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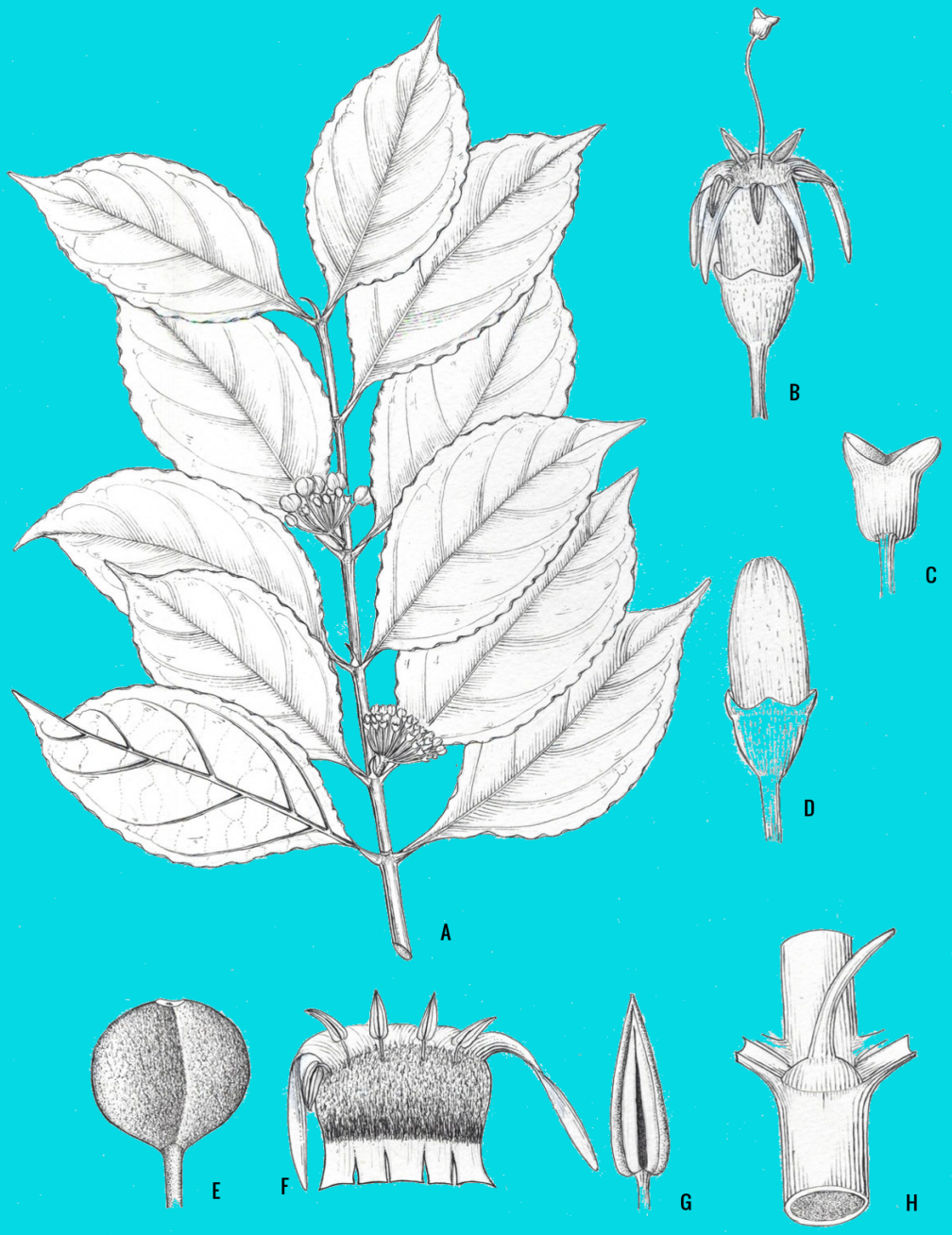

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A REVISION OF *ISACHNE* IN MALESIA 2: SECT. ALBENTES (GRAMINEAE, ISACHNEAE)

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ABSTRACT
VELDKAMP, J. F. 2018. A revision of *Isachne* in Malesia 2: Sect. Albentes (Gramineae, Isachneae). *Reinwardtia* 17 (1): 1–33. — There are 23 species of *Isachn*e in Malesia of which the 16 belonging to sect. *Albentes* are revised here. *Isachne fera* (N. Sumatra) and I. *glandulosa* (W. Sumatra) are new species, and so is *I. bsipiana* from Vanuatu. *Isachne clementis* and *I. vulcanica* are distinct species. *Isachne albomarginata* and *I. beneckei* are reduced to *I. clarkei, I. obtecta* to *I. stricta, I. repens* to *I. commelinifolia* (which is reinstated here), *I. saxicola* to *I. clementis*. *Isachne kunthiana* restricted to Sri Lanka and S. India has been much misapplied to specimens of *I. commelinifolia* and *I. schmidtii*. Fifteen lectotypes are designated.

Key words: Generic key, *Micrairoideae,* lectotypifications, species key, Vanuatu.

ABSTRAK
VELDKAMP, J. F. 2018. Revisi *Isachne* di Malesia 2: Seksi Albentes (Gramineae, Isachneae). *Reinwardtia* 17(1): 1–33. — Sebanyak 23 jenis *Isachne* di Malesia, yang 16 jenis di antaranya tergolong ke dalam seksi *Albentes*, direvisi di sini. *Isachne fera* dari Sumatera Utara dan *I. glandulosa* dari Sumatera Barat adalah jenis baru, begitu juga *I. bsipiana* dari Vanuatu. *Isachne clementis* dan *I. vulcanica* adalah jenis yang berbeda. *Isachne albomarginata* dan *I. beneckei* adalah sinonim dari *I. clarkei*; *I. obtecta* dari *I. stricta*; *I. repens* dari *I. commelinifolia* (dipulihkan di sini), dan *I. saxicola* dari *I. clementis*. *Isachne kunthiana* terbatas hanya di Sri Lanka dan India Selatan, dan nama ini telah banyak disalahterapkan pada spesimen *I. commelinifolia* dan *I. schmidtii*. Sebanyak 15 lektotipe ditunjuk di sini.

Kata kunci: Kunci identifikasi jenis, kunci identifikasi marga, *Micrairoideae*, lektotipifikasi, Vanuatu.

INTRODUCTION

Isachne R. Br. (*Gramineae, Isachneae*) is a pantropical genus with *ca.* 100 spp. mainly in Asia. It has two florets in the spikelet without a rachilla extension and therefore has long been regarded as a basal member of the *Panicoideae* A. Br. Recent molecular research has shown it to belong to the strongly supported *Micrairoideae* Pilg. (Duvall *et al.*, 2007; Sánchez-Ken & Clark, 2007; 2010; Sánchez-Ken *et al.*, 2007; Soreng *et al.*, 2015). This subfamily contains 184 species in 8 genera in 3 tribes: the *Eriachneae* Eck-Borsboom with *Eriachne* R. Br. (? *incl. Pheidochloa* S.T. Blake), the *Micraireae* Pilg. with *Micraira* F. Muell., and the largest, *Isachneae* Benth., with *Coelachne* R. Br., *Heteranthoecia* Stapf, *Hubbardia* Bor, *Isachne*, *Limnopoa* C.E. Hubb., and *Sphaerocaryum* Nees *ex* Hook. *f.* of which *Coelachne, Isachne*, and *Sphaerocaryum* occur in Malesia. The *Isachneae* were described by Bentham (1881), who included some other genera besides, now placed elsewhere. Now that his too wide circumscription is emended, morphological synapomorphies in the present circumscription of the subfamily are not evident anymore.

Mez in an unpublished manuscript on *Isachne* based mainly on the material available in B distinguished 4 subgenera with 76 species, some formae, and unknowns. Presently, although without molecular support, two sections are recognised: *Isachne* and *Albentes* V. Prakash & S.K. Jain. The name of the section is sometimes given as *Eu-Isachne* Honda or *Pseudoisachne* Ohwi, but the first is invalid and "typified" by *I. globosa* (Thunb.) Kuntze, the type of *Isachne*, while the second one was also invalidly published as there was no Latin diagnosis (Jansen, 1953; Koyama, 1987).

Section *Isachne* is defined by spikelets with two heteromorphous florets. A revision for Malesia was published by Iskandar & Veldkamp (2004) with an extensive general introduction and a checklist of the *ca.* 100 taxa, which are not repeated here. The *Albentes* with more or less homomorphous florets is treated in this contribution.

An overall key to the Malesian species is provided, but the taxa treated by Iskandar & Veldkamp (2004) are also briefly mentioned in the text for completeness' sake. The correct name and homotypic synonyms, if any, are given, together with a diagnosis and its distribution, sometimes with a comparison to the most similar Malesian species.

It may be noted that the leaves next to the

† **This manuscript based on J.F. Veldkamp original version.**

midrib usually have thick and narrow nerves. When the number of nerves is given, this refers to the thick ones, which are best seen at the lower surface of the leaves. However, in *e.g. I. clarkei* Hook. *f.*, *I. clementis* Merr., *I. myosotis* Nees, and *I. vulcanica* Merr., *etc.* there may only be the midrib next to about dozen to a score of fine nerves.

It was very frustrating that because of digitalisation the type specimens of the grasses in L were unavailable for study. Scans do not have the necessary resolution. Fortunately, I could see many of them in BO.

Key to the Malesian Genera of Isachneae

1 a. Leaf blades narrow. Spikelets 2-flowered. First lemma 3- or 5-7-nerved; callus present 2
b. Leaf blades broad (*Commelina*-like). Spikelets 1-flowered. Lemmas 1- or 2-nerved; callus absent. Culms hollow. Branches and pedicels glandular. Spikelets terete. Lemma 1- or 2-nerved, membranous ..... *Sphaerocaryum malaccense* (Trin.) Pilg. (incl. *Sphaerocaryum pulchellum* auct., non Merr. *et al.*)

2 a. Culms solid. Spikelets laterally flattened. First lemma 3-nerved; upper lemma membranous. ..... *Coelachne infirma* Buse [*incl. Coelachne simpliciuscula* (Wight & Arn. *ex* Steud.) Munro *ex*. Benth.].
b. Culms hollow. Spikelets terete to dorsoventrally flattened. First lemma 5-7-nerved; upper lemma indurated ..... *Isachne*

ISACHNE R. Br.

Isachne R. Br., Prodr. 1: 196 (1810); V. Prakash & S.K. Jain, Fasc. Fl. India 14: 7 (1984); Iskandar & Veldk., Reinwardtia 12: 159. (2004) — *Panicum* L. sect. *Isachne* Trin., Mém. Acad. Imp. Sci. St. Pétersbourg, VI, Sci. Math. 3: 195, 328 (see p. 193!) (1834); R. Br. *ex* Steud., Syn. Pl. Glumac. 1: 38 (1853); 94 (1854), isonym. — [*Isachne* R. Br. sect. *Euisachne* Honda, J. Fac. Sci. Univ. Tokyo III, 3: 278 (1930), *nom. inval.*]. Type: *Isachne australis* R. Br. [= *Isachne globosa* (Thunb.) Kuntze].

Isachne R. Br. sect. *Paraisachne* Honda, J. Fac. Sci. Univ. Tokyo III, 3: 278, 282. (1930). Type: *Isachne dispar* Trin. (= *Isachne pulchella* Roth). [*Isachne* R. Br. sect. *Pseudoisachne* Ohwi *ex* Jansen, Reinwardtia 2: 290 (1953), *nom. inval. anglice in clave*); *ex* T. Koyama, Grasses of Japan: 126 (1987), *idem*.]. — *Isachne* R. Br. sect. *Albentes* V. Prakash & S.K. Jain, Fasc. Fl. India 14: 8 (1984). Type: *Isachne albens* Trin.

Annuals or perennials, sex very variable (florets sterile to bisexual). Culms tufted, mat-, cushion-forming, or subscandent, branching intra- and / or extra-vaginally at base, sometimes rhizomatous, hollow. Ligule a row of cilia or hairs to absent. Spikelets 2-flowered, quaquaversal to secund, abaxial, paired, disarticulating above the glumes, and between the lemmas, callus absent. Lower glume 3-9-nerved; upper glume 5-9-nerved. Rachilla process absent. Lemmas 5-11-nerved, apex obtuse to rounded, entire, muticous; first lemma similar in texture to the second one (sect. *Albentes*), or much less indurated, sometimes very different from it (sect. *Isachne*), upper lemma callus obtuse, glabrous, dorsally rounded to grooved, margins involute over the palea. Stamens 3. Styles free to base. Hilum punctiform. Embryo about 0.25-0.5 times as long as the caryopsis. x = 10.

Distribution. *ca*. 100 pantropical spp. (Listed in Iskandar & Veldkamp, 2004), especially in Asia, 23 in Malesia.

1. ISACHNE ALBENS Trin.

Isachne albens Trin., Sp. Gram. 1: t. 85 (1826). — *Panicum albens* (Trin.) Trin. *ex* Steud., Syn. Pl. Glumac. 1: 96 (1854). Lectotype: *Wallich (8658?) via Hornemann in Herb. Trinius 569.1* (LE, fragm., microfiche IDC BT-16/1; iso: C), designated here.

Isachne saxatile Steud., Syn. Pl. Glumac. 1: 97 (1854). Type: *Zollinger 3493* (P, holo; A, L).

Isachne zollingeri Steud., Syn. Pl. Glumac. 1: 96 (1854). Type: *Zollinger 880* (P, holo).

Isachne beneckei Hack. var. *magna* Merr., Philipp. J. Sci. 1, Suppl. 5: 350 (1906). — *Isachne magna* (Merr.) Merr., Philipp. J. Sci. 5: 327 (1910). Lectotype: *Merrill 4541* (K; iso: PNH, lost, K), designated here.

Isachne apoensis Elmer, Leafl. Philipp. Bot. 7: 2676 (1915). Lectotype: *Elmer 11578* (US *00134039*; iso: PNH, lost; BO *1441859*, BISH, E *00393779*, HBG, K *000290195*, L *0044618, -19*, NY *381253*), designated here.

Isachne ledermannii Mez *msc.*: 102, *ined.*, *p.p.*]. — Vouchers: *Rodatz & Klink 177* (B *10 0525293*), *Schultze 217*: B, not found).

Isachne beneckei auct., non Hack.

Isachne biflora auct., non Cordem.

Isachne pangerangensis auct., non Zoll. & Mor.

Isachne scabrosa auct., non Hook. *f.*

VAR. ALBENS

Plants perennial. Culms tufted or geniculate, rooting in decumbent nodes, 0.2−1(−3) m long, without annular glands below the glabrous, rarely pubescent nodes. Sheaths hairy along the margins. Ligule hairs 1−2.7 mm long. Blades linear,

Key to the taxa (leads 1-8 after Iskandar & Veldkamp, 2004).
Characters after "—" are valid for this lead, they are variable in the opposing one. For scabridity and pubescence of the lemmas a 30 times magnification is needed.

1 a. Lemmas differing in texture and (usually) in size, the lower one herbaceous to membranous, usually longer than the chartaceous upper one, usually dorsally depressed. [sect. *Isachne*]..... 2

b. Lemmas not differing in texture, subequal to equal, chartaceous to coriaceous, not dorsally depressed. [sect. *Albentes*] ……..……...…... 9

2 a. Culms with annular glands below the nodes 3

b. Culms without annular glands below the nodes (rarely so in *I. globosa*!)..... 4

3 a. Culm nodes glabrous. Sheaths 5.5–8.5 cm long, margin glabrous. Blades lanceolate, 10.5–14 cm by 15–20 mm, smooth, with *ca.* 13 main nerves. Base rounded. Margins not white, not undulate. Panicle loosely contracted, *ca.* 22 by *ca.* 11 cm. Spikelets not secund, not yawning, subglobose, 1.5–1.9 mm wide. Lower glume 1.8–2 by 1.1–1.8 mm, with 7 main nerves. Upper glume 1.8–1.9 mm long, 9-nerved. Lower floret ellipsoid and planoconvex. — W. Sumatra……..... 7.*Isachne diabolica*

b. Culm nodes pubescent. Sheaths 0.6–1.5 cm long, margin pubescent to pubescent with bulbous hairs. Blades ovate-oblong to ovate-lanceolate, 1.2–3 cm by 3.5–11 mm, scaberulous, with 7 main nerves. Base cordate, clasping, and pectinate. Margins white cartilaginous, undulate. Spikelets secund, yawning, obovoid, 1–1.1 mm wide. Lower glume 1.2–1.3 by 0.7–0.8 mm, 5-nerved. Upper glume 1.2–1.3 mm long, 7-nerved. Lower floret flattened ellipsoid. — Sumatra to Celebes, Mindanao.....16. *Isachne pulchella*

4 a. Blade margins not white cartilaginous..... 5

b. Blade margins white cartilaginous..... 7

5 a. Blades underneath with 7-11 main nerves. — Culm nodes glabrous 6

b. Blades underneath with 5 main nerves. — Culm nodes pubescent (rarely glabrous). Spikelets 1.3–2 mm long, obovoid. Lower glume 0.7–0.9 mm wide. Upper glume 1.4–1.9 by 0.75–1.3 mm. Rachilla between florets distinctly obdeltoid. First lemma oblong, 1.25–2 by 0.8–0.85 mm. — Widespread (not yet in New Guinea)…….....13. *Isachne minutula*

6 a. Spikelets 1.2–1.5 mm long, obovoid. Lower glume 0.5–0.7 mm wide. Upper glume 1.3–1.6 by 0.7–0.8 mm. Rachilla between florets flattened and parallel-sided. First lemma elliptic, 1.2–1.25 by 0.6–0.8 mm. — Celebes, Moluccas to New Guinea..... 3. *Isachne brassii*

b. Spikelets 1.75–2.7 mm long, subglobose or ellipsoid. Lower glume 0.9–1.4 mm wide. Upper glume 1.7–2.7 by 1–1.5 mm. Rachilla between florets distinctly obdeltoid. First lemma oblong, 1.75–2.55 by 0.9–1.2 mm. — Widespread…..... 10. *Isachne globosa*

7 a. Spikelets 1.75–2.7 mm long, subglobose or ellipsoid. First lemma oblong to obovate oblong, 1.75–2.55 mm long, glabrous..... 8

b. Spikelets 1.2–1.5 mm long, obovoid. First lemma elliptic, 1.1–1.2 mm long, puberulous. — Blades with 5 main nerves, scaberulous. Base narrowed, pectinate. Lower glume elliptic, 0.75–1 mm wide, with 7 main nerves, glabrous, obtuse. Upper glume obovate, 1.25–1.6 mm long, glabrous, obtuse. First lemma 0.7–0.75 mm wide. Rachilla between florets terete. Upper floret bisexual. — New Guinea..... 22. *Isachne villosa*

8 a. Sheaths glabrous to distally pubescent without bulbous hairs. Leaf blades (7-9-nerved. Lower glume 0.85–1.4 mm wide, 7-nerved, glabrous, obtuse. Upper glume elliptic to obovate, 1.6–2.7 mm long, glabrous, obtuse. Rachilla between florets distinctly obdeltoid. First lemma oblong, 0.8–1.25 mm wide. Upper floret female. — Widespread..... 10. *Isachne globosa*

b. Sheaths pubescent with bulbous hairs. Leaf blades with 5 main nerves. Lower glume 0.75–0.8 mm wide, 5-nerved, densely setose with bulbous based setae, acute. Upper glume obovate oblong, 1.5–1.6 mm long, pubescent with bulbous hairs, acute. Rachilla between florets terete. First lemma obovate oblong, 0.7–0.75 mm wide. Upper floret bisexual. — Peninsular Malaysia. (Langkawi Isl.)..... 12. *Isachne langkawiensis*

9 a. Panicle with either less than 10 erectopatent branches, or, when more, longer than 4 cm.……..……..... 10

b. Panicle 1.5–4 cm long, with many stiffly patent branches. — Ligule absent. Blades base subcordate to cordate, clasping, margins pectinate, above scaberulous, below smooth erecto-patent, glabrous, with 11-13 main nerves. Panicle branches smooth erecto-patent, lowermost branch 0.5–2 cm long, not branched, with 2-4 spikelets. Glands often inconspicuous to absent. Spikelets subglobose, yawning at maturity, 1–1.3 mm long. Glumes setose, apex rounded; lower glume 0.8–1 mm long; upper glume 0.9–1 mm long. First lemma 0.8–1 mm long, apex rounded. Anthers *ca.* 0.5 mm long. Second lemma apex rounded. — Widespread..... 6. *Isachne confusa*

10 a. Plants glandular at least on the inflorescence branches and pedicels (sometimes sporadically so!).....11

b. Plant eglandular..... 13

11 a. Culms with annular glands below the nodes. Blades lanceolate or linear, base cuneate or obtuse, both sides scaberulous erecto-patent. Panicle branches many. Second lemma 1.2–1.5 mm long..... 12

b. Culms without annular glands below the nodes. Blades linear-lanceolate, base truncate, both sides smooth erecto-patent. Panicle branches few. Second lemma 1.7–2.6 mm long. — Peninsular Malaysia, Sumatra, Borneo.....11. *Isachne kinabaluensis*

12 a. Culms nodes glabrous. Blades linear, base cuneate, above scaberulous. Panicle lowermost branch with few spikelets. Lower glume glabrous, apex acuminate. First lemma puberulous erecto-patent. — Sumatra (E. Coast)..... 9. *Isachne glandulosa*

b. Culms nodes pubescent. Blades ovate-lanceolate to lanceolate, base truncate to subcordate, above smooth. Panicle lowermost branch with many spikelets. Lower glume distally setose, apex obtuse. First lemma glabrous erecto-patent. — Peninsular Malaysia (S. W. Perak), N. Sumatra (Aceh) ..... 20. *Isachne sylvestris*

