A revision of *Dimeria (Gramineae-Dimeriinae)* in Malesia with a note on *Cymbachne*

J.F. Veldkamp¹

**Key words**
Cymbachne, history, nomenclature

**Abstract**
In Malesia there are 4 species of *Dimeria (Gramineae)*. A brief history of the genus with a key, nomenclature, descriptions, and notes is provided. *Dimeria cillicata*, *D. dipetora*, and *D. fuscescens* are reduced to *D. chloridiformis*, *D. leporinachus* and its var. *velutina* to *D. gracilis*, *D. monostachya* to *D. kurzii*. *Dimeria orthomphora* var. *gracillima* is not recognised. *Cymbachne* is doubtfully referred to *Ischaemum*.

**Published on** 16 November 2016

**INTRODUCTION**

*Dimeria* R.Br. (*Gramineae*) is a genus with about 67 species ranging from Madagascar, India to S Korea, Marianas, and Australia. The majority (c. 34 species) occur in Peninsular India (Hackel 1889, Hooker 1896, Bor 1953, Kiran Raj 2008) indicating it to be the centre of speciation of the subtribe *Dimeriniae* Hack. In SE Asia, approximately 14 have been reported for Indo-China, Malesia, China, and the Pacific (Camus & Camus 1922, Ridley 1925, Jansen 1953, Schmid 1958, Henty 1969, Gilliland 1971, Lazarides 1980, Chen & Phillips 2006, Clayton & Snow 2010, Teerawatananon et al. 2014). In Australia there are 3 (Simon 1993) and in the Pacific (Clayton & Snow 2010) 3.

Although rather anomalous, it clearly belongs to the *Andropogoneae* Dumort. It is immediately distinct by the tenacious, espatheate, solitary or digitate racemes with solitary hermaphrodite spikelets lateral to the rachis, shortly pedicelled, laterally compressed, and florets with 2 anthers (there are some reports of 3, but this has not been seen in this study). The authorship of the subtribe *Dimeriniae* is sometimes given as C.E. Hubbard (1934), but he explicitly cited Hackel (1889).

It was first described from Australia with as the only species *D. acinaciformis* R.Br. which Brown placed between *Imperata* Cirillo and *Ischaemum* L. He also mentioned an unnamed species from India. The name alludes to the paired racemes (*dimeros*: δίς μέρις, ‘two parts’: ‘spica duplex’). Bor (1953: 554) has suggested that Brown had inspected an abnormal specimen with 3 anthers.

It was not the first species known to Western science, though, for *Anthoxanthum avenaceum* Retz. was described in 1783 from South India, now known as *D. avenacea* (Retz.) C.E.C.Fisch. *Haplachne* JPresl (1830) was based on *H. pilosissima* JPresl from Luzon, the Philippines, a synonym of *D. chloridiformis* (Gaudich.) K.Schum. & Lauterb. The name means ‘simple chaff’ (‘ατμίος’ ‘empty’).

*Didactylost Zoll.* & Moritz (1846) was described with two species from Java, both forms of *Dimeria orthomphora* Trin. The name refers to the paired racemes (‘two fingers’: δίς δακτυλός).

*Psilotachys* Steud. (1854: 413; non Turcz. 1843, *Euphorbiaceae*, nec Hochst. 1844, *Amaranthaceae*) with *P. hohonackeri* Steud. was described from Canara (Karnataka) in S India. This is now *D. hohonackeri* (Steud.) Hochst. ex Miq. The name means ‘glabrous spike’ (ψηλός στοξύς).

Next to this *Steudel* (1854) recognised 6 species in *Dimeria*. *Pterygostachyum* Steud. (1854: 413) was based on *P. lehmanni* Nees ex Steud. from India, *D. lehmannii* (Nees ex Steud.) Hack. The name means ‘winged spike’ (πτερυγός στοξύς).

Hackel (1889) recognised 12 species, 2 subspecies, and 10 varieties.

*Woodrowia* Stapf (1896) from India was described in the *Agrostideae* Dumort. and compared to *Garnotia* Brongn. It was dedicated to George Marshall Woodrow (1846–1911; see Stapf 1895, Desmond 1977), the collector of the type of *W. andra* Stapf (non D. diandra Griff. 1851a, b), now *D. stapfiana* C.E.Hubb. ex Pilg.

The genus was revised for India by Bor (1953) with 25 species and more recently Kiran Raj (2008) treated the subtribe with 2 genera and 43 taxa in an unpublished thesis. For the Malesian taxa the diagnostic characters are but few; hence several are here reduced.

For the record it may be noted that Robertson (1960) had a single species, *D. avenacea* (Retz.) C.E.C.Fisch., with 22 subspecies in a monotypic ‘Cohors’ *Dimeriastreae* Robert. He erroneously cited the Indian endemics *D. bialata* C.E.C.Fisch. and *D. fischeri* Bor for Malesia.

