) Cur. Post. 30. — *Streptachne verticillata* Trin. & Rupr., Mém. Ac. Sc. St Pétersb. VI, Sect. Nat. 5 (1843) 8. — Type: Sieber *Agrost.* 64 (LE, holo, n.v.; BM, K, L, P).

*Stipa breviglumis* J. M. Black, Trans. Roy. Soc. S. Austr. 65 (1941) 333. — Types: Cleland s.n.; Tate Herb. s.n. (n.v.).

*Stipa micrantha auct. non Cav.*: R. Br., Prodr. (1810) 175; Benth., Fl. Austr. 7 (1878) 566, p. p.

*Stipa ramosissima auct. non Nees*: F. v. M., Fragm. Phytogr. Austr. 8 (1873) 105, p. p.

These species should be regarded as true *Stipas*, although Miss Hughes (1921) excluded them. She referred them first to *Dichelachne* and later (1923) to *Muehlenbergia*. The presence of an articulate awn and a linear hilum, albeit exceptionally short, shows them to belong to *Stipa*, and although they are quite different from the other Australian representatives, there are a number of South American ones that are similar in various aspects (e.g. of the sections *Microstipa*, *Leptostipa*, and *Cirtostipa*).

Bentham's remark (1881) that *S. verticillata* (!) and *S. arundinacea* closely resemble each other, taken up again by Cheeseman (1906, 1925), is erroneous. The latter species is an *Oryzopsis* (see below sub *Agrostis procera*).

### 3. *Dichelachne crinita* (Linné f.) Hook. f.

*D. crinita* (Linné f.) Hook. f., Fl. Nov. Zel. 1 (1853) 293; Fl. Tasm. 2 (1859) 111; Handb. New Zeal. Fl. (1864) 325; Benth., Fl. Austr. 7 (1878) 574; Turner, Austr. Grasses 1 (1895) 21, fig.; Maiden, Manual Grasses N.S. Wales (1898) 118; Bailey, Queensl. Fl. 6 (1902) 1884; Rodway, Tasm. Fl. (1903) 263; Cheeseman, Manual New Zeal. Fl. (1906) 873; Laing, Trans. & Proc. New Zeal. Inst. 47 (1915) 18; Cheeseman, Manual New Zeal. Fl. ed. 2 (1925) 163; Ewart, Fl. Vict. (1930) 172, fig. 80; Black, Fl. S. Austr. ed. 2, 1 (1948) 99, fig. 121; Gardner, Fl. W. Austr. 1 (1952) 151, fig. 46 A; Connor & Cook, New Zeal. J. Sc. Techn. 34, A (1952) 369; Connor, New Zeal. J. Sc. Techn. 38, A (1957) 742; Metcalfe, Anat. Monoc. 1 (1960) 156; Willis, Handb. Fl. Vict. 1 (1962) 137; Burbidge, Austr. Grasses 3 (1970) 128, fig. 49; Burbidge & Gray, Fl. A.C.T. (1970) 47. — *Anthoxanthum crinitum* Linné f., Suppl. (1781) 90. — *Agrostis crinita* R. Br., Prodr. (1810) 170; non Moench. (1794). — *Apera? crinita* Beauv., Agrost. (1812) 31, 147, 151. — *Cinna crinita* Trin., Fund. Agrost. (1820) 118. — *Muehlenbergia crinita* Trin., Gram. Unif. (1824) 192, pl. 5 f. 13; Mém. Ac. Sc. St Pétersb. VI, Sect. Nat. 6 (1841) 309 (62 in ed. alt.). — *D. forsteriana* Trin. & Rupr., Mém. Ac. Sc. St Pétersb. VI, Sect. Nat. 5 (1843) 4, *nom. superfl.* — *Deyeuxia crinita* Zotov, Trans. Proc. Roy. Soc. New Zeal. 73 (1943) 234. — Type: Forster s.n. in Hb. Bäck (S, holo, n.v.); the following are probably isotypes: Forster in Hb Willdenow 626 (B); Forster s.n. (LE, n.v.; K); Forster 15 (P); Forster 18 (BM).

*Muehlenbergia mollicoma* Nees in Hook. f., Lond. J. Bot. 2 (1843) 414. — Type: Gunn 988 (BM, holo; K, NSW).

*D. hookeriana* Trin. & Rupr., Mém. Ac. Sc. St Pétersb. VI, Sect. Nat. 5 (1843) 3. — Type: Hooker s.n. (LE, holo, n.v.; BM, K).

*D. comata* Trin. & Rupr., Mém. Ac. Sc. St Pétersb. VI, Sect. Nat. 5 (1843) 4. — Type: Sieber *Agrost.* 86 (LE, holo, n.v.; BM, K, L, P).

*D. longiseta* Trin. & Rupr., Mém. Ac. Sc. St Pétersb. VI, Sect. Nat. 5 (1843) 5. — Type: Hooker s.n. (LE, holo, n.v.; BM, K).

*D. crinita* Hook. f. var. *intermedia* Hack. ex Cheeseman, Manual New Zeal. Fl. ed. 2 (1925) 163. — Type: not indicated (W, holo, n.v.; CHR, n.v.).