13 a. Sheaths glabrous to hairy, blades above glabrous to pubescent, below smooth or scaberulous erecto-patent. Rachilla between glumes developed. Glumes smooth erecto-patent..... 14

b. Sheaths and blades above with bulbous hairs, blades below scabrous erecto-patent. Rachilla between glumes not distinctly developed. Glumes scaberulous erecto-patent. — N. Sumatra……..... 21. *Isachne trachycaulis*

14 a. First lemma apex rounded to obtuse, rachilla between florets developed, terete erecto-patent, second lemma apex rounded, or obtuse..... 15

b. First lemma apex acute, rachilla between florets not distinctly developed erecto-patent, second lemma apex acute. — S. W. Celebes ……..... 19. *Isachne surgens*

15 a. Blades margins not white cartilaginous..... 16

b. Blades margins white cartilaginous.....18

16 a. Blades below glabrous. Panicle branches scaberulous erecto-patent. Glumes distinctly longer than the lemmas, 2–2.8 mm long. First lemma 1.4–1.8 mm long..... 17

b. Blades below puberulous or pubescent. Panicle branches smooth erecto-patent. Glumes shorter than to slightly longer than the lemmas; lower glume 1.3–1.8 mm long; upper glume 1–1.5 mm long. First lemma 1.0–1.3 mm long. — Culms tufted to erect. Sheaths hairy at least along the margins. Ligule present. Blades lanceolate to linear, 1–8 cm long, base rounded. Pedicels smooth erecto-patent. Lower glume 3-5-nerved; upper glume 5-nerved. Upper floret male or bisexual; second lemma about as long as the first lemma. — Widespread..... 4. *Isachne clarkei*

17 a. Culms geniculate, rooting in decumbent nodes. Sheaths hairy along the margins. Ligule present. Blades linear-lanceolate, 4–8 cm long, base narrowed, above pubescent, below scaberulous erecto-patent. Pedicels scaberulous erecto-patent. Glumes setose; lower glume obscurely 7-9-nerved; upper glume 2–2.2 mm long, obscurely 7-nerved. First lemma apex obtuse. Upper floret female; second lemma 0.7-0.9 times as long as the first lemma, glabrous erecto-patent, apex obtuse. — Carolines, ? Vanuatu.....App. 1: 2. *Isachne carolinensis*

b. Culms tufted or cushion forming. Sheaths hairy. Ligule absent. Blades lanceolate, 1.5–3.5 cm long, base rounded or subcordate, above glabrous, below smooth erecto-patent. Pedicels smooth erecto-patent. Glumes glabrous or distally setose; lower glume distinctly 5-nerved; upper glume 2.4–2.8 mm long, distinctly 5-nerved. First lemma apex rounded. Upper floret bisexual. Second lemma as long as the first lemma, puberulous along the margin to puberulous erecto-patent, apex rounded. — N. Sumatra, Peninsular Malaysia (Pahang, Perak), Sabah (Mt. Kinabalu) ……....5. *Isachne clementis*

18 a. Spikelets yawning at maturity..... 19

b. Spikelets not yawning 20

19 a. Blades smooth erecto-patent, above puberulous to pubescent, base subcordate. Upper glume *ca.* 1.4 mm wide. Lemmas puberulous erecto-patent. — Sri Lanka, S. India..... App. 1: 3. *Isachne kunthiana*

b. Blades scaberulous and glabrous on both sides, base nearly pseudo-petiolate or cuneate. Upper glume *ca.* 1 mm wide. Lemmas puberulous near the margin erecto-patent. — Peninsular Malaysia, Singapore, Sumatra (Bangka, Enggano), W. Java, Borneo, New Guinea…….....7. *Isachne schmidtii*

20 a. Lower glume apex acute to acuminate; upper glume apex obtuse to acuminate…..... 21

b. Lower glume apex obtuse or rounded; upper glume apex rounded. — Ligule present. Blades linear, scaberulous, base rounded to obtuse, margins scaberulous erecto-patent. Panicle branches many, lowermost branch with *ca.* 8 branches. Glumes subequal to the lemmas; lower glume 0.8–1.2 mm long; upper glume 0.8–1 mm long. Anthers 0.3–0.35 mm long. Second lemma as long as the first lemma. — Celebes, Philippines, New Guinea. .....18. *Isachne stricta*

21 a. Panicle branches scaberulous erecto-patent or sparsely pilose, lowermost branch with up to 3 branches. Pedicels scaberulous erecto-patent. Second lemma 0.7-1 times as long as the first lemma..... 22

b. Panicle branches smooth erecto-patent, lowermost branch with 4-10 branches. Pedicels smooth erecto-patent. Second l emma *ca.* 0.67 times as long as the first lemma. — Culms tufted or geniculate, rooting in decumbent nodes. Blades linear. Panicle 8–40 cm long, lowermost branch 4 –10.5 cm long, with many spikelets. Glumes shorter to slightly longer than the lemmas. Anthers 0.8–1 mm long. — Widespread…….....1. *Isachne albens*

22 a. Panicle branches many. — Culms up to 0.35 m long..... 23

b. Panicle branches few..... 25

23 a. Panicle loosely contracted to lax. Ligule hairs 1.7–2 mm long. Glumes distinctly nerved. First lemma apex rounded. Second lemma 0.8-1 times as long as the first lemma..……..24

b. Panicle contracted. Ligule hairs 1.2−1.5 mm long. Glumes obscurely nerved. First lemma apex obtuse. Second lemma 0.7 times as long as the first lemma. — Vanuatu ……. App. 1: 1. *Isachne bsipiana*

24 a. Culms 0.45–3 m long. Blades base rounded to truncate. Panicle branches scaberulous erecto-patent. Glumes elliptic; upper glume glabrous, 5-nerved. Lower floret bisexual. Anthers *ca.* 0.5 mm long. — New Guinea, Vanuatu..... 2. *Isachne arfakensis*

b. Culms 0.25 to 0.3 m long. Blades base cuneate. Panicle branches sparsely pilose. Glumes oblong; upper glume distally setose, 7-nerved. Lower floret male. Anthers *ca.* 1 mm long. — Sumatra (Aceh).....8. *Isachne fera*

25 a. Panicle lax, pedicels smooth erecto-patent..... 26

b. Panicle contracted, or loosely contracted, pedicels scaberulous erecto-patent. — Peninsular Malaysia Sumatra, Java, Lesser Sunda Island, Borneo, Celebes, Philippines …..... ……15. *Isachne pangerangensis*

26 a. Blades lanceolate to linear, below with 1-7 main nerves. — Widespread …..... 4. *Isachne clarkei*

b. Blades ovate-oblong, below with 11-19 equal nerves. — ? Java, Lesser Sunda Isl., Sabah, Celebes, Philippines, Moluccas, New Guinea ..... 14. *Isachne myosotis*

(2.5–) 4–25 cm by (1.5–) 4–15 (–20) mm, base rounded to truncate, margins white cartilaginous, not undulate, smooth to scaberulous erecto-patent, above smooth to scabrous, glabrous, rarely pubescent, below smooth to scaberulous, glabrous to pubescent (rarely), with 7-13 main nerves. Panicle loosely contracted to lax, 8–40 by 2.5–17 cm, branches erecto-patent, many, eglandular, smooth erecto-patent, lowermost branch 4–10.5 cm long, with 4-10 branches and many spikelets. Pedicels eglandular (see note), shorter than the spikelet to subequal to, rarely longer than the spikelet, smooth erecto-patent. Spikelets ellipsoid, not yawning, (0.8–)1–2 by 0.8–2.5 mm. Glumes shorter to slightly longer than the lemmas, elliptic, apex acute, glabrous to distally with a few setae, smooth erecto-patent; lower glume (0.6–) 0.8–2 by 0.7–1 mm, distinctly 7-nerved; upper glume 0.7–1.8 by 0.6–1 mm, distinctly 5- or 7-nerved. Rachilla between glumes present erecto-patent, between florets terete erecto-patent. Florets not differing in texture, subequal to equal, plano-convex; lower floret male or bisexual. First lemma not longitudinally depressed, 0.8–1.5 mm long, chartaceous, obscurely nerved, glabrous or puberulous erecto-patent. Anthers 0.8–1 mm long. Upper floret bisexual or female. Second lemma (0.6–)0.8–1.2 mm long, *ca.* 0.67 times as long as the first lemma, chartaceous, glabrous or puberulous erecto-patent. Anthers 0.8–1 mm long. 2n = 10, 18, 20, 40, 60.

Distribution. Bhutan, Nepal, Sikkim, N. India to S. E. China, Taiwan; Malesia: Mal. Penins. (Pahang, Perak, Selangor, Terengganu), Sumatra (Aceh, Bengkulu, East-, West Coast, Lampong, Tapanuli), Java, Borneo (W.-, S. Kalimantan, Sabah: Mt. Kinabalu), Celebes (Central), Philippines (Luzon: Benguet, Bontoc, Ifugao, Lepanto Prov.; Mindanao, Davao Prov.), Lesser Sunda Isl. (Bali, Lombok), Moluccas (Buru, Ceram), New Guinea: Irian Jaya (Arfak, Lake Habbema, Trikora, Star Mts.), Papua New Guinea (Bougainville, E.-, S.-, W. Highlands, Milne Bay, Morobe, E. New Britain Prov.).

Habitat. Humid, shaded places, marshes, (moss) forest margins, disturbed places, road sides, often on ultrabasic soils, locally abundant, 1,340-3,000 m asl.

Uses. Readily eaten by cattle, with a satisfactory nutritional value (Backer, 1914b).

Collector's Notes. Plants tufted, 30–200 cm tall, semi-prostrate, forming long runners (= prostrate culms, rooting in the nodes), yellowish green. Nodes glabrous. Leaves large, mid-, pale green. Panicle lax, all branches glabrous. Spikelets pale green, yellow green, brownish. Lemmas isomorphic, indurate. Stigmas pale purple. Anthers pale yellow.

Notes. Kuntze (1891:778) said this was the same as *Panicum biflorum* Lam. (1791: 174) *Isachne biflora* (Lam.) Kuntze, and added as a synonym also *I. mauritiana* Kunth (1829). This was followed by Mez (*msc.* 129-130), who distinguished 4 formae, 3 of which are regarded as varieties of *I. albens* (Veldkamp, 2015); of the fourth (*Griffith s.n.*) I have not seen dependable original material. Peter (1931) and Pilger (1940) called collections from Africa *I. albens*. I have not seen any material to know which variety Peter has collected.

At least Hubbard & Vaughan (1940) have *Panicum biflorum* as a synonym of *Panicum brevifolium* L. which has been generally followed *e.g.* by Iskandar & Veldkamp (2004). The correct specific combination then is *I. mauritiana* Kunth, but it is better called *I. albens* var. *hispidula* (Hack.) Veldk. (2016).

The plants are nearly always eglandular. *Lörzing 13454* (BO, L) from N. Sumatra, G. Sibayak, had inconspicuous glandular bands on the inflorescence branches and pedicels. It might be a glabrous form of *Isachne sylvestris* Ridl. from the Peninsular Malaysia (Perak: Dindings) and N. Sumatra (*Rahmat si Toroes 1738*, "Lumbil"), which I have not seen. *Walsh s.n.* (Z) from South Central Timor had inconspicuous bands, while *Brass 11823* (BO) from the Baliem Valley and *Saunders 703* (CANB, L) from Papua New Guinea, W. Highlands Prov., Mt. Oga, had fairly conspicuous ones. I don't see much difference with *I. scabrosa* Hook. *f*. from Khasia.

The other varieties, var. *buettneri* (Hack.) Veldk. and var. *hispidula* (Hack.) Veldk., occur in Madagascar, Mauritius and continental Africa (Veldk., 2016).

2. ISACHNE ARFAKENSIS Ohwi

Isachne arfakensis Ohwi, Bot. Mag. (Tokyo) 56": 4 (1942). Type: *Kanehira & Hatusima 13588* (FU, holo; A, fragm.; TI).

Isachne elatiuscula Ohwi, Bot. Mag. (Tokyo) 56: 5 (1942). *Isachne albens* Trin. var. *elatiuscula* (Ohwi) Jansen, Reinwardtia 2 (1953) 280. Type: *Kanehira & Hatusima 14019* (FU, holo; A, BO *sh. 05611*).

Isachne pangerangensis auct., non Zoll. & Moritzi.

Isachne scabrosa auct., non Hook. *f.*

Plants perennial. Culms tufted or erect or geniculate, rooting in decumbent nodes or

straggling, 0.45–1.1(–3) m long, without annular glands below the glabrous to pubescent nodes. Sheaths hairy at least along the margins. Ligule hairs 1.7–2 mm long. Blades linear, rarely ovate, (3–)4.5–20 cm by 4–12 mm, base rounded to truncate, above smooth to scaberulous erecto-patent, glabrous, margins white cartilaginous, not undulate, scaberulous erecto-patent below smooth erecto-patent, glabrous to pubescent, with 7-11 main nerves. Panicle loosely contracted to lax, 4–20 by 1–9 cm, branches appressed to erecto-patent, many, eglandular, scaberulous erecto-patent, lowermost branch 2–5 cm long, with 0-3 branches, with 5 or more spikelets. Pedicels eglandular, shorter to longer than the spikelet, scaberulous. Spikelets ellipsoid, not yawning, 1.5–3.2 by 0.7–1.3 mm. Glumes subequal to distinctly longer than the lemmas, elliptic, apex acute to acuminate, distinctly 5- or 7-nerved, smooth erecto-patent; lower glume 1.5–3.2 by 0.7–1.1 mm, glabrous or distally setose; upper glume 1.5–2.5 by 0.8–1.1 mm, glabrous. Rachilla between glumes present, between florets terete erecto-patent. Florets not differing in texture, subequal to equal. Lower floret plano-convex, bisexual. First lemma not longitudinally depressed, 1.2–2.3 mm long, chartaceous, glabrous or sparsely puberulous erecto-patent. Anthers *ca.* 0.5 mm long. Upper floret plano-convex, female. Second lemma 1.2–2.2 mm long, 0.8-1 times as long as the first lemma, chartaceous, puberulous erecto-patent.

Distribution. New Guinea: Irian Jaya (Arfak, Carstensz, Manokwari), Papua New Guinea (Central, Chimbu, E.-, S.-, W. Highlands, Madang, Milne Bay, Morobe, New Ireland, Sandaun Prov.), N. Vanuatu.

Habitat. Thickets, open marshes, stream banks, among rocks, midmontane forest, hard turf subalpine vegetation, treefern-grassland, 1,525-3,200 m asl.

Collector's Notes. Upright perennial in a tight tuft, rooting at base, at the nodes. ascending. Roots wiry, fibrous. Culms up to several yards (at 91.5 cm) long. Nodes swollen, green. Sheaths rigid, purplish. Blades at 45° to the culm, lanceolate, tough, pale green. Rachis green, becoming brown, purple. Panicle upright. Spikelets obovate, green, yellow, purple, at maturity brown, dehiscent, falling from the pedicels. Anthers (dark) purple. Stigmas pale to dark purple.

Notes. Very similar to *I. albens*:
-. Panicle branches smooth erecto-patent, lowermost branch with 4–10 branches. Pedicels terete, smooth erecto-patent. First lemma glabrous. Anthers 0.8–1 mm long …….. ……. *Isachne albens*
-. Panicle branches scaberulous erecto-patent, lowermost branch with 0 - 3 branches. Pedicels angular, scaberulous. First lemma usually puberulous erecto-patent. Anthers *ca.* 0.5 mm long. …….. *Isachne arfakensis*

3. ISACHNE BRASSII Hitchc.

Isachne brassii Hitchc., Proc. Linn. Soc. New S Wales 54: 146 (1929); Iskandar & Veldk., Reinwardtia 12: 163 (2004). Type: *Brass 1018* (US *00134045*, holo, K photo; A, BRI).

Culms loosely tufted to geniculate, rooting in decumbent nodes, nodes glabrous. Blades below with 7 main nerves, margins not white cartilaginous. Panicle branches few. Spikelets obovoid, 1.2–1.5 mm long. Lower glume 0.55–0.75 mm wide, apex *ca.* obtuse; upper glume 0.7–0.8 mm wide. Lemmas differing in texture and (usually) in size, the lower one herbaceous to membranous, usually longer than the chartaceous upper one. Rachilla between glumes not distinctly developed, between florets flat erecto-patent. First lemma longitudinally depressed, 1.2–1.25 mm long, chartaceous, apex rounded. Second lemma apex rounded, glabrous erecto-patent to puberulous along the margin erecto-patent.

Distribution. Malesia: C. Celebes, Moluccas (Buru, E. Ceram), New Guinea: Irian Jaya (Biak; Fak-fak, Mamberamo, Eta River, Tami River, Taritatu River), Papua New Guinea (Western, Central Province).

Notes. Most similar to *Isachne minutula*:
-. Culms nodes glabrous. Blades below with 7 main nerves. Rachilla between florets flat erecto-patent. First lemma chartaceous, apex rounded. Second lemma glabrous to puberulous along the margin erecto-patent, apex rounded.....*Isachne brassii*
-. Culms nodes pubescent. Blades below with 5 main nerves. Rachilla between florets distinctly obdeltoid erecto-patent. First lemma membranous, apex obtuse. Second lemma puberulous erecto-patent, apex-obtuse …….. ……*Isachne minutula*

4. ISACHNE CLARKEI Hack.

Isachne clarkei Hook. *f.*, Fl. Brit. India 7: 24 (1896). Lectotype: *Hooker f. "Sikkim, asl. 8 — 11,000 ft."* (K *000245447*, left hand specimen), first step designation by Prakash & Jain (1984: 17), designated here in second step.

Isachne beneckei Hack., Oesterr. Bot. Z. 51: 459 (1901). Lectotype: *Benecke 23 Mar 1891* (W *20408*; photo in K), designated here.

Isachne caespitosa Backer, Teysmannia 25: 209, t. 22, 23 (1914). Type: *Mousset 719* (BO *1441879*, holo; L).

Isachne montana Backer, Teysmannia 25: 298, t. 25 (1914). Lectotype: *Koorders 37605* (BO *1441892*; iso: K *001056199*), designated here.

Isachne albomarginata Jansen, Reinwardtia 2: 279 (1953). Type: *Clemens 30270* (L, holo; B *10 0525291*, BO, K).

Isachne albomarginata Jansen var. *hirsuta* Jansen, Reinwardtia 2: 279 (1953). Type: *Hallier f. 2897* (BO *1441906*; iso: BO *1441905*; L, holo *fide* Jansen, but not found).

Plants annual or perennial (?, see note). Culms tufted to loosely tufted to erect, 0.03–0.3 m long, without annular glands below the glabrous or pubescent nodes. Sheaths hairy along the margins to hairy. Ligule ciliate to setose erecto-patent, hairs 0.7–2 mm long. Blades lanceolate to linear, 1–8 cm by 1.5–7 mm wide, base rounded, margins white cartilaginous or not, not undulate, smooth or scaberulous, both sides smooth to scaberulous, glabrous to pubescent, below puberulous to pubescent, inconspicuously with 1-5 (-7) main nerves. Panicle lax, 0.8–12 by 1–12 cm, branches 2-12, eglandular, smooth, lowermost branch 0.35–2.5 cm long, with 0-3 branches, with 3-12 spikelets. Pedicels eglandular, subequal to longer than the spikelet, smooth. Spikelets ellipsoid, not yawning, 1.3–2 by 0.7–1.5 mm. Glumes shorter to slightly longer than the lemmas, elliptic, glabrous or distally with a few setae, smooth, obscurely nerved; lower glume 1.3–1.8 by 0.7–1.2 mm, apex acute, 3-5-nerved; upper glume 1–1.5 by 0.7–1 mm, apex obtuse to acute, 5-nerved. Rachilla between glumes present, between florets terete erecto-patent. Florets not differing in texture, subequal to equal. Lower floret plano-convex, female, bisexual, or sterile. First lemma not longitudinally depressed, *ca.* 1 mm long, chartaceous, obscurely nerved, glabrous or puberulous near the margin or puberulous. Anthers *ca.* 0.5 mm long. Upper floret plano-convex, male or bisexual. Second lemma 1–1.1 mm long, about as long as the first lemma, coriaceous, glabrous, papillose, or puberulous. Anthers 0.5–1.7 mm long. (n = 10, 20).

Distribution. Sikkim, Thailand (Northern: Chiang Mai), Taiwan; Malesia: Java (C, E), Borneo (Kalimantan: Banjarmasin; Sabah: Mt. Kinabalu), Celebes (Manado; Lake Linda; Poso), Philippines Lesser Sunda Isl. (Flores, Lombok, Timor), Philippines (Luzon), Moluccas (Ceram, Ternate), New Guinea (Irian Jaya: Jayapura; Papua New Guinea: W. Highlands, Morobe, Northern Prov.).

Habitat. Open, sunny, humid places, forest edges, gardens, fields, road sides, *Cinchona* plantations, rocks and boulders along rivers, marshes, floating on mud, locally abundant, 0–2,700 m asl.

Collector's Notes. Tufted. Culms in mud with long trailing stems, ascending. Spikelets deep violet. Anthers dark brown. Styles purple.

Notes. Because of the size of the loosely tufted plants they appear to be annual, but very occasionally cataphylls and even extravaginal branching was seen, which are typical for perennials.

The sexuality of the florets is according to Backer (1916e).