**TAXONOMIC POSITION**

The *Dimeriniae* generally have been regarded as a member of the *Andropogoneae* Dumort. with *Dimeria* as the only genus, until *Nanoravia* Kiran Raj & Sivad. (in Kiran Raj et al. 2013a, b) with one species from India was described. Affinities have been pointed out with e.g. *Ischaemum* L., *Saccharum* L., and *Sorghum* Moench. Clayton & Renvoize (1986) regarded it as derived from the *Ischaemaeae* J.Presl by suppression of the sessile spikelet, as the remaining spikelets are shortly pedicelled. This might as well be a loss of the pedicelled ones, as was observed by Miquel (1851; ‘rudimentary pedicels’), but by no one else. In the *Andropogoneae* reduction of the pedicelled spikelet is the usual trend, while the ‘sessile’ spikelets sometimes may be shortly pedicelled. The reduction of the pedicelled spikelets usually is from male, neuter, to absent.
Kellogg & Watson (1993: 296) in a phylogenetic analysis based on morphological data treated Dimeria as a sister group of Cleistachne. Benth. of the subtribe Sorghinae Bluff et al. with both genera nesting in a Saccharinae clade. Estep et al. (2014) in a nuclear molecular study, however, found Dimeria nested in a clade within Ischaemum, but with little basal support, so a reduction of Dimeria to Ischaemum seems premature. Morphologically the two are very dissimilar.

Teerawatanaon et al. (2011a, 2014) regarded the Dimeriinae as monophyletic and most related to Eulalia Kunth s.l. and Ischaemum. Kellogg (2015) actually reduced the Dimeriinae to Ischaeminae, but remarked “The subtribe lacks obvious morphological synapomorphies, though the lower glume often has a winged keel”. The latter feature is highly variable in both morphological synapomorphies, though the lower glume often has a winged keel. The latter feature is highly variable in both morphological synapomorphies, though the lower glume often has a winged keel. However, she also pointed out the presence of “leaf epidermis with intercostal cells with several papillae per cell”. Whether this is indeed a synapomorphy remains to be seen.

Sections
Bor (1953) recognised three sections in India: Annulares Bor (type: D. woodrowii Stapf), Capillares Bor (D. hohenackeri Hochst. ex Miq.), and Loriformes Bor (D. pubescens Hack.), but did not account for D. acinaciformis, as this is an endemic of Australia, and would be the type of the autonym. Kiran Raj et al. (2015) recognised for India four sections with 12 species in sect. Dimeria, some of which had been placed by Bor in the Capillares and Loriformes.

In Malesia there are:
- Dimeria: D. chloridiformis, D. dipteros Reeder, D. gracilis Nees ex Steud., D. monostachya Reeder, D. ornithopoda.
- Loriformes: D. kurzii Hook.

Dimeria — Map 1
Dimeria R.Br. (1810) 204; Bor (1953) 553; Teerawat. et al. (2014) 137.
- Type: Dimeria acinaciformis R.Br.
Haplachne J.Presl (1830) 234. — Dimeria R.Br. [sect.] Haplachne (J.Presl) Endl. (1836) 106. — Type: Haplachne pilosissima J.Presl [= Dimeria chloridiformis (Gaudich.) K.Schum. & Lauterb.].
Didactylon Zoll. & Moritz in Moritz (1846) 99. — Lectotype: Didactylon simplex Zoll. & Moritz (= Dimeria ornithopoda Trin.), designated by Clayton & Renvoize (1986: 349).

Annual or perennial, caespitose. Culms internodes hollow. Leaf blades linear. Ligules truncate, margin lacerate or fimbriate. Inflorescences determinate, espathate, composed of 1–14 digitate racemes. Spikelets numerous, hermaphrodite, solitary, lateral to and partially embedded in the rachis, secund, biseri-ate, pedicellate, laterally compressed. Glumes more or less equal, awnless, carinate, 1–3-nerved. Lower floret epaleate, sterile, lemma awnless, 0-nerved, similar in texture to the upper one; upper lemma incised, awnless to awned from the sinus, glabrous, 1–3-nerved. Lodicules absent or very small. Stamens 2, rarely 3 (see note). Styles fused, stigmas 2. Hilum punctiform, embryo large. x = 7, 25.

Distribution — C. 67 species from Madagascar to S Korea, Micronesia and northern Australia. In Malesia 4 species.

Note — Brown (1810) described the type species D. acinaciformis with three stamens, other authors (e.g. Hackel 1889: 86 ‘certissime’) have reported two. Presl (1830) said two, his artist depicted three. Kiran Raj erroneously (fide litt.) reported the presence of 3 stamens in D. thwaitesii Hack.

KEY TO THE TAXA
1. Racemes 2 or more. (Rarely 1 in D. chloridiformis, then plants perennial; culms 0.3–1 m long; racemes rachis flattened to tufted, internodes 0.8–1.5 mm long; lower glumes keel puberulous to pilose (30 x!); upper glumes acute to mucronate, keel pilose (30 x!).) .......................... 2
2. Racemes 1. — Annuals. Racemes rachis flattened, 0.4–0.9 mm wide. Spikelets 4.5–8 mm long. Glume keels not winged. Anthers 0.5–1.5 mm long. Malay Penins. (Kedah), Papua New Guinea 3. — 3. D. kurzii
3. Percennial. — Spikelets 3.3–8 mm long .......... 4
2. Annuals. — Racemes rachis 0.1–0.4 mm wide. Spikelets 1–3.5(–4.5) mm long. Glume keels not winged. Anthers 0.25–0.8 mm long. Widespread 4. — D. ornithopoda
3. Racemes rachis flattened, or tufted. Upper glumes keel winged 4. — Thailand 4. — 4. D. graciilis
5. Upper glumes keel pilose (30 x!), wing absent to narrow, not rugose. — Philippines (Palawan), New Guinea 1. — 5. D. chloridiformis
4. Upper glumes keel ciliolate (30 x!), wing broad, rugose. — Thailand 5. — D. kerrii