Caespitose perennial, up to 120 cm high, culms smooth. *Ligule* 0.75—1 mm long. *Blades* 6—22 cm by 2—5 mm. *Peduncle* up to 20 cm, smooth. *Panicle* up to 20 cm, densely contracted, spiciform, sometimes lobed at base, axis and branches obscured by the many spikelets. *Spikelets* exceptionally up to 3-floreted. *Glumes* 4.75—11.5 mm long. *Lemma* 3.75—8 mm long, incl. the 0.4—0.5 mm long callus, callus-hairs 0.5—1 mm long, apex above awn 1—3 mm long; awn 2—4 cm long, 4—6 times as long as the lemma. *Palea* 3.5—4.25 mm long. *Lodicules* 0.4—0.5 mm long, apically ciliate. *Anthers* (short form) yellow, 0.35—0.75 mm long, or (long form) yellow or purple, 0.9—1.75 mm long. *Caryopsis* up to 2.75 mm long, beak 0.5—0.75 mm long.

Distribution: Malesia (New Guinea: Mt. Wilhelmina, E. Highlands Distr.), Australia, Tasmania, Lord Howe I., Norfolk I., Kermadec Is., New Zealand.

Ecology: Clearings, (dry) open places, along roads, streams, etc., but also in rich valley bottoms. In New Guinea above 1700 m.

Uses: Reports are varied, some consider it as an excellent pasture grass, making good hay (Bailey), others find it little palatable to stock and of little pastoral significance (Burbidge). A strong paper can be made from the culms (Ewart).

Anatomy: See Metcalfe (1960).

Notes: Previous authors have mentioned the presence of two anthers per floret. Linné *f.* placed the species in *Anthoxanthum* for that reason, but I have encountered this only in very rare cases in some florets in panicles which had otherwise normal 1- or 3-anthered florets.

Connor (1957) and Cook (1952) have discussed the breeding system of this species, suggesting that it is facultatively self-fertilizing. This seems to be the common situation in view of the more or less exclusive occurrence of cleistogamic plants.

#### EXCLUDED OR DUBIOUS NAMES

1. *Agrostis procera* A. Rich., *Voy. Astrol.* 1 (1832) 125; *non* Retz. (1786/7). — *Agrostis lessoniana* Steud., *Nomencl. Bot.* ed. 2, 1 (1840) 41, 42. — Type: *Lesson s.n.* (P, holo).  
*Agrostis rigida* A. Rich., *Voy. Astrol.* 1 (1832) 124; *non* Spreng. (1825). — *Dichelachne rigida* Steud., *Syn.* 1 (1854) 120. — *Oryzopsis rigida* Zotov, *Trans. Roy. Soc. New Zeal.* 73 (1943) 235. — Type: *Lesson s.n.* ('Passe de Français') (not in P).

*Apera arundinacea* Hook. *f.*, *Fl. Nov. Zel.* 1 (1853) 295, t. 67; *Handb. Fl. New Zeal.* (1864) 326; Buchanan, *New Zeal. Grasses* (1880) t. 17. — *Stipa arundinacea* Benth., *J. Linn. Soc. Bot.* 19 (1881) 81; Cheesman, *Manual New Zeal. Fl.* (1906) 857; ed. 2 (1925) 148. — Type: *Colenso s.n.* (K. hololectotype; BM).

*Apera purpurascens* Colenso, *Trans. Proc. New Zeal. Inst.* 21 (1888) 206. — Type: *Colenso s.n.* (K).

= *Oryzopsis lessoniana* (Steud.) Veldk., *comb. nov.*

Although the type of *Agrostis rigida* could not be found in Paris (according to a note by Zotov on *Colenso 609*, K, there should even be 4 sheets), it seems probable from the description that it belongs here.

The fact that this species belongs to *Oryzopsis* is of phytogeographic interest. The genus itself occurs mainly in the temperate Northern Hemisphere, only a few species are found in South America, which belong to the New World section *Oryzopsis*. The present species belongs to the Old World section *Piptatherum*. The genus is not native to Malesia, Australia, and Tasmania; in the latter two areas *O. miliacea* (L.) Aschers. & Schweinf. has been introduced.

2. *Dichelachne setacea* Nees, *Pl. Preiss.* 2 (1846) 98; *non* *Stipa setacea* R. Br. (1810). — Type: *Preiss 1854* (BM, holo).

*D. stipoides* Hook. *f.*, *Fl. Nov. Zel.* 1 (1853) 294, t. 66. — Type: *Banks & Solander* (BM, holo).

*Stipa teretifolia* Steud., *Syn.* 1 (1854) 128. — Type: *Lesson s.n.* (P, holo).

= *Stipa stipoides* (Hook. *f.*) Veldk., *comb. nov.*

This species is currently known as *S. teretifolia* and must unfortunately have another name.

3. *Dichelachne drummondiana* Steud., Syn. 1 (1854) 120. — *Deyeuxia drummondiana* Benth., Fl. Austr. 7 (1878) 580. — Type: *Drummond IV*, 371 (P, holo; K).  
= ***Agrostis drummondiana*** (Steud.) Vickery, Constr. N.S. Wales Nat. Herb. 1 (1941) 111.
4. *Dichelachne brachyathera* Stapf, Kew Bull. (1906) 203. — Type: *Gregson s.n.* ('Gryson') (K, holo).  
= ***Deyeuxia brachyathera*** (Stapf) Vickery, Contr. N.S. Wales Nat. Herb. 1 (1940) 68.
5. *Dichelachne minor* Domin ex Gardner, Fl. W. Austr. 1 (1952) 150, *in obs.*  
I have not been able to trace material bearing this name.

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