The differences between *Isachne albomarginata* and *I. beneckei* could not be maintained and they are united here.

The (first step) lectotypification by Prakash & Jain (1984: 17) of *Isachne clarkei* apparently is with K *000245447*, a sheet with a mixture of poor specimens of *I. albens*, *clarkei* and *I. sikkimensis* Bor as was pointed out by Noltie (2000: 746) and Chen & Phillips (2006: 358). The left hand specimen is here designed (second step) as the lectotype.

Sometimes not easy to distinguish from relatively "stout" *Isachne myosotis*: These species may grow together as is shown by *Backer 30303* and *30303-bis* (BO) from G. Marabou, Java.

Isachne myosotis has small, relatively wide leaves with underneath many subequal nerves and a much reduced inflorescences with hardly any (sub)patent branches.

5. ISACHNE CLEMENTIS Merr.

Isachne clementis Merr., J. Straits Branch Roy. Asiat. Soc. 76: 76 (1917). Type: *Clemens 10503* (PNH, holo, *32046*); BO *sh. 05842*, K *000290190*).

Isachne javana Nees *ex* Miq. var. *saxicola* Ridl., J. Fed. Malay States Mus. 6: 196 (1915). – *Isachne saxicola* (Ridl.) Ridl., Fl. Malay Penins. 5: 237(1925). Type: *Ridley 15932* (SING, holo; K).

Isachne kunthiana (Steud.) Nees *ex* Miq. var. *denticulata* Ridl., J. Straits Branch Roy. Asiat. Soc. 82: 203 (1920). Lectotype: *Robinson s.n.* (G. Kerbau, 6600 ft.) (SING; iso: ? K), designated by Chase & Niles [Index Gr. Sp. 2 (1962) 294].

Isachne saxicola (Ridl.) Ridl. var. *denticulata* Ridl., Fl. Malay Penins. 5: 237 (1925). Type: *Robinson s.n.* (G. Kerbau) (SING; iso: ? K) (see note).

Isachne pangerangensis auct., non Zoll. & Mor.

Plants perennial. Culms cushion-forming or tufted, 0.2–0.35 m long, without annular glands below the glabrous nodes. Sheaths hairy. Ligule absent. Blades lanceolate, 1.5–3.5 cm by 2.3–7 mm, base rounded or subcordate, margins not white cartilaginous, not undulate, scaberulous erecto-patent or pectinate, below smooth, glabrous, many-nerved. Panicle loosely contracted to lax, 1.5–7 by 1–5 cm, branches erecto-patent to stiffly patent, 0-5, eglandular, scaberulous erecto-patent, lowermost branch 0.7–3 cm long, with 0 or 1 branches, with 3-9 spikelets. Pedicels eglandular, shorter to longer than the spikelet, smooth erecto-patent. Spikelets ellipsoid, yawning, 2.5–2.8 by 0.8–1 mm. Glumes distinctly longer than the lemmas, elliptic, 2.4–2.8 by 0.8– 1 mm, apex acute, distinctly 5-nerved, glabrous or distally with a few setae, smooth erecto-patent. Rachilla between glumes present, between florets terete erecto-patent. Florets not differing in texture, subequal to equal, plano-convex, bisexual. Lemmas 1.5–1.8 mm long, chartaceous, obscurely nerved, puberulous at least near the margin erecto-patent. First lemma not longitudinally depressed. Anthers 0.7–0.8 mm long.

Distribution. Sumatra (Aceh, W.-, E. Coast), Peninsular Malaysia (Pahang, Perak), Borneo (Sabah: Mt. Kinabalu).

Habitat. Montane forests, often on ultrabasic soil, disturbed places, cracks of rocks, stream sides, 1,400-3,400 m asl.

Notes. In PNH a sheet of *Isachne clementis* stamped "Herb. Bur. Sci., Manila" was found with an original field label and a copy of Merrill's manuscript. It has always been believed that all material in PNH had been destroyed.

Isachne kunthiana var. *denticulata* Ridl. (1920) is not mentioned by Ridley (1925) and Gilliland (1971: 122). Syntypes are *Haviland s.n.* (Mt. Kinabalu), *Thwaites CP 2754* (Sri Lanka; K). The first is cited by Beaman & Beaman (1998: 161; K) *sub I. clementis*, the second is a paratype of the Sri Lanka endemic var. *eligulata* Davidse (1994: 269).

It is not homotypic with *Isachne saxicola* var. *denticulata*, although they share the same epithet and type locality. The diagnoses differ and the types were collected at different altitudes.

Jansen (1953: 282) regarded *Isachne vulcanica* as a variety of *I. clementis*, but did not realise that the first epithet has priority. Beaman & Beaman (1998: 161) did not regard the two as distinct. However, the two differ considerably, see the descriptions.

Usually the leaf blades except for the margins are glabrous, *Bünnemeijer 5754* (BO, L), has pilose ones, and thus much resemble the *marginata* form of *I. pangerangensis*.

6. ISACHNE CONFUSA Ohwi

Isachne confusa Ohwi, Bull. Tokyo Sci. Mus. 18: 14 (1947). Type: *Bünnemeijer 1577* (BO *1441922*, holo; CAL, L *0044624, -25*, SING, US; B, PNH, lost).

? *Panicum piluliferum* Nees *ex* Steud., Syn. Pl. Glumac. 1: 94 (1854). *Isachne pilulifera* (Nees *ex* Steud.) Henrard, Blumea 3: 471 (1940), *nom. prov., inval.* Type: *Lehmann s.n. "Ind. Or."* (P, holo, not found; K in Herb. Munro?, *fide* Hook. *f.*: 1896 ("1897"): 24; S, *det.* Mez). See note.

Isachne purpurascens Glassm., Bernice P. Bishop Mus. Bull. 209: 130 (1952). Type: *Glassmann 2888* (US, holo; K *001056194*; OKL).

Isachne firmula auct., non Buse.
Isachne myosotis auct., non Nees.
Isachne rhignon auct., non Ohwi.
Isachne rigida auct., non Miq.

Plants perennial, or seemingly annual. Culms tufted and stiffly erect, 0.15–0.7 m long, without annular glands below the glabrous nodes. Sheaths glabrous or hairy at least along the margins with bulbous based hairs. Ligule absent. Blades ovate to linear-lanceolate, 0.9–3 cm by 2–4.5(–10) mm, base subcordate to cordate, clasping, margins white cartilaginous or not, not undulate, pectinate, both sides glabrous, above scaberulous erecto-patent, below smooth, with 11-13 main nerves. Panicle lax, 1.5–4 by 1.5–3.5 cm, branches stiffly patent, many, eglandular or with (sometimes very inconspicuous) glands, terete, smooth erecto-patent, lowermost branch 0.5–2 cm long, unbranched, with 2-4 spikelets. Pedicels eglandular, shorter to longer than the spikelet, smooth erecto-patent. Spikelets subglobose, yawning, 1–1.3 by 1–1.5 mm. Glumes shorter than to subequal to the lemmas, elliptic, apex rounded, setose, smooth erecto-patent; lower glume 0.8–1 by 0.7–1 mm, obscurely 3-5-nerved; upper glume 0.9–1 mm long and wide, obscurely 5-nerved. Rachilla between glumes present, between florets terete erecto-patent. Florets not differing in texture, subequal to equal. Lower floret hemi-orbicular, bisexual. First lemma not longitudinally depressed, 0.8–1 mm long, chartaceous, obscurely nerved, glabrous erecto-patent. Anthers *ca.* 0.5 mm long. Upper floret hemi-orbicular, bisexual. Second lemma 0.6–1 mm long, 0.9-1 times as long as the first lemma, chartaceous, glabrous erecto-patent. Anthers *ca.* 0.5 mm long.

Distribution. Nicobars, Burma (Tenasserim), Thailand (Peninsular: Narathiwat, Satun, Trang),

Cambodia, Vietnam, China (Hong Kong), to the Carolines (Palau, Ponape), Australia (Northern Terr., Queensland); Malesia: Peninsular Malaysia. (Johor, Kedah, Pahang, Perak, Perlis, Terengganu), not in Singapore, Sumatra (Bangka, Billiton, W. Sumatra), Borneo, Celebes, New Guinea, Irian Jaya (Kebar, Merauke, Sorong, Star Mts., Jayapura), Papua New Guinea (Milne Bay, Morobe, Sandaun, Western Prov.).

Habitat. Among higher vegetation in humid, shaded places, in marshes, kerangas forest, open sand areas (padang) between thickets, ultrabasics, liable to periodic flooding, locally common, 0-1,525 m asl.

Collector's Notes. Erect, generally unbranched, *ca.* 30 cm tall, in up to 40 cm deep water, only the inflorescences not submerged. Stems, leaves midgreen, with white stiff hairs on sheath and leaf margins. Flowers brownish green, reddish or purple tinged. Stigmas whitish.

Notes. It seems unlikely that *Panicum piluliferum* Nees *ex* Steud. (1854: 94) provides the correct name for this, but the type has not been seen. It should be in the Lehmann herbarium and was collected in "Ind. Or." Lehmann gathered a large herbarium from various sources, but apparently never was outside Germany, so who collected this exactly where is a mystery. His "Indian" collections apparently came mainly from Nepal and Sri Lanka, where *Isachne confusa* is not known to occur; many (all?) are in K, but this one was not found. The S isotype http://plants.jstor.org/stable/viewer/10.5555/al.ap.specimen.s-g-3408?page=1 was misidentified as *Isachne muricata* Nees by Mez. This is *Cyrtococcum patens* (L.) A. Camus. Mez's description of *I. muricata* (*msc.* 1: 96) pertains to *I. globosa*. The S specimen is not cited.

Hooker *f*. (1896: 24) has it erroneously under *Isachne rigida* (= *I. pangerangensis*). Henrard (1940) suggested that it might be *Panicum piluliferum* Nees *ex* Steud.: "it may be *Isachne pilulifera* (Nees) Henr.", a new combination published with an expression of doubt, hence invalid. From the somewhat garbled account it would seem he had *I. confusa* in mind, with which Bor (1960) equated it.

7. ISACHNE DIABOLICA Ohwi

Isachne diabolica Ohwi, Bull. Tokyo Sci. Mus. 18: 14 (1947); Iskandar & Veldk., Reinwardtia 12: 164 (2004). Type: *Bünnemeijer 8739* (BO *1477383*, holo; K *000290191*).

Culms with annular glands below the glabrous nodes. Sheaths glabrous. Ligule hairs 3.8–4.5 mm long. Blades lanceolate, 10.5–14 cm by 15–20 mm, base rounded, smooth, below glabrous, with 13 main nerves, margins not white cartilaginous. Panicle *ca.* 22 by 11 cm, branches with annular glands, lowermost branch *ca.* 8 cm long, with *ca.* 6 branches, with *ca.* 30 spikelets. Spikelets subglobose. Glumes apex obtuse, glabrous; lower glume 1.1–1.8 mm wide. Lemmas differing in texture and (usually) in size, the lower one herbaceous to membranous, usually longer than the chartaceous upper one, usually dorsally depressed, 1.7–1.75 mm long.

Distribution. Malesia: W. Sumatra (Mt. Kerinci).

Habitat. Forest; 1,600 m asl.

Notes. Only known from the type collection. Most similar to *Isachne sylvestris*.

-. Culms nodes glabrous. Sheaths glabrous. Blades base rounded, margins not white cartilaginous, below glabrous. Panicle *ca.* 11 cm wide, lowermost branch with few spikelets. Spikelets subglobose. Glumes glabrous. Florets differing in texture and (usually) in size. First lemma 1.7–1.75 mm long. – W. Sumatra (Kerinci) ..... *Isachne diabolica*

-. Culms nodes pubescent. Sheaths hairy along the margins to densely setose. Blades base truncate to subcordate, margins white cartilaginous, below puberulous to pubescent. Panicle 5–7.5 cm wide, lowermost branch with many spikelets. Spikelets ellipsoid. Glumes distally setose; Florets not differing in texture, subequal to equal. First lemma 1.2–1.6 mm long. – Peninsular Malaysia (S.W. Perak: Dinding), and N. Sumatra (Aceh) ..... *Isachne sylvestris*

8. **Isachne fera** Veldk., *spec. nov*.

Type *De Wilde & De Wilde-Duyfjes 16398* (L *1270404* holo; BO).

Plants perennial. Culms geniculate, rooting in decumbent nodes, 0.25–0.3 m long, without annular glands below the glabrous nodes. Sheaths hairy along the margins. Ligule hairs *ca.* 1.7 mm long. Blades linear, 7–9.5 cm by 5.5–10 mm, base broadly cuneate, margins white cartilaginous, not undulate, scaberulous erecto-patent, both sides glabrous, above scaberulous erecto-patent, below smooth erecto-patent, with 9 main nerves. Panicle loosely contracted, *ca.* 12.5 by 6 cm, branches erecto-patent, many, eglandular, scaberulous erecto-patent, lowermost branch *ca.* 5 cm long, with 3 branches, with *ca.* 11 spikelets. Pedicels eglandular, longer than the spikelet, scaberulous. Spikelets ellipsoid, not yawning, 2.3–2.6 by *ca.*

1.5 mm. Glumes oblong, distinctly longer than the lemmas, apex acuminate, distinctly nerved, 7-nerved, distally setose, smooth erecto-patent; lower glume 2.3—2.6 by *ca.* 1 mm; upper glume 2.2—2.5 by *ca.* 1 mm. Rachilla between glumes present erecto-patent, between florets terete erecto-patent. Florets plano-convex, lemmas not differing in texture, subequal to equal, chartaceous. Lower floret male. First lemma not longitudinally depressed, 1.7—1.8 mm long, puberulous near the margin erecto-patent. Anthers *ca.* 1 mm long. Upper floret female. Second lemma *ca.* 1.6 mm long, 0.9-0.95 times as long as the first lemma, puberulous erecto-patent.

Distribution. Sumatra: Aceh, G. Leuser.

Habitat. Riverine forest, ca. 2,150 m asl.

Collector's Notes. Herb, *ca.* 30 cm, prostrate at base. Inflorescence pale greenish.

Notes. Only known from the type collection.

Plants distinct by ligule hairs *ca.* 1.7 mm long. Blades linear, base cuneate, below smooth erecto-patent. Panicle loosely contracted, branches many, scaberulous erecto-patent, lowermost branch *ca.* 5 cm long, with few branches. Pedicels scaberulous. Glumes oblong, acuminate. First lemma puberulous near the margin erecto-patent.

Named for the collectors, Willem Jan Jacobus Oswald de Wilde (1936 – *hodie*) and Brigitta Emma Elisabeth De Wilde-Duyfjes (1936 — *hodie*): *ferus* = wild, untamed.

9. **Isachne glandulosa** Veldk., *spec. nov*.

Type — *Lörzing 13454* (L *1270398*, holo; BO).

Plants perennial. Culms geniculate, rooting in decumbent nodes, *ca.* 0.35 m long, with annular glands below the glabrous nodes. Sheaths hairy along the margins. Ligule hairs 2–4.5 mm long. Blades linear, 8–15 cm by 7–11 mm, base cuneate, margins white cartilaginous, not undulate, scaberulous erecto-patent, pectinate, both sides pubescent, scaberulous erecto-patent, below with 7-11 main nerves. Panicle loosely contracted, 11.5–16 by 4–7 cm, branches erecto-patent, many, with annular glands, smooth erecto-patent, lowermost branch *ca.* 6 cm long, with 2 branches and 7-10 spikelets. Pedicels glandular, shorter to longer than the spikelet, smooth erecto-patent. Spikelets ellipsoid, not yawning, 1.7–2 by *ca.* 1 mm. Glumes subequal to the lemmas, elliptic, glabrous, distinctly 5- or 7-nerved, glabrous, smooth erecto-patent; lower glume 1.7–2 by *ca.* 1 mm, apex acuminate; upper glume *ca.* 1.8 by *ca.* 1 mm, apex acute to acuminate. Rachilla between glumes present erecto-patent, between florets terete erecto-patent. Florets not differing in texture, plano-convex, lemmas sub-equal to equal, *ca.* 1.4 mm long, chartaceous, puberulous erecto-patent. Lower floret male. First lemma not longitudinally depressed. Anthers *ca.* 0.9 mm long. Upper floret female.

Distribution. Sumatra, E. Coast, Sibayak, near Petani waterfall.

Habitat. Moist places, common, somewhat vegetation forming, *ca.* 1,200 m asl.

Notes. Plants distinct by being glandular below the nodes, on the inflorescence branches and pedicels. Sheaths hairy along the margins. Blades linear, base cuneate, above pubescent. Panicle branches many, lowermost branch *ca.* 6 cm long. Glumes subequal to the lemmas, lower glume acuminate. Lemmas puberulous erecto-patent

10. ISACHNE GLOBOSA (Thunb.) Kuntze

Isachne globosa (Thunb.) Kuntze, Rev. Gen. Pl. 2: 778 (1891); Iskandar & Veldk., Reinwardtia 12: 165 (2004). — *Milium globosum* Thunb. *in* Murray, Syst. Veg., ed. 14: 109 (May-June 1784); Fl. Jap.: 49 (Aug 1784). — *Agrostis globosa* (Thunb.) Poir. *in* Lam., Encycl., Suppl. 1: 257 (1810). Type: *Herb. Thunberg 2041* (UPS, holo, microfiche IDC 1036; B, extant?).

Culms without annular glands below the glabrous nodes. Blades base abruptly narrowed to truncate, below with 7-9 main nerves. Spikelets subglobose to ellipsoid, 1.75—2.4 mm long. Lower glume 0.85—1.4 mm wide, apex obtuse. Lemmas differing in texture and (usually) in size, the lower one herbaceous to membranous, usually longer than the chartaceous upper one, usually dorsally depressed. Rachilla between glumes not distinctly developed erecto-patent, between florets distinctly obdeltoid erecto-patent.

Distribution. Oman, India, Sri Lanka to Japan, China (widespread), Taiwan, Carolines, Cook Isl., Fiji, Marianas, Vanuatu, New Caledonia, Australia (Northern Terr., Queensland, New S Wales, Victoria, S Australia), New Zealand; Thailand (Peninsular: Narathiwat); Malesia: Peninsular Malaysia (Langkawi, Malacca, Negeri Sembilan, Pahang, Perlis, Selangor), Singapore, Sumatra (Aceh, N-, W. Sumatra, Palembang, Bangka, Lingga Island), Java, Borneo (Sarawak, E. Kalimantan), Philippines (Luzon, see note), N.-, S. Celebes, Lesser Sunda Islands (Sumba, Timor), Papua New Guinea (W. Highlands, East Sepik Province).

Notes. Most similar to *Isachne minutula*:

-. Culms nodes glabrous. Blades below with 7-9 main nerves. Spikelets subglobose to ellipsoid. ..... *Isachne globosa*
-. Culms nodes pubescent. Blades below with 5 main nerves. Spikelets obovoid ..... ……..……..... *Isachne minutula*

11. ISACHNE KINABALUENSIS Merr.

Isachne kinabaluensis Merr., J. Straits Branch Roy. Asiat. Soc. 76: 77 (1917). Type: *Clemens 10704* (PNH, holo, extant; K *000290192*).

[*Isachne clavigera* Mez, *msc.* 114, *ined.*]. – Voucher: *Hullett 867* (B *10 0525280*; ? CAL, K, SING).

Isachne javana auct., non Nees *ex* Miq.

Plants perennial. Culms loosely tufted to erect, 0.03–0.6 m long, without annular glands below the pubescent nodes. Sheaths hairy along the margins to puberulous. Ligule usually absent, rarely of 2 mm long setae. Blades linear-lanceolate, 3–11.5 cm by 5–9 mm, base truncate, smooth erecto-patent, margins white cartilaginous, not undulate, scaberulous erecto-patent, above glabrous, below glabrous to pubescent, with 7-11 main nerves. Panicle loosely contracted to lax, 2–10(–17) by 1.5–9(–19) cm, branches erecto-patent to reflexed, 8-11(-14), more or less terete, with annular glands, rarely without, smooth to scaberulous erecto-patent, lowermost branch 4–8(–12) cm long, with 0-2(or 3) branches, with 4-6(-8) spikelets. Pedicels glandular, rarely eglandular, longer than the spikelet, smooth erecto-patent. Spikelets ellipsoid, not yawning, 1.8–2.2(–3) by 1.2–1.6 mm. Glumes shorter than the lemmas, very unequally inserted, elliptic, apex acute, glabrous to distally setose, smooth erecto-patent; lower glume *ca.* 1.8 by 1 mm, 7-nerved; upper glume 1.7–2 by *ca.* 1 mm, 7-9-nerved. Rachilla between glumes present erecto-patent, between florets terete erecto-patent. Florets plano-convex, not differing in texture, subequal to equal, bisexual. Lemmas chartaceous, obscurely nerved, puberulous at least near the margin erecto-patent; first lemma not longitudinally depressed, 1.6–1.8(–2) mm long. Anthers 1–1.2 mm long. Second lemma 1.7–1.8(–2) mm long.

Distribution. ? India (Meghalaya), ? N. Burma, Thailand (Peninsular: Nakhon Si Thammarat), Malesia: Peninsular Malaysia. (Johor, Kelantan, Pahang, Perak), Sumatra (Aceh. W. Coast, Tapanuli), Borneo (Sarawak, Sabah: Mt. Kinabalu, Mt. Murud).

Habitat. Open areas in mossy forest, on ultramafic, in *Sphagnum* mats, (600-1,000-3,200 m asl.