1. Dimeria chloridiformis (Gaudich.) K.Schum. & Lauterb.
Dimeria chloridiformis (Gaudich.) K.Schum. & Lauterb. (1900) 165. — Andropogon chloridiformis Gaudich. (1826) 72, 75 (nomen); (1829) 412 (descri.). — [Dimeria avenacea (Retz.) C.E.C.Fisch. subvar. chloridiformis (Gaudich.) Roberty (1960) 398, 402, nom. invalid.]. — Type: Gaudichaud s.n. (holo P; photo in BRI, K).
Perennials. *Culms* 0.3–1 m long. Nodes bearded. *Ligules* 0.5–1 mm long, margin glabrous (30 x!) or ciliolate (30 x!). *Leaf blades* 3–25 cm by 2–5(–8) mm, puberulous or pilose, sometimes glabrous. Racemes 1–6, rachis flattened, 4–15 cm long, 0.2–1 mm wide, internodes 0.8–4 mm long, margin glabrous, ciliate, or pilose (30 x!). Pedicels 0.3–1 mm long. *Spikelets* 3.3–4.8(–5.6) mm long. Callus hairs 0.2–1 mm long. Lower *glumes* keel puberulous to pilose (30 x!), apex acuminate to mucronate, mucro 0–0.2 mm long, not winged; *upper glumes* acute to mucronate, mucro 0–0.6 mm long, keel winged or not, pilose (30 x!), wing narrow, not rugose. Awns 4–17 mm long, incl. 0–3.5 mm long column. Anthers 0.8–3.5 mm long. 2n = 50.

**Distribution** — Sri Lanka, Nepal, India (Andhra Pradesh, Assam, Bengal, Kerala, Manipur, Meghalaya, Nagaland, Orissa, Tamil Nadu) to Thailand (NE: Loei; E: Chayaphum; Pen.: Satun; therefore may be expected in N Malay Pen.), N Vietnam, Micronesia (Guam, Yap), Australia (N Territory, Queensland); Malesia: Philippines (Palawan), New Guinea; Irian Jaya (Baliem Valley); Papua New Guinea (Central, W, S Highlands, Western Prov.).

Habitat — Savannahs, sometimes dominant, swampy places, wet rocks, open pine or evergreen forest; 30–2530 m altitude.

Collector’s notes — Erect, fairly densely tufted, culms 30–100 cm, purple. Leaves dull mid green, bluish green with silver hairs. Inflorescence yellow/green, purplish. Spikes 1–2. Anthers yellow. Style white, pale yellow.

Notes — The var. *heteromorpha* is merely a rather glabrous form with an extended wing on the upper glume. An isotype in A of *Dimeria diptera* is a small specimen, but with cataphylls and extra-vaginal branching, thence not an annual. An isotype in L could not be found.

The Continental Asian representatives are known as *D. fuscescens* Trin. (1832) but I have failed to find any convincing differences.

Roberty (1960: 402) cited his subvar. *ciliata* for Deccan (India) and the Philippines. The first surely is a misidentification. Reeder (1948: 325) and Jansen (1953: 267) noted that the peduncle would be “short pubescent below the inflorescence”. I have not seen this.

The development of a wing on the keel of the upper glume is apparently not such a reliable character as some keys suggest. Merrill (1914) did not note the upper glume to be winged. Reeder said prominently in upper part. Actually it may be absent to broad, while the plants in other respects do not seem to differ. Although said to be common in e.g. New Guinea (Henty 1969: 80), only two specimens were received from K. Possible specimens in L could not be found.

### 2. *Dimeria gracilis* Nees ex Steud.

*Dimeria gracilis* Nees ex Steud. (1854) 413. — *Dimeria avenacea* (Retz.) C.E.C. Fisch. subvar. *gracilis* (Nees ex Steud.) Roberty (1960) 398, 402, nom. inval. — Type: *Macrae 229 in Herb. Lindley* (holo P; CGE).

**Distribution** — India (Kerala), disjunct with Burma (Bago, Kachin, Shan, Taninthayi), Thailand (Eastern: Buri Ram, Nakorn Ratchasima, Ubon Ratchathani; Southeastern: Chantaburi; Central: Nakorn Nayok; Penins.: Phangnga, Ranong, Satun, Songkhla), Cambodia (Stung Treng), Vietnam, S China; Micronesia (Guam, Yap), Australia (N Territory, Queensland); 30–2530 m altitude.

Notes — The differences between *D. leptorrhachis* and its var. *velutina* is only in the pubescence of the sheaths and leaves, which is insufficient to recognise these forms at any level. The differences with *D. gracilis* were equally unimportant.

Collected in the same site in Kedah, G. Jerai, were *Burkill 3304 (L, SING) and KLU 8157 (Kassim & Garrick) (KLU).*

Distribution remarkable, everywhere apparently very local.

### 3. *Dimeria kurzii* Hook.f.

*Dimeria kurzii* Hook.f. (1896) 103. — *Dimeria avenacea* (Retz.) C.E.C. Fisch. subvar. *kurzii* (Hook.) Roberty (1960) 398, 401, nom. inval. — Lectotype: *Kurz 2741 (K 000245780)*; iso G, K 000245780, designated by Teerawatana et al. (2014: 141).

**Distribution** — Sri Lanka, W India (Goa, Karnataka, Maharastra), Burma (Tenasserim), Thailand (Trat), Cambodia (Kampong Speu), Vietnam (Dalat), Malesia: Malay Pen. (Kedah).

Habitat — On scrub, grass land, pine and dipterocarp forest, 600–975 m altitude.

Notes — The differences between *D. leptorrhachis* and its var. *velutina* is only in the pubescence of the sheaths and leaves, which is insufficient to recognise these forms at any level. The differences with *D. gracilis* were equally unimportant.

Collected in the same site in Kedah, G. Jerai, were *Burkill 3304 (L, SING) and KLU 8157 (Kassim & Garrick) (KLU).*

Distribution remarkable, everywhere apparently very local.
Malesia: Malay Penins. (Kedah), Papua New Guinea (Western Prov.).

Habitat — Lateritic, sandy soil, dry deciduous forest, savannahs, disturbed places, edge of rice field, beaches, locally abundant, 0–1200 m altitude.

Collector’s notes — Annual. Culms violet. Blades green above, pale green underneath. Inflorescence axes greenish. Glumes green, pinkish purple, violet. Awns tan, violet.

Notes — Reeder compared his *D. monostachya* to *D. sinensis* Rendle, a synonym of *D. kurzii*. The only difference outside the very disjunct distribution is that the awns are shorter than those in *D. kurzii*. The isotype specimen in A does not have broadly ovate leaves, but unfortunately without ‘designated there’.

The 9–18 mm long, incl. 2–6 mm long column. **Dimeria ornithopoda**

—— Awns 6–8.5 mm long, incl. 1–2 mm long column. **D. monostachya**

Teerawatananon et al. (2014: 138) differentiated between *D. kurzii* and *D. sinensis* by the absence or presence of a wing on the keel of the upper glume. Having studied some specimens of both species identified by them, I fail to find this difference (or any other). Indeed some of their ‘*D. sinensis*’ are completely wingless.

**Hance 1385** is the number of a species, which consists of several collections, most pertaining to *D. falcata* Hack. as was already pointed out by Rendle (1904). The lectotypification of *D. sinensis* was sorted out by Teerawatananon et al. (2014), but unfortunately without ‘designated here’.

4. **Dimeria ornithopoda** Trin.

*Dimeria ornithopoda* Trin. (ante 24 Jan. 1820) 167, t. 14; Ridl. (1903) 274 (*D. ornithopodoides*, spathifl., miq.; Trin. 1930) 324 [incl. forma typica Hack. ex Honda, nov. inval.] ; Bor (1953) 572 (incl. var. genuina, nov. inval.). — [Dimeria avuncana (Retz.) C.E.C.Fisch. subvar. *ornithopoda* (Trin.) Roberty (1960) 399, 401, nov. inval.]. — Type: Herb. *Trinius* 1254.1. (holo LE, IDC microfiche BT-16/1) \n
*Dimeria tenera* Trin. (1832) 335. — *Dimeria ornithopoda* var. *tenera* (Trin.) Hack. (1889) 81. — *Dimeria ornithopoda* var. *tenera* Hack. subvar. typica Hack. (1889) 81, nov. inval. — [Dimeria avuncana (Retz.) C.E.C.Fisch. subvar. *tenera* (Trin.) Roberty (1960) 399, 402, nov. inval.]. — Lectotype: Chamisson s.n. (LE Herb. Trinius 1255.1, IDC microfiche BT-16/1; iso B, extant?), designated by Teerawatananon et al. (2014: 142).

Didactylon ramosum Zoll. & Moritz (1846) 100; Buse (1854) preprint: 27, (print) 367; Miq. (1857) 479. — *Dimeria ornithopoda* var. ramosa (Zoll. & Moritz) Hack. (1889) 82; Ridl. (1891) 27 (*subramosa*). — *Dimeria ornithopoda* var. *ramosa* subvar. *typica* Hack. (1889) 82, nov. inval. — *Dimeria avuncana* (Retz.) C.E.C.Fisch. subvar. *ramosa* (Zoll. & Moritz) Roberty (1960) 399, 402, nov. inval.]. — Type: Zollinger 351 (holo G; K, L, U, W).

Didactylon simplex Zoll. & Moritz (1846) 100; Miq. (1857) 480. — Type: Zollinger 1359 (holo P; U). — Dimeria glabriuscula F.M.Bailey (1890) 83. — Type: Bailey 23 (holo BRI; MEL). — *Dimeria ornithopoda* Trin. var. *imperfecta* Hack. (1889) 82. — Type: Lobb s.n. (holo G). — Dimeria glabra Ridi. (1925) 192. — *Dimeria ornithopoda* Trin. var. glabra (Ridi.) Jansen (1953) 266. — *Dimeria avuncana* (Retz.) C.E.C.Fisch. subvar. *glabra* (Ridi.) Roberty (1960) 398, 400, nov. inval.]. — Type: SF 4674 (Burkill) (holo SING, G, K). — *Dimeria ornithopoda* Trin. var. *griacillima* Bor (1953) 576. — Lectotype: Clarke 21084-B (K 000245790), designated by Teerawatananon et al. (2014: 143).