Collector's Notes. Small tufts, loose tussocks. Culms up to 1.05 m high, prostrate at base. Sheaths green at base turning brownish and then yellowish green towards leaves. Ligule silvery hairy. Blades grey-glaucous beneath. Spikelets pale green. Filaments white, anthers yellow. Stigmas while.

Notes. Immediately distinct from *Isachne albens* by the panicle with less spikelets, branches with glandular bands, although sometimes quite inconspicuous, and the quite distinct internode between the glumes.

Shukla (1996: 286) reported its occurrence in India and Burma, but I have seen no specimens.

12. ISACHNE LANGKAWIENSIS Jansen

Isachne langkawiensis Jansen, Reinwardtia 2: 284 (1953); Iskandar & Veldk., Reinwardtia 12: 167 (2004). Type: *SF 37959 (Nauen)* (SING, holo; BO *1888843*, L, SAN, SAR).

Culms without annular glands below the glabrous to pubescent nodes. Sheaths hairy along the margins to bulbous based hairy. Ligule hairs 0.2–0.6 mm long. Blades linear, pubescent with bulbous hairs. Spikelets ellipsoid. Glumes acute; lower glume 0.75–0.8 mm wide; upper glume obovate, densely setose with bulbous-based setae. Rachilla between glumes not distinctly developed erecto-patent, between florets terete erecto-patent. Lemmas differing in texture and (usually) in size, the lower one herbaceous to membranous, usually longer than the chartaceous upper one, usually dorsally depressed.

Distribution. Thailand: NE: Loei (Phu Kradung); Malesia: Peninsular Malaysia (Langkawi Island).

Notes. Most similar to *Isachne globosa*, see key.

13. ISACHNE MINUTULA (Gaudich.) Kunth

Isachne minutula (Gaudich.) Kunth, Rév. Gram. 2: 407, t. 117 (1831); Iskandar & Veldk., Reinwardtia 12: 167 (2004). **Notes**. *Panicum minutulum* Gaudich. *in* Freyc., Voy. Uranie: 410 (1829). ≡ *Isachne miliacea* Roth var. *minutula* (Gaudich.) Fosberg & Sachet, Micronesica 18: 55 (1984). Lectotype: *Gaudichaud s.n.* (P *01934348*, middle specimen; iso perhaps E), designated here.

Culm nodes usually pubescent, eglandular. Ligule hairs 0.7–1.5 mm long. Blades below with 5 main nerves. Spikelets obovoid. Lower glume scaberulous erecto-patent. Rachilla between florets distinctly obdeltoid erecto-patent. Lemmas

differing in texture and (usually) in size, the lower one herbaceous to membranous, usually longer than the chartaceous upper one, usually dorsally depressed.

Distribution. India, Sri Lanka to Vietnam, Australia (W. Australia, Northern Terr., Queensland), Carolines, Marianas; Malesia: Sumatra (Aceh, Bangka, Bengkulu, Enggano Isl., Riau, N. Sumatra, W. Sumatra,), Peninsular Malaysia. (Pahang, Perlis), Singapore, Java, Madura, Kangean, Bawean, Borneo (Sarawak, W. Kalimantan), Philippines (Basilan Isl., Biliran, Guimaras Isl., Luzon, Mindanao, Panay Isl.), N. Celebes, Lesser Sunda Islands (Sumba, Alor, Timor, Tanimbar Isl.), Moluccas (Ambon, Buru, Halmahera). Mez (*msc.* 1: 89) mentioned its occurrence in Yap (*Volkens 152, 260*).

Notes. Most similar to *Isachne globosa*:

-. Culms nodes glabrous. Blades below with 7-9 main nerves. Spikelets subglobose to ellipsoid. .....*Isachne globosa*
-. Culms nodes pubescent. Blades below with 5 main nerves. Spikelets obovoid……..
……*Isachne minutula*

14. ISACHNE MYOSOTIS Nees

Isachne myosotis Nees *in* Hook., J. Kew Misc. 2: 98 ("*947*") (1850). — *Panicum myosotis* (Nees) Nees *ex* Steud., Syn. Pl. Glumac. 1: 96 (1854). Type: *Cuming 946* (CGE, holo, "*947*"; B *10 0525256*, as *I. pusilla* Mez, ined; BM *000959682*, K *000290356-8*, P *00740918*, US, fragm.].

Isachne debilis Rendle *in* Forbes & Hemsl., J. Linn. Soc. London, Bot. 36: 322 (1904). Type: *Oldham 605* (BM, holo; K*0010556225*, W *18890238004*). — Hackel (1906: 79) regarded this as a syn. of *I. monticola* Buse. Keng *f.* (1965: 21) accepted it as distinct. Chen & Phillips (2006: 558) incorrectly as syn. of *I. pauciflora* (date of publication 1906!).

Isachne grisea K. Schum. *in* K. Schum. & Lauterb., Fl. Deut. Schutzgeb. Südsee, Nachtr.: 57 (1905). Type: *Schlechter 14054* (B *0272965*, holo; BO *1309164*).

Isachne debilis Rendle var. *incrassata* Hack., Philipp. J. Sci. 1, Suppl. 4: 268 (1906). — *Isachne incrassata* (Hack.) Merr., Philipp. J. Sci. 5: 168 (1910). Lectotype: *De Vore & Hoover 358* (W *20396*), designated here.

Isachne pauciflora Hack., Publ. Gov. Lab. Philipp. 35: 80 (1906, "1905"); Philipp. J. Sci. 3: 167 (1908). Type: *Elmer 6486* (W *21711*; iso: BO *1442466*, G *178817/1*, K *000290201, -202*, NY *381256*, US *10120449, 01117951*), designated here.

Isachne pauciflora Hack. var. *hirsuta* Hack., Philipp. J. Sci. 3: 167 (1908). Type: *FB 4405* (Merritt) (W, holo; PNH, lost; US *01210448*).

Isachne beneckei Ohwi forma *depauperata* Hack. *ex* Merr., Philipp. J. Sci. 1, Suppl. 5: 350 (1906). — *Isachne beneckei* Ohwi var. *depauperata* (Hack. *ex* Merr.) Merr. & Merritt, Philipp. J. Sci. 5: 32 (1910); Ohwi, Acta Phytotax. Geobot. 11: 55 (1942), isonym. — *Isachne depauperata* (Hack. *ex* Merr.) Merr., Enum. Philipp. Fl. Pl. 1: 58 (1923). — *Isachne pauciflora* Hack. var. *depauperata* (Hack. *ex* Merr.) Jansen, Reinwardtia 2: 288 (1953). Lectotype: *BS 4489 (Merrill)* (US; iso: PNH, lost, K *000290198*), designated here.

Isachne micrantha Merr., Philipp. J. Sci. 5: 168 (1910). — *Isachne myosotis* Nees var. *micrantha* (Merr.) Jansen, Reinwardtia 2: 286 (1953). Lectotype: *FB 16841 (Curran)* (L; iso: NY *381255,* PNH, holo, lost, BO, K *000290196*), designated by Chase & Niles [Index Gr. Sp. 2 (1962) 293].

Isachne myosotis Nees var. *minor* Honda, Bot. Mag. (Tokyo) 38: 58. (1924). Lectotype: *Tashiro 15* (TI; iso: US), designated by Koyama (1976: 203).

[*Isachne ernstii* Mez, *msc.* 137, *ined.*] — Voucher: *Ernst 7 Apr 1906* (B *10 0525285*, Z).

Isachne beneckei auct., non Ohwi.

Isachne monticola auct., non Buse.

Plants perennial (weak plants look annual!). Culms geniculate, rooting in decumbent nodes to straggling, 0.05−0.15 m long, without annular glands below the pubescent nodes. Sheaths hairy at least along the margins. Ligule hairs 0.7−1.5 mm long. Blades ovate-oblong, 0.6−1.8 cm by 2−4.5 mm, base rounded, margins white cartilaginous, not undulate, scaberulous erecto-patent, both sides smooth erecto-patent, pubescent, below with 11-19 inconspicuous nerves. Panicle lax, 0.8−3 by 0.2−1.5 cm, branches erecto-patent, 0-2, eglandular, smooth erecto-patent, lowermost branch 0−1.5 cm long, unbranched, with 1-7 spikelets. Pedicels eglandular, shorter to longer than the spikelet, smooth erecto-patent. Spikelets ellipsoid, not yawning, 1.1−2 by *ca.* 1 mm. Glumes shorter than to subequal to the lemmas, elliptic, acute, distinctly or obscurely 3- or 5-nerved, glabrous to setose, smooth erecto-patent; lower glume 1.1−1.9 mm by *ca.* 1 mm; upper glume 1.1−1.7 mm by *ca.* 1 mm. Rachilla between glumes present erecto-patent, between florets terete erecto-patent. Florets not differing in texture, subequal to equal, plano-convex. Lower floret male or bisexual. First lemma not longitudinally depressed, 0.8−1.6 mm long, chartaceous, puberulous erecto-patent. Anthers 0.5−1 mm long. Upper floret female, rarely bisexual. Second lemma 0.7−1.5 mm long,

ca. as long as the first lemma, chartaceous, puberulous erecto-patent.

Distribution. Thailand (Peninsula: Chumphon), Indochina to S. China (Fujian), Taiwan, Ryukyu Isl., and Australia (West Australia, Queensland), Malesia: Java (*fide* Backer, 1928: 136, none in BO, L), Lesser Sunda Isl. (Alor, Flores, Timor), Borneo (Sabah: Kinabalu), Celebes (C), Philippines (Luzon, Mindanao, Mindoro, Negros), Moluccas (Ceram, Tidore), New Guinea (widespread).

Habitat. In shaded, damp places, *e.g.* bogs, on rocks in spray, stream banks, along rice fields, mossy forest, edge of pine-oak forest, limestone, 500–3,225 m asl. Possibly a facultative rheophyte.

Collector's Notes. Forming dense cushions or mats (up to 1 m diam.). Flowering shoots erect. Leaves yellowish green, blue green, green above, pale to whitish below, hairy on both surfaces. Spikelets white, cream, pale yellow, pale green, purplish, violet, blackish purple. Anthers yellow. Stigmas purplish black.

Notes. Rather uniform species, conspicuous by its often tufted or mat-forming habit with intertwined, slender culms, small, usually hairy leaves without distinct main nerves, poor inflorescences, and small spikelets. Yet several authors have distinguished distinct taxa possibly because they had only a few specimens available.

Reeder (1948: 309), Jansen (1953: 288) and Henty (1969: 113), and Chen & Phillips (2006: 554) separated *I. myosotis* from *I. pauciflora*:

-. Annual plants. Culms in small tufts, 2–6 cm tall. Sheaths more than half as long as the internodes. Panicle with 15-30 spikelets (less in depauperate specimens). Spikelets 1–1.5 mm long. Glumes glabrous or minutely hairy towards the tip ……. *Isachne myosotis*

-. Semi-aquatic plants. Culms creeping, elongate, 10–15 cm long. Sheaths very short, less than half as long as the internodes. Panicle sparse, usually with less than 12 spikelets. Spikelets 1.4–2 mm long. Glumes obtuse or appearing apiculate because of the involute margins, more or less hispid (glabrous in var. *depauperata*!) ..... *Isachne pauciflora*

In tropical rain forest areas where this species occurs the distinction between annual and perennial is most tenuous. The culms form cushions or mats sometimes more than 1 m in diam., rooting at the nodes and dying off at the proximal parts, whereby collections consisting mainly of the young, flowering distal parts may appear to be annual. It is hard to tell how long the culms are and (here I have measured them from the proximal rooting node to the apex of the inflorescence) and this most likely is caused by edaphic factors.

There is no disjunction in the length of the spikelets as is suggested here. Also, there is no correlation between spikelet number and size.

Jansen (1953: 286) recognised within his concept of *Isachne myosotis s.s.* two forms by the size of the spikelets and their parts, var. *micrantha* and var. *myosotis*. I have observed these, too, but otherwise there seem to be no differences in habit, foliage, inflorescences, distribution, elevation, and perhaps ecology (which is too rarely mentioned).

The type of *Isachne myosotis* was given as *Cuming 947* by Nees, which is an error in labelling by Cuming himself for "*946*". Also "*947*" on the satchel in B. However, *Cuming 947* is *Nepenthes ventricosa* Blume. Reeder (1948: 312) mentioned the spikelets as 1.2–1.5 mm long and would thereby be intermediate.

-. Spikelets 1.1–1.4 mm long. Glumes 1.1–1.4 mm long. Lemmas 0.8–1 mm long…… ……..... *var. micrantha* (possibly there are older epithets of which I have not seen the types: *e.g. depauperata, hirsuta, incrassata, minor*).

-. Spikelets 1.4–2 mm long. Glumes 1.4–1.9 mm long. Lemmas 1–1.5 mm long …….. …….....*var. myosotis*

The small-spikelets form seems to be the more common one in New Guinea. Both appear over the whole distributional area and are therefore not recognised here.

Isachne nipponensis Ohwi (1935: 30) would hardly differ, especially small specimens are troublesome to place (T. Koyama, 1987: 126, 129). The most striking difference is the nervature on the under surface of the leaves:

-. Leaves underneath with 11-19 thin, equal, indistinct nerves. Blades 1–2 cm by 3–5 mm, subdensely to densely hairy on both surfaces. Panicles 1–2.5 by 0.7–1.5 cm, the branches bearing spikelets from the base. Glumes 1.2–1.6 mm long ….. *Isachne myosotis*

-. Leaves underneath with 3, 5, or 7 major nerves (at least at base) with indistinct intermediary minor ones. Blades 1.5–4.5 cm by 4–15 mm, glabrous to sparingly pilose. Panicles 1.5–6 by 1.5–4 cm, the branches as a rule not bearing spikelets towards base. Glumes 1.3–1.5 mm long.....*Isachne nipponensis*

15. ISACHNE PANGERANGENSIS Zoll. & Moritzi

Isachne pangerangensis Zoll. & Moritzi in

Moritzi, Syst. Verz.: 102 (1846). – *Panicum pangerangense* (Zoll. & Moritzi) Zoll. & Moritzi *ex* Steud., Syn. Pl. Glumac. 1: 95 (1854). Type: *Zollinger 1917* (P, *01934332*, holo; B *10 02729359*, 3 bottom specimens "B"; P *01934333, -4*; Z *00072981, 000098398*).

Isachne firmula Buse in Miq., Pl. Jungh. 3: preprint: 39 (Feb 1854); 379 (Aug 1854). – [*Isachne firmula* Buse var. *typica* Backer, Teysmannia 24: 88, t. 20 (1914), *nom. inval.*]. – *Isachne pangerangensis* Zoll. & Moritzi var. *firmula* (Buse) Henrard, Blumea 3: 471 (1940). – Syntypes: *Junghuhn s.n.* (L, *sh. 904.26-94*).

Isachne firmula Buse var. *marginata* Buse *in* Miq., Pl. Jungh. 3: preprint: 39 (Feb 1854); 379 (Aug 1854). – *Isachne pangerangensis* Zoll. & Moritzi var. *marginata* (Buse) Jansen, Reinwardtia 2: 288, t. 9b (1953). Type: *Junghuhn s.n.* (L *0044641*, holo; iso: L *0044640, -42*).

Isachne monticola Buse *in* Miq., Pl. Jungh. 3: preprint: 39 (Feb 1854); 379`(Aug 1854). Type: *Junghuhn s.n.* (L, holo, 3 sheets: *0819932, -33, -34*).

Panicum rhabdinum Steud., Syn. Pl. Glumac. 1: 96 (Mar 1854). – *Isachne virgata* Nees *ex* Miq., Fl. Ned. Ind. 3 (1857) 462, *nom. superfl.*; Nees *ex* Stapf *in* Gibbs, J. Linn. Soc., Bot. 42: 185 (1914). *Isachne firmula* Buse var. *virgata* (Nees *ex* Miq.) Backer, Teysmannia 24: 88, t. 21 (1914). – *Isachne rhabdina* (Steud.) [Henrard, Blumea 4: 530 (1941), *nom. prov., inval.*] Ohwi, Bull. Tokyo Sci. Mus. 18: 1 (1947). – [*Isachne pangerangensis* Zoll. & Moritzi var. *rhabdina* (Steud.) Henrard, Blumea 4: 530 (1941), *nom. prov., inval.*] Type: Not indicated (presumably in P), Miquel with a query cited *Junghuhn s.n.*

Panicum rhignon Steud., Syn. Pl. Glumac. 1: 95 (Mar 1854). – *Isachne rigida* [Nees *ex* Steud., Syn. Pl. Gram. 1: 95 (1854), *in syn.*] Nees *ex* Miq., Fl. Ned. Ind. 3: 461 (1857); Nees *ex* Steud. *ex* Hook. *f.*, Fl. Brit. India 7: 24 (1896), isonym, *nom. superfl.* – *Isachne pangerangensis* Zoll. & Moritzi var. *rhignon* (Steud.) Henrard, Blumea 3: 471 (1940). – *Isachne rhignon* (Steud.) Ohwi, Bot. Mag. (Tokyo) 55: 541 (1941), *excl. specim*. Type: Not cited (P, holo, not found), "Java". Miquel cited both this and *I. monticola*, and has "*Junghuhn*". No such specimen was found in L or U, where the collections at the time of writing were partly inaccessible.

? Isachne pangerangensis Zoll. & Moritzi var. *halconensis* Hack., Philipp. J. Sci. 3: 167 (1908). Lectotype: *Merrill 6203* (W; iso: K *00290197*, L *0044638*, n.v., PNH, lost), Mindoro, Mt. Halcon, designated here.

[*Isachne pangerangensis* Zoll. & Moritzi forma *altior* Chase, Candollea 6: 409 (1936), *nom. nud.*]. – Vouchers: *Hochreutiner 2112, 2116* (G, *etc.*)

[*Isachne loerzingii* Mez, *msc.*: 125, *ined.* – Vouchers: *Lörzing 48* (B extant?, BO *1442563, 1867855*)].

Isachne kunthiana auct., non Miq.

Isachne rigida auct., non Miq.

Plants perennial (sometimes annual?). Culms tufted or geniculate, rooting in decumbent nodes or cushion forming (at high elevations), 0.1–0.8 m long, without annular glands below the glabrous nodes. Sheaths glabrous to hairy. Ligule hairs 1.5–2.5 mm long. Blades lanceolate to linear, 1.6–5(–18) cm by 2.5–8(–15) mm, base rounded, on both sides scaberulous erecto-patent, glabrous or pubescent (densely in "var. *marginata*"), with 7 main nerves, margins white cartilaginous, not undulate, scaberulous erecto-patent to pectinate. Panicle contracted to loosely contracted, 1.5–7(–18) by 1–2.5(–10) cm wide, branches 0-7, eglandular, smooth erecto-patent to sparsely pilose (usually), lowermost branch 1–2(–9) cm long, with 0 or 1 branches, with 4-11 spikelets. Pedicels eglandular, shorter to longer than the spikelet, scaberulous. Spikelets ellipsoid, not yawning, 1.6–2.2(–3) by 1–1.2 mm. Glumes subequal to slightly longer than the lemmas, elliptic, 1.5–2.2(–3) by 1–1.2 mm, apex acute, distinctly 5-nerved, distally with a few setae, smooth erecto-patent. Rachilla between glumes present erecto-patent, between florets terete erecto-patent. Florets not differing in texture, subequal to equal, plano-convex. Lower floret bisexual. First lemma not longitudinally depressed, 1.3–1.8(–2) mm long, chartaceous, obscurely nerved, puberulous erecto-patent. Anthers 0.7–1(–2) mm long. Upper floret bisexual or female. Second lemma 1.3–1.7 mm long, 0.9-1 times as long as the first lemma, chartaceous, puberulous erecto-patent.

Distribution. Peninsular Malaysia (Pahang), Sumatra (Aceh, W. Coast), Java, Lesser Sunda Isl. (Bali, Flores, Lombok, Timor), Borneo (Sarawak: Labuan; Sabah), Celebes, Philippines (Luzon, Mindoro). Ohwi *msc.* mentioned moreover New Guinea, but these collections in BO are *Isachne albens*.

Habitat. Mountains with shaded mixed forest, *e.g.* with *Casuarina*, coffee and *Cinchona* plantations, in subalpine vegetations with *e.g. Anaphalis, Carex, Fragaria vesca* (!), *Gleichenia, Lycopodium*, roadsides, grass fields, coffee plantations, open, stony areas, river banks, marshes, locally (very) common, 1,200-3,100 m asl.

Uses. Horse feed of good quality, but yield too small.

Collector's Notes. Soft grass, decumbent, forming loose carpets, or short, close turf, sometimes vegetation forming. Culms stiffly erect, 20−100 cm. Upper surface leaves shiny dark green. Nodes darkly green. Spikelets whitish, reddish green, violet in fruit. Glumes weakly shiny. Stigmas greyish white, purple.

Notes. *Docters van Leeuwen-Reijnvaan 12458* and *Scheffer C 22* (BO) show scaly stolons. Ohwi (1941) under his new combination *Isachne rhignon* cited collections from the Carolines (Palau, Ponape), but later (1947) he corrected this to *I. confusa*.

The species is quite plastic. High altitude forms (as the type depicted by Jansen, 1953: 287, fig. 8) may be cushion-forming with close-set, stiff leaves, and few-spikelets inflorescences. Henrard, followed by Jansen, distinguished four varieties by mainly quantitative characters and pubescence. Monod (1968) had only two (var. *pangerangensis* and var. *marginata*). I do not recognise these here. An example of a mixed population are *Veldkamp 6016* and *6018* (L) from Telaga Warna, Jeng Plateau, Java, which represent shade and open area forms.