Annuals. Culms 0.035–0.45 (–0.8) m long. Nodes bearded to glabrous. *Ligules* 0.2–0.5 (–1) mm long, margin glabrous, ciliolate, or fimbriate. *Leaf blades* 1–10 (–13) cm by 0.75–3.25 mm, glabrous or sparsely setose. Racemes usually 2, sometimes 3, rarely 4, rachis flabellate, terete or quiescent, 0.7–7 (–8) mm long, 0.1–0.5 mm wide, internodes 1–2 mm long, margin scabrous or ciliate (30 x). Pedicels 0.1–0.3 mm long. *Spikelets* 1–3 (–4.5) mm long. Callus hairs 0–0.8 mm long. Glume keels not winged. *Upper glumes* acute, smooth, scabrous, ciliolate, or setose. Awn present or absent, (0–)4–6.5 (–10) mm long, incl. 1–3.5 mm long column. Anthers 0.25–0.8 mm long. 2n = 14, 32.

Distribution — India to Japan, N Australia, Malesia: throughout.

Habitat — Sunny, infertile soil, grass fields, road sides, river banks, abandoned rice fields in the dry season, resistant to mowing and grazing, locally abundant, 0–1800 m altitude.

Vernacular name — Bird’s foot grass.

Collector’s notes — Rhizomatous? Culms prostrate, geniculate. Rachis white, margins green. Spikelets purple. Glumes with green veins, sometimes purple tinged. Column pubescent brown. Anthers white, yellow. Stigmas white.

Notes — This species is rather variable and Hackel (1889) optimistically and based on only a few specimens distinguished 6 varieties and 4 subvarieties, warning that intermediary forms occur. Bor (1953, 1960) for India distinguished four. Jansen (1953) for Malesia provisionally distinguished three, Duistermaat (2005) regarded them as extremes of a range and I agree. Specimens with spikelets 1–1.5 mm long and anthers up to 0.25 mm have been distinguished as var. *gracillima* Bor (1953: 576), and e.g. Teerawatananon et al. (2014: 143, lectotype!), but otherwise they cannot be distinguished. Some collections appear to be just dwarfed forms.

Forms without awns or mucronate ones (var. *glabra*) occur within the same population (see also Ohwi 1965, Duistermaat 2005), but I have not seen mixed collections. BS 336719 (*Ramos & Eduño*) (SING) from Luzon had spikelets without awns or with short, simple, filiform ones in the same racemes.

**POSSIBLE MALESIAN TAXA**

**Dimeria avenacea** (Retz.) C.E.C.Fisch. forma *latilancefolia* Roberthy (1960) 398, 400, is a nom. inval., vouchered by Merrill 3226 (G, where it could not be found), Philippines, Luzon, Bataan (n.v.).

**Dimeria kerrii** C.E.Hubb. ex Teerawat. & Sungkaew (in Teerawatananon et al. 2011b) 151, t. 2. — Type: Kerr 13868 (holo K; BK, BM).

Description after Teerawatananon et al. (2011b, 2014).

Perennials. Culms up to 1.2 m long. Nodes bearded. *Ligules* c. 0.6 mm long, margin ciliate. *Leaf blades* 10–20 cm by 3–4.5 mm, hairy. Racemes 2–3, rachis flattened, 8–16 cm long, 0.6–0.7 mm wide, internodes 1.5–2 mm long, margin ciliate. Pedicels 0.8–1.2 mm long. *Spikelets* 5–6 mm long. Callus hairs up to 0.5 mm long. Lower glumes keels not winged; *upper glumes* acute to acuminate, keel winged, ciliolate, broad, rugose. Awns 12–15 mm long, incl. 2–3 mm long column. Anthers 1.8–2 mm long.

Distribution — Thailand (Peninsula: Satun) and so may be expected in the N Malay Peninsula.

Habitat — Grasslands, moist savannah, c. 50 m altitude.

**OTHER SPECIES**

**Dimeria fischeri** Bor (1953) 564. — Type: Fischer 133 (holo K).

Note — Roberthy (1960: 398) recorded it as present in Maleasia; the actual distribution is S India (Kerala, Tamil Nadu).

**Dimeria scrobiculata** C.B.Clarke ex Koord. (1911) 102. — Lectotype: Ottolander 358 (BO), designated here.

= *Arthraxon hispidus* (Thunb.) Makino var. *hispidus*. 

---
Fig. 1 The Zetterstedt sheet in Lund (1228279).
Cymbachne

Cymbachne Retz. (1791) was described with as the single species C. ciliata represented by a single (!) specimen collected by König in Bengal. Retzius material may be expected to be in Lund (LD), but it has been long lost. It was not found by Fischer (1932), but as noted by Bor (1960: 139) a specimen is present in the Zetterstedt herbarium (LD 1228279). It was annotated not by Retzius, but by Zetterstedt (Messrs. P. Frodén and P. Lassen, LD, in litt.). Bor identified it as D. alata Hook.f., a Sri Lanka endemic (Fig. 1, 2).

However, this cannot be original material. From the reference to Sprengel (1824) on the label and the absence of any mention of König it would seem that after 1824 Zetterstedt tried to identify a collection, and besides the incongruence with the original description, this cannot be the type of C. ciliata. That it came from Bengal, as is noted on the label, might well have been a deduction from the provenance cited by Retzius and subsequent authors.