-. Culms ascending, up to 45 cm long. Panicle 6−8 cm long, more or less contracted, many-spikelets. Sheaths usually glabrous, margins hairy.....var. *firmula*
-. As above, but sheaths and blades pilose. Blades linear-lanceolate, margins cartilaginous, scaberulous. Panicle small. Glumes setose.....var. *marginata*
-. As above. Blades lanceolate, margins cartilaginous, scaberulous. Panicle large, virgate. Glumes often setose.....var. *rhabdina*
-. As above, but smaller. Panicle branches stiffly spreading, spikelets short-pedicelled, drooping.....var. *pangerangensis ("rhignon")*

Small specimens resemble *Isachne clarkei*:

-.Pedicels smooth, terete. Glumes obscurely nerved. First lemma *ca.* 1 mm long. Anthers *ca.* 0.5 mm long. Second lemma 1−1.1 mm long.....*Isachne clarkei*
-.Pedicels scaberulous, angular. Glumes distinctly nerved. First lemma 1.3−2.1 mm long. Anthers 0.7−2 mm long. Second lemma 1.3−1.7 mm long.....*Isachne pangerangensis*

Hackel described his var. *halconensis*: "Differs from the type from Java by the sparsely pilose to glabrescent leaves, the wider panicle, the spikelets shorter, longer pedicelled, the pedicel of the subterminal spikelets about 3 times longer [?]".

I have seen no material. The isotype in L was mislaid; it would be a form of *I. pangerangensis* (Monod in Jansen *msc.*), while Jansen identified the K duplicate as *I. kinabaluensis*. In L he identified some collections from Java as var. *halconensis*, but they are *I. pangerangensis s.l.*

16. ISACHNE PULCHELLA Roth

Isachne pulchella Roth *in* Roem. & Schult., Syst. Veg. 2: 476 (1817); Nov. Pl. Sp.: 58 (1821); Iskandar & Veldk., Reinwardtia 12: 168 (2004). — *Panicum pulchellum* (Roth) Spreng., Syst. Veg. 1: 322 (1824), *non* Raddi (1823). — *Panicum bellum* Steud., Syn. Pl. Glumac. 1: 96. (1854) — *Sphaerocaryum pulchellum* (Roth) Merr., Philipp. J. Sci. 11: 52 (1916), *pro comb.*; Druce, Bot. Soc. Exch. Club Brit. Isles Rep. 1916: 648 (1917); A. Camus, Fl. Indo-Chine 7: 514 (1922), isonyms. — *Steudelella pulchella* (Roth) Honda, J. Fac. Sci. Tokyo, Bot. 3: 258 (1930), *pro comb.* Type: *Heyne s.n. in Herb. Roth* [B *10 0088720*, holo, photo in K, depicted by Bor, Kew Bull. (7): 321, t. (1952)].

Culms with annular glands below the pubescent nodes. Ligule hairs 0.9−1.1 mm long. Blades margins white cartilaginous, undulate, below with 7 main nerves. Spikelets obovoid, yawning at maturity, 1−1.1 mm wide. Rachilla between glumes not distinctly developed erecto-patent. Glumes apex obtuse. Lemmas differing in texture and (usually) in size, the lower one herbaceous to membranous, usually longer than the chartaceous upper one, usually dorsally depressed.

Distribution. India, Nepal to S. W. China (Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Yunnan, Zhejiang), Taiwan, Marianas; Malesia: Peninsular Malaysia (Pahang), Singapore, Sumatra (Aceh, W.-, E. Coast, Selayar Isl., Tapanuli), Lingga, W. Java, Borneo (Sabah, E. Kalimantan), Philippines (Busuanga, Mindanao), S. Celebes.

Notes. Most similar is *Isachne minutula*:

-. Culms without annular glands below the nodes. Blades margins not white cartilaginous, not undulate, below with 5 main nerves. Spikelets not yawning. Lower glume 1.4−1.9 mm long, scaberulous erecto-patent; upper glume 1.4−1.9 mm long, scaberulous. Rachilla between florets distinctly obdeltoid erecto-patent. First lemma longitudinally depressed ……. ……..… *Isachne minutula*
-. Culms with annular glands below the nodes. Blades margins white cartilaginous, undulate, below with 7 main nerves. Spikelets yawning at maturity. Lower glume 1.2−1.3 mm long, smooth erecto-patent; Upper glume 1.2−1.3 mm long, smooth. Rachilla between florets developed, terete erecto-patent. First lemma

not longitudinally depressed ……. ……. *Isachne pulchella*

17. ISACHNE SCHMIDTII Hack.

Isachne schmidtii Hack., Bot. Tidsskr. 24: 97 (1901). Type: *Schmidt s.n.* (W, holo; US, fragm.)

Isachne semitalis Ridl., Fl. Malay Penins. 5: 237 (1925). — Syntypes: many specimens mentioned, see also Ridl., Mat. Fl. Malay. Penins. 3 (1907) 128, *sub I. kunthiana*. Some in US: Niles & Chase [Index Gr. Sp. 2 (1962) 295-a] cite *Ridley 73, 5770, 6110, 7777.* Seen in K: *Boden Kloss 87, Ridley 6110, 6251, 7264, 12480.*

[*Isachne borneensis* Mez, *msc.* 110, *ined.*] — Voucher: *Hub. Winkler 2739* (B *10 0525284*, L).

[*Isachne malayica* Mez, *msc.* 104, *ined.*]. — Voucher: *Ridley 24 Feb 1892*, "Singapore" (B).

Isachne kunthiana auct., non Miq.

Plants perennial, matforming. Culms geniculate, rooting in decumbent nodes, 0.06−0.3 m long, without annular glands below the glabrous or puberulous nodes. Sheaths hairy along the margins. Ligule hairs 1−1.6 mm long. Blades ovate-oblong, 2−7 cm by 6−12 mm, base cuneate to nearly pseudo-petiolate, scaberulous erecto-patent, glabrous, with 5-9 main nerves, margins white cartilaginous, not undulate, scaberulous erecto-patent. Panicle contracted to lax, 1−5 by 0.3−0.8 cm, branches appressed to erecto-patent, 0−6, angular, eglandular, smooth to scaberulous erecto-patent, lowermost branch 0.6−2 cm long, with 0 or 1 branch, with 2-7 spikelets. Pedicels eglandular (very rarely glandular), shorter to longer than the spikelet, smooth to scaberulous. Spikelets ellipsoid, not yawning or yawning at maturity, 2.4−3(−3.5) by 1.5−3 mm. Glumes distinctly longer than the lemmas, oblong, apex acuminate, puberulous and distally setose, smooth erecto-patent; lower glume 1.8−3 by 1−1.3 mm, 7- or 9-nerved; upper glume 2−3 by *ca.* 1 mm, 5-11-nerved. Rachilla between glumes present erecto-patent, between florets terete erecto-patent. Florets not differing in texture, subequal to equal, plano-convex; lower floret bisexual. First lemma not longitudinally depressed, 1.5−1.8 mm long, chartaceous, obscurely nerved, puberulous near the margin erecto-patent. Upper floret bisexual or female. Second lemma 1.4−1.6 mm long, 0.9−1 times as long as the first lemma, chartaceous, puberulous along the margin erecto-patent. Anthers 0.9−1 mm long.

Distribution. Thailand (Central: Bangkok; Southeast: Trat), Malesia: Peninsular Malaysia. (Johor, Malacca, Perak, Selangor), Singapore, Sumatra (Bangka, Enggano, Lingga), W. Java (Cibeureum, G. Kembang), Borneo (Kalimantan, Sabah, Sarawak), Philippines (Bohol), New Guinea: Irian Jaya (Bernhard Bivouac; Biak; McCluer Bay), Papua New Guinea (Milne Bay), Vanuatu (Ysabel Isl.).

Habitat. Shaded places in Dipterocarp forest, rubber plantations, stream banks, paths, 0-550 m asl.

Collector's Notes. Decumbent, matforming. Inflorescences contracted, green. Spikelets white. Anthers, stigmas white.

Notes. In the literature on Southeast Asia and Malesia this is known as *Isachne kunthiana*, but that species is restricted to Sri Lanka and Southern India.

-. Blades base subcordate; above smooth erecto-patent, puberulous to pubescent; margins not undulate. Upper glume *ca.* 1.4 mm wide. Lemmas puberulous erecto-patent …….. ……*Isachne kunthiana*
-. Blades base nearly pseudo-petiolate to cuneate; above scaberulous erecto-patent, glabrous; margins undulate. Upper glume *ca.* 1 mm wide. Lemmas puberulous near the margin erecto-patent.....*Isachne schmidtii*

Chen & Phillips (2006: 557) regarded *Isachne schmidtii* as distinct from *I. commelinifolia* Warb. (as *I. repens*) as distinct.

-. Blades 11−20 mm wide, margins not undulate. Panicle 1.5−2.5 cm wide, lowermost branch with 12-19 spikelets, spikelets *ca.* 2 mm long. Glumes shorter than to subequal to the lemmas, acute. Lemmas glabrous erecto-patent. — S. China, Taiwan, southern Ryukyus……..…. ……..... App. 1: 4. *Isachne commelinifolia*
-. Blades 6−9 mm wide, margins undulate. Panicle 0.3−0.8 cm wide, lowermost branch with 2-7 spikelets, spikelets 2.4−3.5 mm long. Glumes distinctly longer than the lemmas, acuminate. Lemmas puberulous near the margin erecto-patent. — Thailand, Malesia, Vanuatu. ..... *Isachne schmidtii*

Ernst s.n. (Z *000098394*) from the Jeng Plateau, C. Java, had minute glandular bands on the pedicels.

Bünnemeijer 11975 (BO 1442469) from Celebes, G. Bonthain, was labelled as *Isachne pauciflora* Hack. var. *trachyantha* by Ohwi (*ined.*).Tentatively it is here regarded as a small-leaved (1.5−2 cm by 2−3 mm) form with setulose glumes (hence the name) of *I. schmidtii*.

18. ISACHNE STRICTA Elmer

Isachne stricta Elmer, Leafl. Philipp. Bot. 2: 463 (1908). Lectotype: *Elmer 10425* (US *00134060*;

iso: PNH, lost; B *10 0272956*, BISH, BO *1442612*, E *00393778*, HBG, K *000290204*, L *0044643, -44*, NY *381257*, U *0226318*, US *00134060*, Z *000098378*), designated here.

Isachne obtecta Reeder, J. Arnold Arbor. 29: 313, t. 4 (1948). Type: *Brass 7242* (A, holo; BISH (fragm.), BO (*s.n.*, fragm. in L), US *00134056*, K neg. 5329).

Plants perennial. Culms tufted, 0.3–1(–1.4) m long, without annular glands below the glabrous nodes. Sheaths glabrous, or hairy along the margins. Ligule hairs 1.5–3 mm long. Blades linear, 2–20 cm by 3–10 mm, base rounded to obtuse, margins white cartilaginous, not undulate, scaberulous, on both sides scaberulous erecto-patent, glabrous to pubescent, below with 7-9 main nerves. Panicle loosely contracted to lax, 5–20 by 1.5–5 cm, branches erecto-patent, many, eglandular, smooth erecto-patent, lowermost branch 4.5–9.5 cm long, with 8- many branches, with few to many spikelets. Pedicels eglandular, smooth erecto-patent. Spikelets ellipsoid, not yawning, 1–1.5 by 0.7–1 mm. Glumes subequal to the lemmas, glabrous or distally setose, distinctly to obscurely 5-7-nerved, smooth; lower glume elliptic, 0.8–1.2 by 0.7–1 mm, apex obtuse or rounded; upper glume elliptic, 0.8–1 by 0.7–1 mm, apex rounded. Rachilla between glumes present erecto-patent, between florets terete erecto-patent. Florets not differing in texture, subequal to equal. Lower floret plano-convex, bisexual. First lemma not longitudinally depressed, 0.75–1.5 mm long, chartaceous, glabrous erecto-patent, apex rounded. Anthers 0.3–0.35 mm long. Upper floret plano-convex, bisexual or female. Second lemma 0.75–1.5 mm long, as long as the first lemma, glabrous erecto-patent, apex rounded.

Distribution. Philippines (Negros Oriental), Celebes (North: Bogani Nani Wartabone; Middle: Sopu Valley), New Guinea: Irian Jaya (Carstensz), Papua New Guinea (Morobe, Western Prov.).

Habitat. Native garden, river bank, shallow soil of rock crevices upon seepage ledges and cliffs (? rheophyte), 100-2,100 m asl.

Collector's Notes. Culms strict, quite rigid, straw-coloured near base, distally yellowish green. Blades quite stiff, flat, ascending, pale green, paler, glaucous beneath. Panicle strict, upper portion slightly recurved, yellowish green. Glumes green, the lower one usually more spreading.

Notes. Not a synonym of *Isachne albens* as Reeder (1949: 309), Keng *f*. (1965: 10), and Hsu (1978: 516) thought.

-. Blades above smooth. Panicles lax, spikelets long-pedicelled. Glumes acute, 7-nerved. Second lemma *ca.* 0.67 times as long as the first one. Anthers 0.8–1 mm long. — Widespread.....*Isachne albens*
-. Blades above scaberulous. Panicles dense, spikelets shortly pedicelled. Glumes obtuse to rounded, 5-nerved. Second lemma as long as the first one. Anthers 0.3–0.35 mm long. — Celebes, Philippines, New Guinea …… ……...…...*Isachne stricta*

Elmer on immature material described the spikelets as 1- or 2-flowered.

Chase (1943: 88) mentioned the species for the Morobe Prov., Papua New Guinea, citing *Clemens 4105, 5402 , 9208, 9239*. I have seen the latter in B. It is remarkable that no-one after her found it in the relatively well-known province. The synonym *I. obtecta* is not mentioned by Henty (1969: 112).

19. ISACHNE SURGENS Jansen

Isachne surgens Jansen, Reinwardtia 2: 281 (1953); Iskandar & Veldk., Reinwardtia 12: 171 (2004). Type: *Bünnemeijer 11268* (BO *1441914*, holo).

Plants perennial. Culms tufted and geniculate, rooting in decumbent nodes, 0.25–0.4 m long, without annular glands below the glabrous nodes. Sheaths glabrous. Ligule hairs 0.5–1.2 mm long. Blades linear-lanceolate to linear, 1.5–4.5 cm by 2 –4 mm, base rounded, smooth erecto-patent, margins white cartilaginous, not undulate, scaberulous, both sides glabrous, below with 3 or 5 main nerves,. Panicle loosely contracted, 3.5–5 by 1.5–2.5 cm, branches erecto-patent, 2-9, eglandular, smooth erecto-patent, lowermost branch 1.5 –2 cm long, without branches, with 3 – 6 spikelets. Pedicels eglandular, shorter to longer than the spikelet, smooth erecto-patent. Spikelets ellipsoid, not yawning, 2.25–2.5 by 1.3–2 mm. Glumes distinctly longer than the lemmas, oblong, apex acute, distinctly 5-nerved, glabrous, smooth erecto -patent; lower glume 2.3–2.5 by 1–1.2 mm; upper glume 2–2.3 by 0.9–1.2 mm. Rachilla between glumes present erecto-patent, between florets developed, terete erecto-patent. Florets not differing in texture, subequal to equal. Lower floret plano-convex, bisexual. First lemma not longitudinally depressed, 2–2.2 mm long, chartaceous, obscurely nerved, glabrous erecto-patent. Anthers 0.7–1 mm long. Upper floret plano-convex, bisexual. Second lemma 1.7–2 mm

long, 0.8-1 times as long as the first lemma, chartaceous, puberulous erecto-patent.

Distribution. Malesia: Celebes (Mt. Bonthain).

Habitat. Subalpine scrub, 2,750-2,890 m asl.

Notes. Jansen (1953: 281) erroneously regarded it as belonging to sect. "*Eu-Isachne*", but the lemmas are not heteromorphous.

20. ISACHNE SYLVESTRIS Ridl.

Isachne sylvestris Ridl., J. Straits Branch Roy. Asiat. Soc. 44: 206 (1905). – *Isachne albens* Trin. var. *sylvestris* (Ridl.) Jansen, Reinwardtia 2: 280 (1953). Type: *Ridley 7265* (SING, holo; K *000290184*).

Isachne albens Trin. var. *hirsuta* Hook. *f*., Fl. Brit. India 7: 23. (1896). – *Isachne hirsuta* (Hook. *f*.) Keng *f*., Acta Phytotax. Sin. 10: 11 (1965). Lectotype: *Keenan s.n.* (K *00245409*; iso: B *10 0525237*, K *001056220*), first step designation by Shukla (1996: 286), second step designated here.

Plants perennial. Culms erect or geniculate, rooting in decumbent nodes or straggling, 0.22–1 m long, pubescent, with annular glands below the pubescent nodes. Sheaths hairy along the margins to densely setose. Ligule hairs 3–5 mm long. Blades ovate-lanceolate or lanceolate, 7.5–12 cm by 10–24 mm, base truncate to subcordate, margins white cartilaginous, not undulate, scaberulous erecto-patent or pectinate; above smooth, glabrous or sparsely pubescent with bulbous hairs, below smooth or scaberulous erecto-patent, puberulous to sparsely setose, with 11-13 main nerves. Panicle loosely contracted, 8–22 by 5–7.5 cm, branches erecto-patent, many, with annular glands, smooth erecto-patent, longest lowermost branch 5–8 cm long, with many spikelets. Pedicels eglandular or glandular, smooth erecto-patent. Spikelets ellipsoid, not yawning, 1.3–2 by 1–1.5 mm. Glumes shorter than to subequal to the lemmas, elliptic, apex obtuse, distally setose, smooth, distinctly 7(or 9)-nerved; lower glume 1.3–1.8 by 0.8–1.2 mm; upper glume 1.4–1.8 by 0.8–1 mm. Rachilla between glumes not distinctly developed erecto-patent, between florets terete erecto-patent. Florets not differing in texture, subequal to equal, plano-convex; lower floret male or bisexual. First lemma not longitudinally depressed, 1.2–1.6 mm long, apex obtuse, chartaceous, glabrous erecto-patent. Anthers *ca.* 1 mm long. Upper floret plano-convex, bisexual or female (rarely). Second lemma 1.2–1.5 mm long, 0.75-1 times as long as the first lemma, apex obtuse, puberulous erecto-patent.

Distribution. India (Assam, only known from the syntypes), Bangladesh, apparently disjunct in China (Fujian, Guangdong), Malesia: Peninsular Malaysia (S. W. Perak: Dindings), Sumatra (Aceh, Lumbil).

Habitat. Lowland forest, grasslands, 500-800 m asl.

Collector's Notes. Glandular ring below nodes brown. Blades glaucous. Glands orange. Spikelets green, dark grey purple. Anthers yellow. Stigmas purple.

Notes. It is a distinct species as Ridley (1905: 206), Bor (1960: 579), Keng. *f*. (1965: 11), Gilliland (1971: 125), and Prakash & Jain (1984: 27) already suspected. It can be recognized by the hirsute leaf sheaths, broad blades, and large glandular panicles with small spikelets.

21. ISACHNE TRACHYCAULIS Ohwi

Isachne trachycaulis Ohwi, Bull. Tokyo Sci. Mus. 18: 14 (1947) (*"trachycaula")*. Type: *Veearts Sibolga 19* (BO *1442613*, holo).

Plants perennial. Culms tufted and erect, 0.4–0.5 m long, nodes glabrous, without annular glands below the nodes. Sheaths with short bulbous based hairs. Ligule setose erecto-patent, hairs *ca.* 0.5 mm long. Blades linear, 4–6.5 cm by 2–4 mm, base rounded, margins not white cartilaginous, not undulate, scaberulous erecto-patent, above scabrous erecto-patent, pubescent with bulbous hairs, below scabrous erecto-patent, puberulous, with many nerves. Panicle loosely contracted to lax, 6–8 by 2–4.5 cm wide, branches erecto-patent, *ca*. 12, eglandular, scaberulous erecto-patent, lowermost branch 3–4 cm long, with 2 or 3 branches, with 7 or 8 spikelets. Pedicels eglandular, scaberulous erecto-patent. Spikelets ellipsoid to obovoid, not yawning, *ca.* 2 by 1 mm. Glumes elliptic, subequal to the lemmas, glabrous, scaberulous erecto-patent; lower glume *ca.* 2 by 1 mm, apex rounded, distinctly 9-11-nerved; upper glume *ca*. 1.8 by *ca*. 1 mm, apex obtuse, distinctly 9-nerved. Rachilla between glumes and between florets not distinctly developed erecto-patent. Florets not differing in texture, plano-convex, subequal to equal; lower floret bisexual. First lemma not longitudinally depressed, *ca.* 2 mm long, apex rounded, chartaceous, puberulous erecto-patent. Upper floret bisexual. Second lemma *ca.* 1.8 mm long, *ca.* 0.8 times as long as the first lemma, apex rounded, puberulous erecto-patent.

Distribution. Sumatra (Aceh, Padanglawas).

Habitat. Lowland, locally common.

Uses. Much liked by cattle.

Notes. Only known from the type in BO, which is rather poor.

The Latinization of the Greek "*trachycaulos*" is "*trachycaulis*" (rough stem), so the epithet in the feminine has to be either *trachycaulis* or *trachycaulos*. As Ohwi clearly meant to Latinize the word, I have opted for the Latin one.

22. ISACHNE VILLOSA (Hitchc.) Reeder

Isachne villosa (Hitchc.) Reeder, J. Arnold Arbor. 29: 314 (1948); Iskandar & Veldk., Reinwardtia 12: 170 (2004). — *Isachne brassii* Hitchc. var. *villosa* Hitchc., Brittonia 2: 123 (1936). Type: *Brass 4132* (NY *381254*, holo, K photo; iso: A *00023844*, BRI *AQ-0319237*, US *00134044*).