Bor wrote “the description might easily apply to a species of Dimeria ... no need for a change of name”. However, the description mentions the presence of paired spikelets, whereby it can never refer to Dimeria R.Br. (1810), which is one of the few andropogonoid genera characterised by solitary ones. Dimeria spikelets have only 2 stamens, 3 are described here, and depicted by Presl (1830; but described as two!). This is most fortunate, as Cymbachne has priority over Dimeria, and there is now no need for a proposal for conservation to prevent about 70 new combinations.

Probably following Bor, Clayton & Renvoize (1986: 376) have suggested that it was based on a damaged specimen of Dimeria R.Br. and thus it is perpetuated in the literature.

Willdenow (1797) unseen and without argumentation transferred it to Rottboellia L.f. as R. cymbachne, a superfluous name, as at the time there was no R. ciliata. There is no duplicate in the Willdenow herbarium (B). This combination, without any further reference, was used by Steudel (1854: 362).

Hackel (1889: 450) stated to have seen a specimen collected by König in Copenhagen (C), labelled as Cymbachne ciliata. He observed (my translation) that “the description is quite obscure and by no means without errors, for what he calls the female flowers seem to be nothing else than thick pedicels, remaining after de male spikelets have fallen off. Besides what else Retzius adds, agree well with the Koenig specimen and I do not doubt that I have described the same as Retzius’ plant. A specimen in the herbarium Retzius, now in Lund, is to be wished for”.

In C there are two (!) sheets, which makes them suspect, because a single sheet was expected in Lund:

- C10016736 with ‘Rottboellia cymbachne Willd.’ and a label by Hackel: Andropogon cymbachne Hack., and on the back annotated as part of the Herbarium Vahl, and with the names Andropogon cymbachne and Cymbachne ciliata Retzi (K neg. 19385) and ‘König’ (Fig. 3).

- C10016737 with a label by Hackel ‘Andropogon cymbachne Hack. / Cymbachne ciliaris Retz.’ and a reference to Hofman Dory (??) (K neg. 19384). The ‘Rottboellia’ in pencil is to be neglected. A note by Clayton states “does not match description” (Fig. 4).

These specimens belong to Andropogon canaliculatus Schumach. This is an African species ranging from Mali to Tanzania and Zimbabwe and never could have been collected by König. Obviously, they were mislabelled and very well could be isotypes of Schumacher’s species described from Ghana, the type of which has otherwise not been found as yet. However, the type of A. eucnemis Trin. (1832) may very well be an isotype of this, and is here designated as the neotype.

Note that later typifications do not make a name superfluous (ICN Art. 52, Note 2).

Hackel for some reason with a query included Arthrostachys Desv. (1831) with A. gracilis. This was described without prove-
nance or collector and is immediately distinct by the articulate inflorescence axes. It was not mentioned by Steudel (1854). Clayton & Renvoize (1986: 349) and Soreng & Pennington (2003) regarded it as a synonym of Andropogon with which I can agree. Arthrostachya Link (1827) is not an earlier synonym (Art. 53.3.Ex.12).

The undaunted Roberty (1960) not having seen the type, either, nevertheless accepted Cymbachne for 8 Asian and African species with 9 varieties and 72 subvarieties, which others have regarded as taxa belonging to Andropogon (incl. Arthrostachys Desv., Dictomis Kunth, Homoeatherum Nees, and Pollinia Spreng., p.p., Rottboellia auct.). It may be noted that Palsot de Beauvois (1812: 109, 159) mentioned a “Cymbachne Lour.” This is an error for Stegosis Loure. From the diagnosis and description I have the impression he had an unawned species of Andropogon Retz. (1791) 36. — Type: Cymbachne ciliata Lour.

From the diagnosis and description I have the impression he had an unawned species of Andropogon Retz. (1791) 36. — Type: Cymbachne ciliata Lour.

It was not mentioned by Steudel (1854).

References

Acknowledgements

Many people assisted me during this study. Many thanks to Dr. I. Fris (C) for comments on Thoning collections. Mr. P. Fröden (LD), Dr. M.S. Kiran Raj (CALI, Department of Botany, Sree Narayana College, Cherthala – 688 582, Alappuzha, Kerala), Mr. P. Lassen (LD), Mr. P.O. Ryding (C), Dr. M. Sivadasan (KSI), and the institutes that allowed me to study their specimens: A. AMD, BIOT, BISH, BO, BORH, K, KE, L, MEL, NSW, P, PNH, PTBG, SAN, SAR, SING, SINU, SPN, U, W, WAG.