Culms 0.1–0.4 m long, nodes pubescent. Sheaths hairy. Blades linear-lanceolate to linear, base truncate, margins white cartilaginous, smooth, above pubescent, below with 4-7 main nerves. Panicle 4.2–9 cm long, branches 8-18. Spikelets ellipsoid. Glumes subequal to the lemmas, distinctly nerved; upper glume apex obtuse. Rachilla between glumes present erecto-patent. Lemmas differing in texture and (usually) in size, the lower one herbaceous to membranous, usually longer than the chartaceous upper one, usually dorsally depressed; first lemma apex obtuse. Anthers 0.55–0.75 mm long. Upper floret bisexual. Second lemma 0.8–1.1 mm long.

Distribution. Malesia: New Guinea: Irian Jaya (Idenburg River), Papua New Guinea (E. Highlands, Morobe, Central Province), Vanuatu.

Notes. Most similar to *Isachne clarkei*:

-. Blades base rounded. Glumes obscurely nerved. Florets not differing in texture, subequal to equal. Lower lemma not longitudinally depressed. Anthers *ca.* 0.5 mm long….. *Isachne clarkei*

-. Blades base truncate. Glumes distinctly nerved. Florets differing in texture, subequal to equal. Lower lemma longitudinally depressed. Anthers 0.55–0.75 mm long ..... *Isachne villosa*

23. ISACHNE VULCANICA Merr.

Isachne vulcanica Merr., Philipp. J. Sci. 5: 169 (1910). — *Isachne clementis* Merr. var. *vulcanica* (Merr.) Jansen, Reinwardtia 2: 282 (1953), *nom. superfl.* Lectotype: *BS 6975* (US *01117950*; iso: PNH, lost; B *10 0272954*, BO *1442610*, K *000290206*, L *1287246, -47*), designated here.

Plants perennial. Culms tufted to cushion-forming, 0.03–0.1 m long, nodes glabrous, without annular glands below the nodes. Sheaths hairy along the margins. Ligule hairs 1.4–2(–3) mm long. Blades lanceolate, 0.3–2.5 cm by 1.7–5 mm, base narrowed. Blades above smooth erecto-patent, glabrous, many-nerved, margins white cartilaginous, not undulate, smooth erecto-patent. Panicle contracted, 1.2–2 by 0.6–1 cm, branches appressed, 3–5, eglandular, smooth erecto-patent, lowermost branch 0.4–1 cm long, unbranched, with 3–5 spikelets. Pedicels eglandular, shorter than to subequal to the spikelet, smooth erecto-patent. Spikelets ellipsoid, not yawning, 1.7–1.8(–2) by 0.8–1 mm. Glumes shorter than to subequal to the lemmas, elliptic, *ca.* 1.7 by 1 mm, apex acute, obscurely 7-nerved, glabrous or distally with a few setae (*fide* Merrill), smooth erecto-patent. Rachilla between glumes present erecto-patent, between florets terete erecto-patent. Florets not differing in texture, subequal to equal, plano-convex. Lower floret male (*fide* Merrill). Lemmas equal, 1.5–1.8 mm long, chartaceous, obscurely nerved, glabrous or puberulous near the margin erecto-patent. First lemma not longitudinally depressed. Anthers *n.v*. Upper floret female (*fide* Merrill).

Distribution. Philippines (Negros Or.: Mount Canlaon).

Habitat. In the crater on bare slopes and debris washed down from the new cone, 1,800-2,100 m asl.

Collector's Notes. Dense tufts or mats a few to 50 cm in diam. Culms rigid, much branched below, internodes short. Leaves crowded. Panicles very dense, short, rigid, slightly or not all exserted, purple. Spikelets sometimes greenish.

Notes. Jansen's combination is superfluous being against the rule of priority. *Isachne clementis* is of 1917, *I. vulcanica* of 1910, and the first has priority as a specific epithet. I have seen only 3 rather poor collections.

NOMINA AD INQUIRENDA VEL MALESIAE EXCLUDENDA

1. **Isachne bsipiana** Veldk., *spec. nov*. Type: *BSIP 7857* (*Dennis*) (L *1287335*, holo; BSIP, K *000482988*).

Plants probably perennial. Culms probably geniculate, more than 0.35 m long, nodes glabrous, without annular glands. Sheaths hairy along the margins. Ligule hairs 1.2–1.5 mm long.

Blades linear-lanceolate, 4–8 cm by 3.5–6 mm, base rounded, margins white cartilaginous, not undulate, scaberulous erecto-patent, both sides smooth erecto-patent, glabrous, below with 7 or 9 inconspicuous main nerves. Panicle contracted, 5 –14.5 by 1–2 cm, branches appressed to erecto-patent, many, eglandular, scaberulous erecto-patent, lowermost branch 2.5–4.5 cm long, with 2 branches and 3-17 spikelets. Pedicels eglandular, scaberulous erecto-patent. Spikelets ellipsoid, not yawning, 1.8–2 by *ca.* 1 mm. Glumes sub-equal to slightly longer than the lemmas, elliptic, acute, obscurely nerved, 5-nerved, glabrous, smooth; lower glume 1.7–2 by *ca.* 1 mm,; upper glume *ca.* 1.7 by 1 mm. Rachilla between glumes present, between florets terete erecto-patent. Florets not differing in texture, subequal to equal. Lower floret plano-convex, bisexual. First lemma not longitudinally depressed, 1.3–1.5 mm long, apex obtuse, chartaceous, glabrous erecto-patent. Anthers *ca.* 0.8 mm long. Upper floret plano-convex, female. Second lemma 1.1–1.3 mm long, *ca.* 0.7 times as long as the first lemma, obtuse, sparsely puberulous at least near along the margin erecto-patent.

Distribution. Vanuatu: Guadalcanal, summit Mount Popomanatseu.

Habitat. Swampy mountain mist forest, on moss-covered water-saturated ground ion full sunlight, *ca.* 2,275 m asl.

Notes. With Clayton & Snow (2010) this keys out to *Isachne carolinensis* Ohwi, but it is quite different:

-. Blades base rounded, above glabrous, below margins smooth erecto-patent, white cartilaginous. Glumes glabrous, 5-nerved; upper glume *ca.* 1.7 mm long. Second lemma puberulous at least along the margin erecto-patent…….. …… *Isachne bsipiana*

-. Blades base narrowed, above pubescent, below scaberulous erecto-patent, margins not white cartilaginous. Glumes setose, 7-9-nerved; upper glume 2–2.2 mm long, 7-nerved. Second lemma glabrous erecto-patent ..... …….. *Isachne carolinensis*

2. ISACHNE CAROLINENSIS Ohwi

Isachne carolinensis Ohwi, Bot. Mag. (Tokyo) 55: 540 (1941). Type: *Hatusima 10878* (FU, holo; ? A), Carolines, Ponape.

Isachne firmula auct., non Buse.

Plants perennial. Culms geniculate, with stilt-roots at the decumbent nodes, flowering branches 0.1–0.3 m long, without annular glands below the glabrous to puberulous nodes. Sheaths hairy along the margins. Ligule hairs 1–1.5 mm long. Blades linear-lanceolate, 4–8 cm by 5–13 mm, base narrowed, margins not white cartilaginous, not undulate, scaberulous erecto-patent, above smooth erecto-patent, sparsely appressed pubescent, below scaberulous, glabrous, with 9-11 main nerves. Panicle contracted to lax, 3–8 by 1.5–4 cm, branches erecto-patent, 5 or more, eglandular, scaberulous erecto-patent, lowermost branch 1.5–3 cm long, with 0-2 branches and 3-12 spikelets. Pedicels eglandular, shorter to longer than the spikelet, scaberulous. Spikelets ellipsoid, yawning, 2–2.5 by *ca.* 1 mm. Glumes distinctly longer than the lemmas, elliptic, acute, obscurely 7- or 9-nerved, setose, smooth erecto-patent; lower glume 2–2.5 by *ca.* 1 mm; upper glume 2–2.2 by *ca.* 1 mm. Rachilla between glumes present erecto-patent, between florets terete erecto-patent. Florets not differing in texture, unequal in length. Lower floret plano-convex. First lemma not longitudinally depressed, 1.4–1.8 mm long, chartaceous, obscurely nerved, glabrous erecto-patent or puberulous near the margin erecto-patent. Anthers *n.v*. Upper floret plano-convex. Second lemma 1–1.6 mm long, 0.7-0.9 times as long as the first lemma, chartaceous, glabrous erecto-patent.

Distribution. Carolines, ? Vanuatu.

Habitat. Not recorded; *ca.* 780 m asl.

Notes. Collections from Ponape, Carolines (*Hosokawa 5666*; L *ex* TAI; and *Stone 5471*; L *ex* GUAM) key out to this with Clayton & Snow (2010). No Vanuatu specimens were seen.

3. ISACHNE COMMELINIFOLIA Warb.

Isachne commelinifolia Warb., Fedde's Repert. Spec. Nov. Regni Veg. 16: 352 (1920). Type: *Warburg s.n. Oct 1887* (B *100272968*, holo).

Isachne myosotis Nees var. *nudiglumis* Hack., Bull. Herb. Boissier 7: 721 (1899). – *Isachne firmula* Buse var. *nudiglumis* (Hack.) Rendle *in* Forbes & Hemsl., J. Linn. Soc., Bot. 36: 322 (1904). – *Isachne kunthiana* (Steud.) Nees *ex* Miq. var. *nudiglumis* (Hack.) T. Koyama, J. Jap. Bot. 37: 236 (1962). –*W Isachne kunthiana* (Steud.) Nees *ex* Miq. subsp. *nudiglumis* (Hack.) T. Koyama, Fl. Jap. & Neighb. Reg.: 511(1987). Type: *Tashiro s.n.* (? *206*)(W, holo; TI, US).

Isachne repens Keng, Sunyatsenia 1: 129 (1933). Type: *C. L. Tso 21292* (SYS, holo).

Plants perennial. Culms geniculate, rooting in decumbent nodes, 0.1–0.25 m long, without annular glands below the glabrous to puberulous nodes. Sheaths hairy along the margins. Ligule

hairs 1.5−2.5 mm long. Blades ovate-oblong to -lanceolate, 4−8 cm by 11−20 mm, base nearly pseudo-petiolate to rounded, margins white cartilaginous, not undulate, scaberulous erecto-patent; on both sides smooth to scaberulous erecto-patent, glabrous or sparsely appressed pubescent, below with 9 or 11 main nerves. Panicle lax, 3−5 by 1.5−2.5 cm, branches erecto-patent, *ca.* 7, subterete or subangular, eglandular, smooth or scaberulous erecto-patent, lowermost branch 1−2.5 cm long, with 0-5 branches, with 12-19 spikelets. Pedicels eglandular, shorter to longer than the spikelets, smooth or scaberulous. Spikelets ellipsoid, not yawning, *ca.* 2 by 1.5 mm. Glumes shorter than to subequal to the lemmas, oblong, apex acute, puberulous and distally setose, smooth; lower glume *ca.* 2.2 by 1 mm, 7-nerved; upper glume 1.8−2 by *ca.* 1 mm, 9-nerved. Rachilla between glumes present erecto-patent, between florets terete erecto-patent. Florets not differing in texture, subequal to equal, plano-convex. First lemma not longitudinally depressed, 1.7−1.8 mm long, obscurely nerved, glabrous erecto-patent. Second lemma 1.6−1.7 mm long, *ca.* 0.9 times as long as the first lemma, glabrous erecto-patent.

Distribution. S. China (Fujian, Guangdong, Guangxi, Hainan), Taiwan, southern Ryukyus.

Habitat. Moist places, secondary thickets, forests, 0-200 m asl.

Notes. *Isachne commelinifolia* Warb. (1920: 352) was described as having 1.4 mm long spikelets, which from the type in B is an error for *ca.* 2 mm. Iskandar & Veldkamp (2004: 175) regarded this as a synonym of *I. myosotis*, but it is reinstated her.

Isachne commelinifolia is most similar to *I. kunthiana* and *I. schmidtii*:

-. Panicle 0.3−0.8 cm wide, lowermost branch with 2-7 spikelets. Spikelets 2.4−3.5 mm long. Glumes distinctly longer than the lemmas, apex acuminate. Lemmas puberulous near the margin erecto-patent. — Thailand, Malesia, Vanuatu ……. *Isachne schmidtii*

-. Panicle 1.5−2.5 cm wide, branches lowermost branch with 12-19 spikelets. Spikelets *ca.* 2 mm long. Glumes shorter than to subequal to the lemmas, apex acute. Lemmas glabrous erecto-patent. — China, Taiwan, Ryukyus ……. ……. *Isachne commelinifolia*

-. Blades below with 9 or 11 main nerves, base nearly pseudo-petiolate to rounded. Panicle branches *ca.* 7. Spikelets not yawning. Glumes shorter than to subequal to the lemmas; upper glume *ca.* 1 mm wide, 9-nerved. Lemmas glabrous erecto-patent. — China, Taiwan, southern Ryukyus.....*Isachne commelinifolia*

-. Blades below with 7 main nerves, base subcordate. Panicle branches 0-5. Spikelets yawning at maturity. Glumes distinctly longer than the lemmas; upper glume *ca.* 1.4 mm wide, 5-nerved. Lemmas puberulous erecto-patent. — Sri Lanka, S. India…….……... ……..…….....*Isachne kunthiana*

4. ISACHNE KUNTHIANA (Wight & Arn. *ex* Steud.) Nees *ex* Miq.

Isachne kunthiana (Wight & Arn. *ex* Steud.) Nees *ex* Miq., Fl. Ned. Ind. 3: 460 (1857), *pro comb.*; Wight & Arn. *ex* Thwaites, Enum. Pl. Zeyl.: 362 (1864), isonym. — *Panicum kunthianum* Wight & Arn. *ex* Steud., Syn. Pl. Glumac. 1: 96 (1854). Lectotype: *Herb. Wight 1659* (P; iso: E *00393788, -89, -90*, K, U *1500907*), designated by Henrard (1940: 465).

Plants perennial, said to be occasionally annual. Culms tufted to geniculate, rooting in decumbent nodes, 0.15−0.5(−1.2) m long, without annular glands below the glabrous or pubescent nodes. Sheaths hairy at least along the margins. Ligule hairs 1−2.7 mm long. Blades ovate-oblong, 1−11 cm by 3−10(−28) mm, base subcordate, smooth erecto-patent, margins white cartilaginous, not undulate, scaberulous erecto-patent or pectinate, above puberulous to pubescent, below pubescent, with 7 main nerves. Panicle loosely contracted to lax, rarely densely contracted (see note), 1−14 by (0.5−)1−5 cm, branches erecto-patent to patent or appressed (see note), 0-5, angular, eglandular, smooth erecto-patent, scaberulous erecto-patent, or sparsely pilose (see note), lowermost branch 0.8−4(−6) cm long, with 0-2 branches, with 3−9 (−25) spikelets. Pedicels eglandular, shorter to longer than the spikelet, smooth erecto-patent. Spikelets ellipsoid, yawning at maturity, (1.7−)2−3.5 by 1−3 mm. Glumes distinctly longer than the lemmas, glumes elliptic to oblong, apex acute to acuminate, glabrous or distally setose, smooth erecto-patent; lower glume 2−3.2 by 1−1.6 mm, distinctly 5- or 7-nerved; upper glume (1.8−)2.4−2.8(−3.5) by *ca.* 1.4 mm, distinctly 5-nerved. Rachilla between glumes present erecto-patent, between florets terete erecto-patent. Florets not differing in texture, subequal to equal. Lower floret plano-convex, bisexual or female (*fide* Seneratna, 1956: 108). First lemma not longitudinally depressed, 1.5−2.2(−2.5) mm long, chartaceous, obscurely nerved, puberulous erecto-patent. Anthers 0.7−1.2(−1.6) mm long. Upper floret plano-convex, female or bisexual (*fide* Kabeer & Nair, 2009: 331). Second lemma 1.4−1.9(−2.5)

mm long, 0.85–1 times as long as the first lemma, chartaceous, puberulous erecto-patent. 2n = 20, 60.

Distribution. Sri Lanka, S. India (Karnataka, S. Kerala, Tamil Nadu).

Habitat. Shaded places in forest, montane scrub ("shola"), stream banks, marshy places, paths, 1,250-1,870(2,600) m asl.

Notes. This combination has been much misapplied. It seems to be restricted to South India and Sri Lanka. In Southeast Asia to Vanuatu the name mainly pertains to *Isachne schmidtii* Hack. and in China to *I. commelinifolia* Warb. (as *I. repens* Keng).

For Java there is only Blume collection in L made in the 1820's from Cibeureum, Gedeh. Although it was discussed by Henrard (1940: 466) and is annotated by Jansen and Monod de Froideville, it was not included in the Flora of Java. Miquel made the combination, but the description and specimen cited (*Zollinger 271*) also pertain to *I. minutula.*

Davidse (1994) distinguished three varieties in Sri Lanka. Prakash & Jain (1984: 30) reduced *I. elatior* Hook. *f.* and var. *latifolia* Hook. *f.* (1896, "1897"): 22) to var. *kunthiana.*

Ballard 1105, Clayton 5539 (L) from Sri Lanka differ from var. *kunthiana* by the densely, spike-like (*ca.* 0.5 cm diam.) inflorescences with appressed setose branches. They were found at 1,800 and 2,200 m asl.

5. PANICUM BATAVICUM Steud.

Panicum batavicum Steud., Syn. Pl. Glumac. 1: 96 (1854). – *Isachne javana* Nees *ex* Miq., Fl. Ned. Ind. 3: 462 (1857), *nom. superfl.* Type: (P, holo), "Java". Miquel (1857) cited *Junghuhn s.n.* (not found in L, U).

Notes. Mez (*msc.*: 98), Chase (1936: 410), and Henrard (1940: 472) have suggested that this might be a form of *Isachne globosa.*

6. PANICUM VENTRICOSUM Lam.

Panicum ventricosum Lam., Tabl. Encycl. 1: 173 (1791). – *Isachne ventricosa* (Lam.) Döll *in* Mart., Fl. Bras. 2, 2: 274, t. 35 (1877), *pro comb*. Type: *Sonnerat*, India (P-LAM, *00740914*).

= *Isachne* sp.

Notes. *Panicum ventricosum* is based on material by Sonnerat from "India". Yet, Döll who made the combination in *Isachne* for Brazilian specimens stated to have seen original material. However, later authors have called the Brazilian collections *I. salzmannii* (Trin. *ex* Steud.) Renvoize. Renvoize made this combination without reference to Lamarck or Döll. From a scan on the internet of an isotype (not holo?) this appears to belong to *Isachne* sect. *Albentes*¸ but I refrain to identify such material. Yet, because this is such an early name, its identity ought to be checked. It is only casually mentioned by Hooker *f*. (1896: 59, *sub P. flexuosum* Retz.), and not at all by Bor (1960) or Prakash & Jain (1984). The *Panicum curvatum* L. mentioned by Lamarck is the basionym of *Sacciolepis curvata* (L.) Chase and is very different from the type specimen of *P. ventricosum*.

INDEX TO SPECIMENS EXAMINED

alb = *Isachne albens* Trin.
arf = *Isachne arfakensis* Ohwi
bra = *Isachne brassii* Hitchc.
cla = *Isachne clarkei* Hook. *f.*
cle = *Isachne clementis* Merr.
con = *Isachne confusa* Ohwi
dia = *Isachne diabolica* Ohwi
glo = *Isachne globosa* (Thunb.) Kuntze
kin = *Isachne kinabaluensis* Merr.
lan = *Isachne langkawiensis* Jansen
min = *Isachne minutula* Kunth
myo = *Isachne myosotis* Nees
pan = *Isachne pangerangensis* Zoll. & Moritzi
pul = *Isachne pulchella* Roth
sch = *Isachne schmidtii* Hack.
str = *Isachne stricta* Elmer
sur = *Isachne surgens* Jansen
syl = *Isachne sylvestris* Ridl.
tra = *Isachne trachycaulis* Ohwi
vil = *Isachne villosa* (Hitchc.) Reeder
vul = *Isachne vulcanica* Merr.