References

Bor NL. 1960. The grasses of Burma, Ceylon, India and Pakistan. Series of Pure and Applied Biology, Botany Division 1: 136–145. Brown R. 1810. Prodromus florae Novae Hollandiae et insulae Van Diemen 1: 204. Johnson, London. Buse LH. 1854. Gramineae. In: Miquel FAW, Plantae junghuhniannae 3 (Feb. 1854) preprint: 27. (Aug. 1854) 367. Sythoff, Leiden; Labellaire, Paris. Camus EG, Camus A. 1922. Graminées. In: Lecomte H, Humbert H (eds), Flore Générale de l’Indo-Chine 7: 226–230. Masson, Paris. Chase A. 1939. Papuan grasses collected by L.J. Brass. II. Journal of the Arnold Arboretum 20: 31. Chen SL, Phillips SM. 2006. Dimeria. In: Zhengyi W, Raven PH, Hong DY (eds), Flora of China 22: 614–616. Science Press, Beijing. Peoples Republic of China and Missouri Botanical Garden Press, St. Louis, Missouri. Clayton WD, Renvoize SA. 1986. Genera graminis. Grasses of the world. Kew Bulletin, Additional Series 1: 348–349, 376. Clayton WD, Snow N. 2010. A key to Pacific grasses: 88–89. Kew Publishing, Kew. Desmond R. 1977. Dictionary of British and Irish botanists and horticulturalists, ed. 3: 675. Taylor & Francis, Natural History Museum, London. Desvaux NA. 1831. Opuscules sur les sciences physiques et naturelles. Mémoires de la Société d’Agriculture, Sciences et Arts d’Angers 1: 74, t. 6, f. 2. Duistermaat H. 2005. Field guide to the grasses of Singapore. Supplement, Gardens Bulletin Singapore 57: 61. Elliott, S. 1816. A sketch of the botany of South Carolina and Georgia. Schenck, Charleston. Endlicher S. 1836. Genera plantarum: 106. Beck, Wien. Estep MC, McKain MR, Diaz DV, et al. 2014. Allopolyploidy, diversification, and the Mocene grassland expansion. PNAS 111: 42: 15149–15154. doi: 10.1073/pnas.1404177111. Fischer CEC. 1932. The Koenig collection in the Lund herbarium. Bulletin of Miscellaneous Information, Royal Gardens, Kew 1932: 70–75. Gauchaud C. 1826. In: De Freyinet L, Voyage autour du monde ... L’Uraine. Botanique: 72, 75. Pilet-Amé, Paris. Gauchaud C. 1829. In: De Freyinet L, Voyage autour du monde ... L’Uraine. Botanique: 412. Pilet-Amé, Paris. Gilliland HB. 1971. A revised flora of Malaya. An illustrated systematic account of the Malaysian flora, including commonly cultivated plants 3: 213–217. Government Printing Office, Singapore. Griffith W. 1851a. Notulae ad plantas asiaticas 3: 7. Serrao, CALCUTTA. Griffith W. 1851b. Icones plantarum asiaticarum 3: t. 157, f. 2. Government of Bengal, Calcutta. Hackel E. 1889. Andropogoneae. De Candolle ALPP, De Candolle ACP, Monographie phanerogamarum, etc. 6: 76–90, 450–451. Masson, Paris. Henty EE. 1969. A manual of the grasses of New Guinea. Botany Bulletin, Lae 1: 80–81. Hepper FN. 1886. The West African herbaria of Isert & Thongning: 142. Bentham-Moxon Trust, Royal Botanic Gardens, Kew. Hitchcock AS. 1936. Botanical results of the Archbold Expedition Expedition No. 1. Papuan grasses collected by L.J. Brass. Brittonia 2: 124–126. Hochstetter CF. 1844. Nova genera plantarum Africae. Flora 27 (1. Bes.): 6, 1, 4. Honda M. 1930. Monographia Poacearum japonicarum, Bambusoideis exclusis, Journal of the Faculty of Science, University of Tokyo. Section 3, Botany 3: 322–325. Hooker JD. 1869. Dimeria. In: Hooker JD, Flora of British India 7: 103–106. Reeve & Co. Hubbard CE. 1934. Gramineae. In: Hutchinson J, The families of flowering plants II. Monocotyledons: 227. Macmillan & Co., London. Jansen P. 1953. Notes on Malayasa grasses – I. Reinwardtia 2: 265–267. Kellogg EA. 2015. Tribes and genera of Panicoideae. In: Kubitzki K, The families and genera of vascular plants 13. Flowering plants. Monocots. Poaceae: 301–302. Springer, Cham, etc. Kellogg EA, Watson L. 1993. Phylogenetic studies on a large data set I. Bambusoideae, Andropogoneae, and Pooideae (Gramineae). The Botanical Review 59: 296–297. Kiran Raj MS. 2008. Taxonomic revision of the subtribe Dimerinae Hack. of Andropogoneae (Panicoideae-Poaceae) in Peninsula India. Thesis, University of Calicut (partly in L). Kiran Raj MS, Sivadasan M, Veldkamp JF, et al. 2013a. Nanorovagina nov., subtribe Dimerinae (Poaceae-Panicoideae-Andropogoneae) from India. Nordic Journal of Botany 31: 161–165. Kiran Raj MS, Sivadasan M, Veldkamp JF, et al. 2013b. Validation of Nanorovagina santapau (Poaceae-Panicoideae-Andropogoneae-Dimerinae). New Journal of Botany 7: 638. Kiran Raj MS, Sivadasan M, Veldkamp JF, et al. 2015. A revised infrageneric classification of Dimeria R.Br. (Poaceae-Andropogoneae). Bangladesh Journal of Plant Taxonomy 22: 47–54.
INDEX TO SPECIMENS

chi = Dimeria chloridiformis (Gaudich.) K.Schum. & Lauterb.
gra = Dimeria gracilis Nees ex Steud.
ker = Dimeria kerrii C.E.Hubb. ex Teerawat. & Sungkajew

Adj. Landbouwc. Pamekasan 7: torn – ANU 2166 (Flenley): chl; 6024 (Wheeler): chl;
Backer 1099: torn; 1928: torn; 2057: torn; 8627: torn – FB 5293 (Curran): torn;
5294 (Curran): torn; 5822 (Curran): torn; 9960 (Merritt): chl;
Duistermaat et al. S 157: torn – ANU 2166 (Flenley): chl; 6024 (Wheeler): chl;
28017 (Weatherstone): chl.