Adelbert 475: alb – Adj. Landbouwc. Pamekasan 5: min – Aet 655: sch – Aet & Idjan 479: sch -- Afriastini 26 Sep 1980: glo; Bl-60: alb; Bl-73: pan; 284: pan; 1809: pan; 1821: pan; 1822: pan; 1824: alb; 1447: alb; 1823: myo; 1830: pan – Alston 14387: pul; 15029: alb; 15039: alb; 16143: cla; 16729: myo – Amdjah 18: glo – Anang 10-a: cla – Anderson 180: kin; 310: alb – Anta 28: con; 1308: sch – ANU 463: myo; 681 (Walker): sp; 2093 (Flenley): cla – Arens & Wurth 23 Apr 1916: myo –Argent 29044: myo; 92412: arf – Argent & Coppins 1124: alb, kin – Argent & Gaerlan 92232: myo; 92254: alb – Asdat 133: glo. Backer Jan 1924: alb; Mar 1920: pan; 12 Jun 1927: cla; 85: glo; 260: alb; 455: alb; 492: alb; 648: glo; 1140: glo; 1679: min; 1852: min; 1875: glo; 2022: glo; 2073: glo; 2402: alb; 3089: glo; 3253: alb; 3602: pan; 3678: alb; 3706: alb; 3707: pan; 4382: glo; 5048: glo; 5069: alb; 5334: alb; 5525: pan; 5575: pan; 5739: alb; 5877: glo; 6042:

glo; 6798: pan; 6893: glo; 7021: glo; 7418: glo; 7933: min; 8340: cla; 9267: alb; 9275: alb; 9669: pan; 9789: pan; 9884: alb; 9915: glo; 10543: alb; 10563: glo; 10630: alb; 11533: cla; 12010: min; 12188: glo; 12276: alb; 12373: glo; 12545: alb; 12563: alb; 12775: pan; 12776: pan; 12798: alb; 13281: pan; 13313: cla; 13511: glo; 13545: pan; 13579: pan; 13701: alb; 13342 (ST I. montana): cla; 14353: glo; 14735: alb; 15895 (ST I. montana): cla; 16170: alb; 17176: glo; 17663: glo; 19286: glo; 20102 (T): min; 20190: min; 20615: min; 21480: glo; 21620: pan; 21636: pan; 21675: pan; 21698: pan; 21722: alb; 22088: glo; 22274: pan; 22299: pan; 22285: alb; 22289: alb; 22321; pan; 22365: alb; 23205: glo; 23974: alb; 24087: glo; 25120: cla; 25331: pan; 25841: alb; 26156: alb; 26268: pul; 26458: glo; 26504: glo; 27057: min; 27365: min; 27709: min; 30216: glo; 30303: cla; 30303-bis: myo; 30310: pan; 30892: pan; 30902: alb; 31171: glo; 31293: alb; 31364: alb; 32035: glo; 32054: glo; 32386: pul; 36748: pan; 36831: glo; 36836: glo; 36940: glo; 37082: glo − Backer & Bremekamp 9823: pan − Backer & Posthumus 15 Apr 1927: cla − Backer & Skottsberg 7 Jun 1929: pan − Bakhuizen van den Brink 99: glo; 772: min; 938: glo; 1073: pul; 1556: alb; 1666: glo; 1670: glo; 1742: alb; 3141: glo; 3409: sch; 3640: alb; 3651: min; 3658: pul; 4140: glo; 4165: alb; 5163: glo; 5418: pul − Balansa 18 Sep 1883: glo; 11 Sep 1885: glo; 25 Jan 1886: pan; 21 Sep 1886: glo; 16 Nov 1886: alb; 25 Nov 1886: alb / pan; 1081: glo; 1620: glo; 1672: glo; 1674: glo; 1675: glo; 1676: min; 1677: min − Barber 264: con − Beaman 10361: kin − Beccari PB 70: glo; PB 927: con; PS 158: alb; PS 198: pan; PS 601: min − Benecke 23 Mar 1891 (T): cla − Beumée A 657: pan − Bianchi Aug 1838: alb / pan − Blake 4515: glo; 14466: glo; 14466: glo; 22898: glo − Boerlage Jul 1888: alb − Bor S-28: glo; 17835: glo − Boden Kloss Camp viii--ix 1/1913: str − Booy 436: kin; 559: lan − Borssum Waalkes 689: glo − Bowers 805: alb − Bremekamp 12 Jul 1919: pan − Brass 1018 (T): bra; 3405: (sch); 4132 (T): vil; 4642: myo; 4807: alb; 4817: arf; 4871: arf; 5854: con; 7242 (T): str; 7364: bra; 7602 (T): glo; 7832: con; 8239: glo; 8550: kin; 8733: con; 9556: myo; 9675: glo; 10740: myo; 10743: alb; 11542: alb; 11559: alb; 11583: myo; 11823: alb; 12370: vil; 12475: vil; 13201: myo; 14055: bra; 22285: myo; 22642: alb; 23647: myo; 23939: myo; 24589: alb; 28182: con; 28816: sch; 30783: alb − Bremekamp Oct 1916 (ST I. montana): cla − Brinkman 140: glo; 261: pan; 601: glo − Brooke 8269: con; 8315: con; 8550: kin; 8733: con; 9099: sch; 9680: con; 10602: con − Brown 6129: glo − Bruggeman 81: alb; 800: cla − BS 195 (Merrill): (myo); 404 (−): min; 560 (Piper): min; 1390 (−): min; 1654 (C.B. Robinson): min; 1765 (Ramos): myo; 3201 (Merrill): cla; 4248 (Mearns): alb; 4269 (Mearns): myo; 4372 (Merrill): alb / cla; 4431 (Merrill): myo; 4483 (Mearns): alb; 4489 (Merrill) (LT): myo; 4522 (Merrill): cla; 4523 (Merrill): cla; 4541 (Merrill): alb; 4544 (Merrill): alb; 4545 (Merrill) (ST): myo; 4619 (Merrill): alb; 4709 (Merrill): (myo); 4870 (−): min; 5019 (Merrill): cla; 5135 (Merrill): myo; 5853 (Ramos): myo; 6203 (Merrill) (ST): var. halconensis; 6221 (Merrill) ST): var. halconensis; 6569 (Merrill): alb; 6975 (Merrill) (T): vul; 6977 (Merrill): myo; 6978 (Merrill): myo; 7029 (Robinson): myo (acc. to *det.* in P); 7673 (Merrill): myo; 7674 (Merrill): myo; 8870 (McGregor): alb; 9680 (Merrill): myo − B 9748 (Robinson): myo; 9770 (Merrill): myo; 11660 (Merrill): myo; 11685 (Merrill): myo; 11736 (Merrill): alb; 11745 (Merrill): alb; 12595 (Fénix): cla; 12230 (Ramos) (V: I. manilensis Mez, *ined.*): glo; 13196 (Loher): glo; 14196 (McGregor): myo; 14680 (Merrill): cla; 17344 (Clemens): myo; 18690 (McGregor): min; 23645 (Ramos): myo; 24987 (Fénix): pul; 27029 (Ramos): myo; 28708 (Ramos & Edaño): myo; 31686 (J.K. Santos): alb; 37745 (Ramos & Edaño); myo; 40195 (Ramos & Edaño) myo; 40251 (Ramos & Edaño): cla; 40329 (Ramos & Edaño): alb; 40330 (Ramos & Edaño): alb; 40361 (Ramos & Edaño); cla; 41221 (Ramos): pul; 44946 (Ramos & Edaño): alb; 44949 (Ramos & Edaño): myo; 42969 (Ramos): sch; 46990 (Ramos & Edaño): min; 44991 (Ramos & Edaño): alb; 79302 (Edaño): myo − Bünnemeijer 798: alb; 858: pan; 859: alb; 949: cle; 950: pan; 1525: con; 1569: glo; 1577 (T): con; 1658: con; 1753: glo / kin; 2247: sch; 2293: sch; 2599: alb; 2803: alb; 3264: min; 4650: alb; 4785: alb; 5188: alb; 5530: pan; 5751: kin; 5754: cle; 6833: glo; 7395: pul; 8739: dia; 8776: alb; 9232: alb; 9328: alb; 9470: alb; 9819: alb; 9951: alb; 10047: alb; 10176: alb; 10275: alb; 10363: pan; 10431: pan; 10440: alb; 10539: alb; 11268 (T): sur; 11945: sur; 11975: ? sch; 12207: sur; 12258: myo; 12268 (T): sur − Burck 320: al b − Burkill 839: kin; 840: alb − Burley *et al.* 635: alb − Burtt 11555: sch − Burtt & Martin 5463: kin; 5500; con; 5501: alb − Burtt & Stone 11868: kin − Buurman van Vreeden 127: min − Buwalda 3044: min; 3262: min; 4191: min; 4192: min; 4498: min; 5794: bra; 8002: glo; 8036: glo − Buysman 127: cla − BW 3315 (Rappard): myo; 3036 (Versteegh): alb; 7358 (Versteegh): glo; 7700 (Schram): arf; 11338 (Vink): con.

Carr 12362: myo; 12412: myo; 12971: myo; 14271: vil; 14565: vil; 14756: myo − Carrick 849: con; 3812: con − Carrick & Enoch 44: con; 178: myo − Clason D 199: alb − Clason-Laarman 180: alb − Clemens 312: myo; 507: min; 1316: myo; 1707: glo; 4105: str; 4592: arf; 4860: cla; 4956: cla; 5301-bis: myo; 5402: str; 5856: (vil);

5924: cla; 6097: (myo); 6258-bis: alb; 6892: cla; 6999: arf; 7461: cla; 7612: arf; 7840: arf; 8961: cla; 9208: (str); 9209: (arf); 9239: str; 9244: cla; 9302: vil; 9565: kin; 10503 (T): cle; 10704 (T): kin; 20095: kin; 20283: pul; 21318: min; 21318: pul; 27076: kin; 27077: cle; 27986: cle; 28164: cla; 28389: alb; 29576: cla; 29693: alb; 30269: kin; 30270 (T): cla; 30283: min; 30436: glo; 30440: alb; 30696: alb; 31688: cle; 32014: kin; 32237: kin; 32326: alb; 32611: cla; 32612: alb; 32655: alb; 32849: cle; 33731: alb; 33736: alb; 33806 = 32849: cle; 33841: alb; 33900: cle; 34048: alb; 34121: cla; 34310: kin; 34410: alb; 40155: kin; 40175-a: cla; 40274: alb; 40885: (myo); 41714: (vil); 50053: cla; 50074: alb; 50916: cle; 51038: kin; 51042: pul; 51291: alb; 51292: alb; 51632: alb − Co 3152: str − Coert 21 Jan 1927: pan; M 67: pan; M 68: pan; M 73: alb; 21: min; 152: pan; 356: pan; 588: glo; 593: pan; 594: pan; 603: pan; 1179: pan; 1200: cla − Comanov 1027: glo − Conn 4330: glo − Corner 12 Sep 1937: cle; 14 Sep 1937: kin − Craven 2809: myo -- Craven & Schodde 338: alb; 1337: alb; 1367: alb; 1375: myo − Cruttwell 1261; myo; 1267: arf -- Cuming 946 (T): myo; 947, error for 946; 2288 (T): glo.

d'Alleizette April 1908: glo − Danser 5739: alb; 5807: pan; 5837: alb; 5900: alb; 6464: glo; 6512: pan; 6773: glo − Darbyshire 329: myo; 1145: myo − Darbyshire & Hoogland 7950: min; Hoogland 7983: cla − Davidse 7491: glo; 7590: glo; 7808: glo; 7821: glo; 8569: glo; 8925: glo − Davis 69121: kin; 69246: alb; 69371: min; 69385: min − De la Savinière 165: min; 1585: glo − De Leeuw 17: con − De Mol 147: glo − De Vogel 5928: con; 5982: con; 12622: min; 14300: kin; 15092: kin; 15854: kin; 16835: alb; 19787: min − De Vogel & Vermeulen 7231: cla − De Voogd 2515: min; 2541: min; 2754: alb in L; but pan in BO − De Vore & Hoover 355: myo; 358 (T): myo − De Wilde & De Wilde-Duyfjes 12622: min; 13073: kin; 13278: kin; 13320: pan; 14300: kin; 15092: kin; 15172: pan; 15187: kin; 156964-B: kin; 15854: kin; 16398: alb; 16652: kin; 16835: alb; 18429: alb; 18642: kin; 19119: kin − De Wilde & Vervoort 475: myo − De Wit 4126: alb; 4131: alb – Deden 143: alb – Denker 110: alb – Djamhari 297: pan − Docters van Leeuwen 10787: myo; 13132: pan; 13143: pan − Docters van Leeuwen-Reijnvaan 2260: pan; 2571: glo; 2576: alb; 2588: alb; 3279: sch; 8861: pan; 11416: alb; 12371: pan; 12374: cla; 12380: pan; 12458: pan; 13342: pan; 13351: alb − Dorgelo Gram. 293: ? alb; 3285: glo − Duistermaat HDS 382: kin; HDS 385: alb; HDS 225: min − Duistermaat *et al.* S 158: glo; S 165: sch − Dunselman 8: pul; 36: min.

Edeling Jul 1764: glo; Sep 1864: glo; Mar 1865: glo; Jun 1865: glo − Edwards *et al.* 4073: myo; 4338: cla − Elbert 134: pan; 135: pan; 1202: cla; 1644: cla − Elmer 5821: myo; 6486 (T): myo; 10425 (T): str; 11578 (T): alb; 22228: myo; 22250: alb; 22674: myo; 22684: alb − Elsener H 66: sch − Endert 1687: pul; 3111: sch; 3248: sch; 4373: alb; 4552: sch − Engler 5167: alb; 5188: pan; 5192: pan − Enoch 197: glo − Erlanson 5190: glo − Ernst 7 Apr 1906 (V: I. ernstii Mez, *ined.*): myo; 195: alb; 508: pan; 509: pan − Everaarts 326: cla − Eyma 164: cla; 240: pan; 272: pan; 1265: pul; 1373: myo; 1508: myo; 3464: glo; 3739: min; 4004: glo; 4013: con; 4046: glo; 4118: bra.

FB 4405 (Merritt) (T): myo; 15936 (−): myo; 16181 (−): cla; 16837 (Curran): myo; 16841 (Curran) (LT): myo; 16182 (Curran *et al.*): var. halconensis − Feilding Sep 1892: alb, glo – Floyd & Hoogland 4005: cla − FMS 6533 (Cubitt): kin; 27667 (Jaamat): kin; 19812 (Ibrahim): glo; 27654 (Jaamat): kin; 30831 (Symington): kin; 36123 (Symington): kin; 32213 (Symington): kin; 32239 (Symington): pan; 36557 (Symington): kin; 42885 (Strugnell & Sow): kin; 45953 (Strugnell & Tachum): kin; 45964 (Strugnell & Tachum): kin; 46878 (Symington): con − Forbes 2418: alb − Forster 16: myo; 39: cla; 45: kin; 53: cle − Fosberg 37253: glo; 37826: glo; 37991: glo; 43780: con − Fox 8/10/1899: alb − Frey Wyssling 113: pan − FRI 1474 (Ng): kin; 6233 (Ng): kin; 12356 (Whitmore): kin; 15580 (Whitmore): kin; 20931 (Ng): kin; 30944 (Wong): con; 34281 (Wong): con; 34210 (Saw): con; 50109 (Sam): alb; 52341 (Ezzawanis *et al.*): kin; 52575 (Ezzawanis *et al.*): kin; 52710 (Rafidah): con; 53309 (Julius *et al.*): alb; 53826 (Lim *et al.*): kin; 55811 (Yao *et al.*): kin; 55856 (Yao *et al.*): kin; 56350 (Lim et a.): kin; 65312 (Yao *et al.*): kin; 70452 (Kiew et al): alb − Funke Oct. 1915: glo.

Gabriel & Budimon 205: pul − Gibbs 2583: con; 4069: kin; 4113: alb − Gilliland Nov 1962: alb; 5140: alb; 5155: alb; 5160: glo; 5166: con; 5240: glo; 5294: alb; 12247: sch – Gisius 5: pan; 12: pan; 103: cla; 104: pan − Gjellerup 33: bra − Goetghebeur & Coppejans 4007: myo − Goetghebeur & Vyverman 6214: cla; 6180: arf; 6697: glo − Gould 13207: glo − Griffith 6567: (pan, *fide* Mez *msc.* 127); 6571: glo.

Hackenberg 2: glo − Hagedoorn & Jeswiet 20 Oct 1913: pan − Hallier f. 12 Jul 1895: glo; 20 Dec 1895: glo; 29 in Mez *msc. sub I. muricata*; 2706: myo; 623-a: glo; 623-b: glo; 623-c: glo; 654: pan; 1484: con; 2897 (T): cla; 4267-a: myo − Ham 29: con − Hartley 10675: myo; 11677: myo − Haviland 1408: cle; 1922: glo − Helfer KD 6563: (myo) − Hendrian *et al.*: cla − Hennipman 5662: str; 6162: pul − Heyne 1814: glo − Hiepko & Schultze-Motel 657: alb; 1004: myo; 1319: alb –Hildebrand O. 247: pan − Hochreutiner 276: pan; 914: pan; 915: pan; 1009: alb; 1033: alb; 1040:

pan; 1067: sch; 1481: alb; 1482: glo; 2112 (V): pan; 2066: alb; 2116 (V): pan; 2460: pan – Höft 2436: arf; 2447: arf; 3279: alb — Hohenacker 202: min – Hoogland 3314: myo; 9220: myo; 9440: arf — Hoogland & Pullen 5358: cla; 5684: alb; 5858: myo – Hoogland & Schodde 6745: cla; 6842: myo; 7145: myo; 7648: myo – Hoover *et al.* 30755: alb; 30656: alb – Horst 79: cla — Hullett 16 Jul 1894: alb; 4 Jan 1894: glo; 867 (V: I. clavigera Mez *msc.* 114): kin – Hume 7359: glo; 7650: glo.

Ichlas 165: pan.

Jaag 990: min; 1025: myo; 1528: cla; 1639: cla / myo – Jacobs 16 Feb 1968: alb; 2 Sep 1968: cle; 2 Oct 1973: arf; 4426: alb; 5505: con; 5722: cle; 5723: kin; 7096: myo; 7101: alb; 7147: (myo); 7267: cle; 7417: alb; 7442: alb; 7505: alb; 8249: alb – Jacobson Dec 1916: cla – Jaheri 145: pul; 1588: sch – James & Damas 622: myo – James *et al.* 600: alb – Jarisse 15523-24: min – Jermy 5141: myo; 14439: kin – Jeswiet 27 Mar 1920: pan; 27 May 1920: cla; 52: pan; 53: pan; 165: pan; 384: pan; 584: cla; 655: glo; 804: pan; 882: pan; 999: pan; 1001: pan; 1273: pan; 1537: pan – Jgisil 17: alb – Junghuhn 1917 (T): pan – Johansson *et al.* 312: myo; 345: bra – Johns 10046: arf – Johns *et al.* 9183: arf – Jumali & Heaslett 2038: con.

Kalkman 4002: con; 4311: alb; 4847: arf – Kanehira & Hatusima 13571: myo; 13588 (T): arf; 13726: (arf); 13755: (arf); 14019 (T): arf; 14221: bra – Kartonegoro 18: pan – Kartonego *et al.* 663: cla – Kasim 5006: con – Kato *et al.* B-5455: myo; C-5877: cla; C-6909: myo; C-7654: alb – Kawakami & Shimada Oct. 1913: pul – Keng *et al.* CAL 10: sch – Kern 7378: alb; 7753: alb; 7795: pan – Kessler 352: con – Khee 18 Jun 1986: con -- Kiew 4061: kin; 5356: alb – Kjellberg 420: min; 726: bra; 3003: myo – Kleinhoonte 38: pan; 319: pan; 336: pan – KLU 1787 (Chin): lan; 9137 (Soepadmo): con; 11605 (Stone): con; 14348 (Stone): lan; 18542 (Achong & Wong): con – Kneucker Gram. Exsicc. 609 (Merrill): min; 809 (Merrill): myo; 810 (Merrill): vul – Kobus 27 Jan 1899: pan; 304: pan – Koelz 26505: glo – Koens 20 Mar 1915: min – Koens 2: glo; 482: pan; 511: alb – Kofman 218: alb – Kooper 10 Jul 1932: glo; 24 Dec 1932: alb; 25 Dec 1932: pan; Oct 1932: alb; 1832-a: pan; 3002: cla – Koorders 15084: glo; 15108: alb; 17271: cla; 19784: cla; 19786: ama / myo; 19786: cla; 19792: alb; 19796: min; 19808: cla; 23066: min; 26743: alb; 27760: cla; 31392: glo; 32012: alb; 32564: ?myo; 36353: glo; 37594: pan; 37605 (T): cla; 40526: alb; 40571: pan; 40572: glo; 40585: glo; 40744: pan; 40956: pan; 41239: glo; 42452: pan; 42557: cla; 42688: pan; 43441: pan; 43536: pan; 43748: pan; 43838: pan; 44043: pan; 44044: pan; 44222: alb –Kostermans 2367: arf; 28550: glo —Kramer 116: alb – K'tung 6411: glo – Kunstler 97: glo.

LAE 50318 (Stevens): myo; 52018 (Foreman & Stevens): alb; 54531 (Lelean & Stevens): ? str; 56736 (Kerenga & Landsberg): glo; 60759 (Croft *et al.*): myo; 60799 (Croft *et al.*): alb; 61520 (Croft): myo; 61987 (Croft *et al.*): cla; 63427 (Clunie et al): myo; 67697 (Barker): myo; 67698 (Barker): myo; 67704 (Barker): alb; 78591 (Gideon *et al.*): arf – Lam 51: alb; 1057: bra; 1373: myo; 2223: alb – Lancaster 7: glo – Landbouwleraar Poerworedjo 26 Nov 1919: min – Landbouwopzichter Toendjoeng 15: glo – Larsen & Larsen 34511: glo – Larsen *et al.* 32168: glo — Latz 6277: min – Lazarides 8132: glo; 8137: glo; 8815: min; 9202: min – Ledermann 10444 (V): alb – Leefmans 344: alb; 165: min – Leenart 49: Lieftinck 21: alb – Lörzing 48 (V): pan; 85: alb; 413 (ST): cla; 418: cla; 851: alb;; 1727: alb; 1888: alb; 2001: alb; 2108: pan; 2207: alb; 2416: pan; 2448: pan; 4241: pul; 4593: alb; 6543: glo; 6606: alb; 7181: alb; 7296: min; 7864: glo; 8541: glo; 8552: alb; 8762: alb; 9381: pul; 9897: glo; 11065: glo; 12657: pul; 12918: min; 13454 (T): gla; 14332: min; 14498: glo; 14676: alb; 14677: min; 15509: glo; 15779: alb; 16186: alb; 16277: alb; 16278: cle – Loher 1683: myo – Lütjeharms 3820: min; 4331: sch; 5260: min – Lwin 257: glo.