Schumann K, Lauterbach K. 1900. Die Flora der deutschen Schutzgebiete in der Südsee: 165. Borntraeger, Leipzig.
Simon BK. 1993. A key to Australian grasses, ed. 2: 103. Queensland Department of Primary Industries, Brisbane.
Soreng RJ, Pennington SJ. 2003. Catalogue of new world grasses (Poaceae): III. Subfamilies Panicoidae, Aristidoideae, Arundinoideae, and Danthonioideae. Contributions from the United States National Herbarium 46: 116. Sprengel K. 1924. Systema vegetabilium 1: 300. Libraria Dietrichiana, Göttingen.
Stapf O. 1895. Dimeria woodrowii, Stapf. Hooker’s Icons plantarum 24: t. 2312.
Stapf O. 1896. Woodrowia diandra, Stapf. Hooker’s Icons plantarum 25: t. 2447.
Steedly EG. 1854. Synopsis plantarum glumacearum: 362, 412–413. Metzler, Stuttgart.
Teerawatananon A, Boonvia T, Charantasuwann B, et al. 2014. A taxonomic revision of the genus Dimeria (Poaceae: Panicoidae) in Thailand. Phytotaxa 186: 137–147.
Teerawatananon A, Jacobs SWL, Hodgkinson TR. 2011a. Phylogenetics of Panicoidae (Poaceae) based on chloroplast and nuclear DNA sequences. Telopea 13: 115–142.
Teerawatananon A, Sungkaw S, Hodgkinson TR. 2011b. Arundinella kerrii and Dimeria kerrii, two new endemic species from Thailand (Poaceae, Panicoidae). Novon 21: 149–153.
Thunberg CP. 1784a (May–June). In: Murray JA, Systema vegetabilium, ed. 14. 903. Dieterich, Göttingen.
Thunberg CP. 1784b (Aug.). Flora japonica: 40–41. Müller, Leipzig.
Trimen H. 1885. Notes on the flora of Ceylon. Journal of Botany 23: 272–273.
Trinius CB. 1820. Fundamenta agrostographica, etc.: 166–167, t. 14. Heuber, Vienna.
Trinius CB. 1832. Andropogineorum generis et speciesque comprehenis: 109, 176.
Fain, Paris.

INDEX TO SPECIMENS

chi = Dimeria chloridiformis (Gaudich.) K.Schum. & Lauterb.
gra = Dimeria gracilis Nees ex Steud.
ker = Dimeria kerrii C.E.Hubb. ex Teerawat. & Sungkajew

Adj. Landbouwc. Pamekasan 7: torn – ANU 2166 (Flenley): chl; 6024 (Wheeler): chl; 28017 (Weatherstone): chl.

Kassim Apr. 4: torn – KEP 63484 (Chew et al.): chl; 63627 (Chew et al.): chl – Kerr 13688: torn; 13688 (T): ker; 20132: torn – Kjellberg 715: KLU 8157 (Kassim & Carrick): gra – Kneucker Exsic. 781 (Merrill): gra – Kooper 10 Sept. 1932: torn – Koorders 40179: torn; 41070: torn.
LAE 60770 (Croft et al.): chl – Lazareides 7457: torn; 7474: ker – Loher 1856: torn; 7214: torn.
McDonald & Ismail 4179: torn – Merrill 360: torn; 3226 (V): torn; 3283: torn; 3286: sp; 3676: torn; 3773: torn; 9320 (T): chl – Monod de Froideville 923: torn; 1776: torn; 1859: torn; 1902: torn – Motley 451: torn. NGF 34700 (Croft & Lelean): chl.
PNH 35799 (Blanco): torn – Powell 6204: chl – Pullen 7206: torn; 7250: torn – Putek 21: torn.
Ramos 1123: torn: 1301: torn – Ridley 27 Mar. 1889: torn; 79: torn; 1703: torn; 11718: torn; 11961: torn; 12140: torn; 14880: torn – Robbins 377: torn.
Santos 200: torn; 4642: torn; 5883: torn; 6095: torn; 7379: torn; 7380: torn; 7395: torn; 7431: torn – Schmutz 6667: torn – SF 2961 (Haniff & Nur): kur; 4522 (Nur): torn; 4622 (Burkill): torn; 4674 (Burkill): torn; 4756 (Nur): torn; 4786 (Nur): torn – Holltum (Holltum): torn; 37335 (Sapunr): torn; 37753 (Conner): torn; 67753 (Corner): torn; 154508 (Haniff): torn – Sørensen et al. 136: torn. Teruya 2076: torn; 2138: torn.
Van der Veen 14: torn – Van Steenis 7892: torn – Veldkamp & Nurainas 2357: torn – Verheijen 80: torn – Veldkamp 181: torn; 577: torn.
White 2: torn – Widjaja & Hamzah 2911: torn – Winckel 1477: torn. Yacob 16: torn.
Zolinger 351 (T): torn; 1595 (T): torn.