MacGregor 50: vil – Mahyar *et al.* 375: myo – Mangen 422: myo; 1079: alb; 1186: alb – Marsden *et al.* 108: arf; 109: arf; 53: myo; 181: arf – Mason 9628: glo; 9832: glo – Massart 565: pan – Mat-Salleh 3361: con – Maxwell 82-7: sch – Mayr 109-a: myo; 476: cla – McKee 7903: glo; 9954: glo; 1198: myo – Mehra 120: glo – Meijer 263: glo; 352: glo; 1606: pan; 1656: pan; 1672: pan; 1968: sch; 2779: cla; 3846: pan; 4872: alb; 5388: con; 9639: cla; 9867: cla; 10419: alb; 11118: glo – Meijer & Kern 1161: glo; 5743: min; 5978: min; 6017: glo – Meijer Drees 377: sch; 625: myo – Merrill 211: myo; 268: myo; 4294: myo; Philip. Pl. 123: min; 195: myo; 585: vul; 589: myo; 599: myo; 1467: alb – Möller 6 Aug 1897: cla – Mogea 2388: cla; 2432: cla – Moi 178: arf – Monod de Froideville 820: glo; 821: glo; 925: min; 1286: min; 1877: min; 1925: glo – Motley 105: glo; 191: con; 319: glo – Mousset Apr 1913: alb; 565: pan; 578: pan; 719 (T): cla –Murata *et al.* B-127: pul; B-4546: glo; J-680: alb; T-15885: glo.

Nagamasu 3611: cle; 3612: kin; 4195: pan – Nauta 6: glo – Nedi (& Idjan) 14: glo; 395: min – Neervoort 28: alb – NGBF 1066 (Argent): con – NGF 1118 (Smith): myo; 4724 (Womersley): vil; 4730 (Womersley): myo; 4921 (Womersley *et al.*): vil; 5908 (Womersley & Van Royen): myo; 6157 (Womersley & Floyd): myo; 6348 (McKee & Floyd): alb; 6363 (Floyd & McKee): vil; 6883

(Womersley & Simmonds): con; 6979 (Womersley & Millar): arf; 9311 (Womersley): con; 9354 (Womersley): con; 9367 (Womersley): con; 9496 (Womersley): cla; 9500 (Womersley): alb; 11100 (Womersley): alb; 15988 (Millar & Van Royen): alb; 16021 (Van Royen): cla; 17534 (Van Royen & Millar): alb; 17504 (Van Royen & Millar): myo; 18060 (Van Royen): (arf); 18360 (Van Royen): arf; 18545 (Millar & Holttum): myo; 20692 (Henty): con; 23932 (Coode & Katik): myo; 24592 (Womersley): arf; 25095 (Gillison): myo; 25098 (Gillison): arf; 27166 (Henty): alb; 29093 (Henty): alb; 30303 (Ridsdale): myo; 32932 (Coode & Katik): myo; 34701 (Croft & Lelean): myo; 34881 (Croft): myo; 38855 (Henty & Streimann): glo; 39072 (Streimann & Kairo): myo; 40377 (Coode): alb; 45032 (Streimann *et al.*): con; 45592 (Foreman & Wardle): arf; 47633 (Streimann & Kairo): myo − Nooteboom 4604: alb − Nooteboom & Chai 2029: kin − NSM 382 (Ohwi): glo − NSW 891 (Coveny): glo; 3554 (Coveny): glo.

Okada *et al.* 6159: kin − Ophof (& De Wit) 4016: glo.

Pancho 10883: cla − Pancho & Hernaez 4884: myo; 10940: min − Paymans 1328: (arf) − Petlo 2: glo − Philipson 10290: glo − Pierrot 246: glo − Pleyte 225: pan; 969: con; 1135: con −Ploem 126: alb; 127: glo; 173: alb; 262: glo; 366: alb – PNH 9402 (Paniza): min; 11041 (Edaño): min; 18045 (Edaño): myo; 18193 (Mendoza): myo; 21993 (Edaño): myo; 39571 (Steiner): alb; 72461 (Banlugan *et al.*): myo; 76729 (Mendoza & Buwaya): myo − Polak 1 Jul 1949: con; 6: glo; 79: glo; 80: kin; 227: con; 290: con; 429: sch − Poore H 199: kin; 594: kin − Posthumus 11 Dec 1925: alb; 155, *p.p.*: pan; 345: myo; 3831: myo − Powell 2459: alb − PPI 535 (Stone *et al.*): myo; 1114 (Reynoso *et al.*): myo; 3136 (Madulid *et al.*): myo; 6487 (Stone et al): vul; 8816 (Barbon *et al.*): alb; 9736 (Argent & Gaerlan): myo; 9758 (Argent & Gaerlan): alb; 9830 (Stone *et al.*): myo; 19176 (Gaerlan & Fernando): cla; 20044 (Argent *et al.*) : myo − Pulle 221: alb; 359: alb; 583: alb; 1164: myo; 3017: pan − Pullen 1759: glo; 2730: myo; 5372: arf; 6110: arf; 6164: arf; 7939: alb −Purseglove 4150: alb; 4881: con.

Raap 642: pan; 934: alb − Rachmat 563: glo − Rahmat si Toroes 1738: syl − Rant 6 Apr 1927: cla − Rappard 5: pan; 149: alb; 299: cla − Raynal 16709: cla; 16811: min; 16885: glo − Reijnvaan 151: pan − Reksodihardjo 25: alb; 215: myo; 605: myo − Rensch 235: cla; 346: alb − Richards 1476: cla; 1624: kin; 1791: kin; 2061: kin; 2410: cla − Ridley 29 Feb 1896 (V: I. malayca Mez, *ined.*): sch; 8/2/1915: alb; 10/2/1915: alb; 13/2/1915: alb; 23/12/1920: pul; 8/2/1921: alb; 15/2/1921: alb; 55: sch; 73: sch; 80: sylvestris; 1242: glo; 1604: pul; 5770: (sch); 6110: (sch); 7265 (T): syl; 5777: (sch); 9034: con; 12045: alb; 12200: pul; 14874: (myo); 15931: alb − Robbins 24/25 Oct 1975: cla; 174: glo; 254: (arf); 265: (arf); 1270: (arf) − Rodatz & Klink 177(V: I. ledermannii Mez *msc.* 102): alb − Rothert 6 Apr 1909: pan – Roxburgh *s.n.* (BM 000812641): pul − RSNB 991 (Chew *et al.*): cle; 994 (Chew *et al.*): kin; 1307 (Chew *et al.*): cla; 4724 (Chew & Corner): alb; 5999 (Chew & Corner): alb − Rutten-Kooistra 50: glo − Ruttner 78: glo; 289: cla; 291: pan.

S 7661 (-): con; 12427 (Gilliland): sch; 17292 (Chai & Paie): con; 21266 (Ashton): con; 55972 (Yii): myo; 57379 (Banyeng *et al.*): glo; 88355 (Yahud *et al.*): kin − SAN 20283 (Meijer): cle; 43620: con; 43620 (FB & Patrick): con; 69757 (Fox): con; 85552 (BCS *et al.*): con; 111326 (Madani & Ismael: con; 140760 (Kilip & Majawat): alb; 151252 (Laegaard *et al.*): alb; 151257 (Laegaard *et al.*): alb; 151260 (Laegaard *et al.*): kin; 151262 (Laegaard *et al.*): cla; 151282 (Laegaard et a.): alb − Sands 18: glo; 43: alb; 140: pan; 433: min − Sands & Johns 5420: con − Sands *et al.* 2226: arf; 2437: myo; 6734: myo − Santos 4476: min; 4635: min; 4904: pul; 5141: min; 5371: alb; 5372: alb; 5374: myo; 5387: alb; 5518: myo; 5780: alb; 5796: alb; 5597: myo; 5904: alb; 5941: alb; 6024: pul; 6636: pul; 6994: myo; 7001: myo; 7073: myo; 7089: myo; 7191: myo; 7201: alb; 7343: alb; 7347: alb; 7503: myo; 7541: alb; 7580: alb; 7631-a: myo; 7819: alb; 7825: cla; 7827: alb; 7832: alb; 7833: alb; 7834: myo; 7835: alb; 7838: alb; 7842: alb; 7843e: myo; 7853: alb; 7856: myo; 7857: alb; 7869: alb; 7827: alb; 7830: alb; 7833: alb; 7835: alb; 7838: alb; 7842: alb; 7852: alb; 7874: alb; 7989: alb; 7991: alb; 7997: alb; 7999: alb; 8043: myo; 8044: cla; 8072: myo; 8148: min; 8250: ? myo − Sapiin 2098: pan; 2213: pan; 28 Aug 1896: pan − Saunders 656: myo − Sauveur & Sinke 2617: myo − Scheffer 29 May 1871: alb; b173-c: alb − Schiffner 1488: alb; 1493: pan; 1496: alb – Schlechter 14054 (T): myo − Schmutz 3238: pan; 3441: pan; 3543: myo; 3637: myo; 5102: cla; 5531: pan; 5571: cla; 5212: myo; 5214: pan; 5606: pan; 5649: cla; 6007: ? myo; 6941: pan; 6945: myo − Schodde 1426: myo; 2053: arf; 3009: myo − Schröter 30 Dec 1898: pan; 17 Jan 1927: pan; 15/17 Apr 1927: pan; 17 May 1927: pan; 18 Jun 1927: cla; 19 Jun 1927: pan; 38: cla − Schultze 217: syntype I. ledermannii Mez *msc.* 102 = ? bra -- Seimund 7 Jan. 1921: glo − SF 4433 (Nur): glo; 4638 (Burkill): glo; 4664 (Burkill): glo; 6406 (Burkill): glo; 7767 (Burkill & Holttum): alb; 7896 (Haniff & Nur): kin; 12887 (−): alb; 13813 (Burkill & Haniff): glo; 17423 (Holttum): lan; 17927 (Henderson): alb; 19410 (Henderson): pul; 22903 (Henderson): glo; 22965 (Henderson): con; 23526 (Holttum): kin; 28851 (Symington & Kiah):

cle; 28852 (Symington & Kiah): kin; 28945 (Henderson): lan; 29054 (Henderson): lan; 29913 (Corner): glo; 31817 (Moysey & Kiah): alb; 34598 (Spare): glo; 37843 (Corner): lan; 37845 (Corner): lan; 37959 (Nauen) (T): lan; 37983 (Corner): glo; 38079 (Nauen): glo; 38205 (Henderson): glo; 38219 (Henderson): sch; 38247 (Sinclair): sch; 40561 (Sinclair): sch − Shah 19: glo; 1481: kin − Shah & Samsuri 3603: kin – Shah *et al.* 2079: sch − Sibuea 5960: glo − Sidiyasa & Ambriansyah 2490: sch − Siew 14: kin −Sinclair 5081: glo; 77: sch; 66: kin; 9952: alb − Sinclair *et al.* 9066: kin; 9083: cle − Smith 456: cle; 460: alb − Smitinand 2326: kin; 8149: con; 8182: cle; 28329: con − SNP 2746 (Phillips & Argent): kin; 5763 (Nais *et al.*): kin – Sohns 22: glo; 60: pul − Soewarta 95: alb -- Sterly 80-318: arf − Stone 5584: alb; 8355: alb; 12032: cle; 12033: kin; 12379: kin − Stone & Sidek 12271: alb − Stone *et al.* 14519: alb − Stoutjesdijk 3: alb − Street & Manner 123: alb; 152: cla; 154: myo − Stresemann 260: alb − Sumadijaya 710: glo; 355: *et al.* 654: pan − Sunarti & Hamzah 18 Feb 1989: glo − Surbeck 205: cle; 552: alb − Synge 407: kin.

't Hart Oct. 1956: bra − Takeuchi 8837: alb; 10448: cla; 10476: alb; 10684: myo; 10938: myo -- Tanaka & Shimada 11101: glo − Teijsmann 8038: con − Thomsen 632: bra − Ting & Shih 943: glo − Tjitrosoedirdjo 38: glo − Toxopeus 28 Feb 1922: min – Tsang 30620: glo.

Uji 3966: min; 3991: con − Uji & Amir 2524: min − UNESCO (Kostermans *et al.*) 283: alb.

Van Balgooy 3156: myo; 57: alb; 14: myo; 13: con; 24: myo; 4998: alb − Van Breemen 24 May 1925: pan; 33: pan; 46: cla; 56: pan; 66: alb − Van Daalen (Pringgo Atmodjo) 384: glo − Van der Meer Mohr 8: alb; 117: pul − Van der Meer & Den Hoed 944: glo; 980: glo − Van der Pijl 545: pan − Van der Veen 27: pan; 87: cla − Van Dillewijn 2 Oct 1928: pan − Van Harreveld 19: glo; 62: pan − Van Niel 4021: con − Van Ooststroom 13105: alb; 13296: alb; 13314: alb; 13357: pan; 13781: glo; 13931: glo; 13943: pan − Van Royen 4489: con; 11205: myo − Van Royen & Sleumer 5827: con; 8179: myo − Van Ryckevoorsel 2: pan; 6: alb − Van Slooten 333: pan − Van Steenis 444: glo; 1258: glo; 1515: pul; 1575: pul; 1743: pul; 2039: pan; 2993: alb; 3602: alb; 3604: alb; 3721: alb; 4099: pan; 4111: pan; 4118: alb; 4333: pan; 4347: pan; 4776: pan; 4828: alb; 4939: pan; 6397: alb; 6890: pan; 7025: pan; 7423: alb; 7862: pan; 8300: kin; 8448: kin; 8608: kin; 8673: kin; 8674: cle; 8696: kin; 9030: kin; 9034: kin; 9657: kin; 10352: myo; 10867: myo; 11026: cla in L; myo in BO; 11049: cla; 18092: glo; 11842: cla; 12119: cla; 12553: glo − Van Strien 15: alb −Van Valkenburg 150: alb − Veearts Palembang 4: glo – Veearts Sibolga 11: glo; 19 (T): tra; 22: glo − Veldkamp 6016: pan; 6018: pan; 6678: arf; 7158: pul; 8257: sch − Veldkamp & Kuduk 8346: arf − Veldkamp & Stevens 5476: arf; 5480: myo; 5555: myo; 5797: alb − Vermeulen 849: con − Verheijen 2332: myo; 2847: ? cla; 3336: pan; 3417: pan; 4466: min −Versteeg 1194: bra; 1613: alb; 1620: bra − Vidal Rev. Pl. Vasc. Filip. 1970: myo − Vink 16323: myo; 16471: alb; 16945: arf; 17538: arf – Volkens 143: pan.

Walker *et al.* 5772: glo − Wallich Cat. 8656D: glo − Walsh 52: pan; 63: cla − Wanner 20 Aug 1975: pan; 29 Sep 1975: pan; Iter Coburg. 1194: alb; 2604: pan; 2609: (pan, *fide* Mez *msc.* 127); 2616: pan; 3575: pan; 3582: pan; 3604: pan; 11203: alb; 11209: (pan, *fide* Mez *msc.* 127); 11188: (pan, *fide* Mez *msc.* 127; alb p. 130); 12717: myo; 15715 (V: I. podogyne Mez *msc.* 101: ? pul − Weber 1062: min − Whitford 264: myo − Wichura 2250: pan; 2255: alb − Widjaja 2106: myo; 3510: cla − Widjaja & Hamzah 3038: cla − Widjaja *et al.* 6466: cla; 6492: alb − Winkler (Hans) 1527: alb − Winkler (Hubert) 3373: pul; (V): sch − Wiriosopoetro 9: pan − Wisse 502: pan − Wong 2386: kin − Wong & Wyatt-Smith 37: kin; 88: cle − Woods 2668-A: myo; 2735: cla; 3140: myo − Worthington 12460: alb; 28510: alb − Wray 13: alb; 779: glo − Wyatt-Smith CH 19: kin.

Yates 81: myo − Yoshida 140: alb − Yoshida 1214: cla.

Zainudin & Salleh 4051: glo − Zollinger 271: min; 880 (T): alb; 1607: glo; 1917 (T): pan.

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REFERENCES

ALSTON, A. H. G. 1931. *Isachne kunthiana* W. & A. In: TRIMEN, H. *A Handbook to the Flora of Ceylon 6*. Dulau & Co., London. Suppl.: 316. http://www.biodiversitylibrary.org/item/42265#page/328/mode/1up

BACKER, C. A. 1914a. Javaansche voedergrassen VII. *Teysmannia* 24: 633−644.

BACKER, C. A. 1914b. Javaansche voedergrassen VIII ('VII'). *Teysmannia* 24:721−729.
BACKER, C. A. 1914c. Javaansche voedergrassen IX. *Teysmannia* 25: 81−88.
BACKER, C. A. 1914d. Javaansche voedergrassen X. *Teysmannia* 25: 209−215.
BACKER, C. A. 1914e. Javaansche voedergrassen XI. *Teysmannia* 25: 298−303, t. 25.
BACKER, C. A. 1928. *Handboek voor de Flora van Java* 2: 133−137. Ruygrock & Co. Batavia.
BALANSA, B. 1890. Catalogue des Graminées de l'Indo-chine française. *J. Bot. (Morot)* 4: 137–138. http://www.biodiversitylibrary.org/item/22204#page/145/mode/1up
BEAMAN, J. H. & BEAMAN, R. S. 1998. *The plants of Mount Kinabalu 3*. Natural History Publications (Borneo), Kota Kinabalu. Pp. 160−161.
BENTHAM, G. 1849. Gramineae. In: HOOKER, W. J. *Niger Flora.* Baillière, London, Paris & Madrid. Pp:559–560. http://www.biodiversitylibrary.org/item/10535#page/ 570/mode/1up
BENTHAM, G. 1881. Notes on *Gramineae. J. Linn. Soc., Bot.* 19: 93–94. http://www.biodiversitylibrary.orgitem/114946#page/86/mode/1up
BOR, N. L. 1949a. Two new grasses from India. *Kew Bull.* 4: 69–70.
BOR, N. L. 1949b. Two new species of Isachne from India. *Kew Bull.* 4: 95–96.
BOR, N. L. 1949c. A new species of Isachne from India. *Kew Bull.* 4: 115.
BOR, N. L. 1960. *The Grasses of Burma, Ceylon, India and Pakistan.* Ser. Monogr. Pure & Appl. Biol., Biol. Pp: 547, 576–583.
BOSSER, J. 1969. Graminées des pâturages et des cultures Madagascar. *Mém. ORSTOM* 35: 271–273.
BROWN, R. 1810. *Prodromus Florae Novae Hollandiae* 1: 196. Johnson & Soc., London. http://www.biodiversitylibrary.org/item/21871#page/64/mode/1up
BURKILL, I. H. 1935. *A Dictionary of the Economic Products of the Peninsular Malaysia*: 1253. London.
BUSE, L. H. 1854. Gramineae. In: MIQUEL, F. A. W. *Plantae Junghuhnianae* 3 (Feb 1854) preprint: 38–39; (Aug. 1854) 378–379. Sythoff, Leiden; Laballière, Paris. http://www.biodiversitylibrary.org/item/9100#page/382/mode/1up
CAMUS, A. ('E. G. Camus & A. Camus'). 1922. Graminées. In: GAGNEPAIN, F. *Flore Générale de l'Indo-Chine* 7: 409–418. Masson & Cie, Paris. http://www.biodiversitylibrary.org/item/98336#page/439/mode/1up
CHASE, A. 1936. Gramineae. In: HOCHREUTINER, B. P. G. Plantae hochreutineranae 4, 1. *Candollea* 6: 409–410.
CHASE, A. 1943. Papuan grasses collected by L. J. Brass, III. *J. Arnold Arbor.* 24: 85–86, t. 4. http://www.biodiversitylibrary.org/item/33600#page/91/mode/1up
CHASE, A. & NILES, C. D. 1962. *Index to Grass Species* 2: 295. Hall & Co., Boston (Mass.).
CHEN, S[-L.]. & PHILLIPS, S. M. 2006. *Flora of China* 22: 554–560. Science Press, Beijing; Missouri Botanical Garden Press, St. Louis. http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=132780
CHÉVALIER, A. 1934. Étude sur les prairies de l'Ouest africain. *Rev. Bot. Appl. Agric. Trop.* 14: 40–41.
CHUNG, I.-C. 1965. *Korean Grasses* I.-C. Chung, Chicago. Pp. 144–145.
CLAYTON, W. D. 1989. Isachne. In: LAUNERT, E. & POPE, G.V. *Flora Zambesiaca* 10(3): 193−195. Managing Committee on behalf of the contributors to Flora Zambesiaca, London.
CLAYTON, W. D. & SNOW, N. 2010. A Key to Pacific Grasses. Royal Botanic Gardens, Kew. Pp. 76–78.
CORDEMOY, E. J. DE. 1895. *Flore de l'Île de la Réunion (Phanérogames, Cryptogames vasculaires, Muscinées) avec l'indication des propriétés économiques & industrielles des plantes*: 115. Lechevalier, Paris. http://www.biodiversitylibrary.org/item/70623#page/147/mode/1up
DAVIDSE, G. 1994. *Isachne*, In: DASSANAYAKE, M. S. (Ed.) *A Revised Handbook to the Flora of Ceylon* 8. Amerind Publishing Co., New Delhi. Pp. 264–272.
DECAISNE, J. 1834. Herbarii timorensis: 24. Roret, Paris (reprint of Description d'un herbier de l'île de Timor. *Nouv. Ann. Mus. Hist. Nat.* 3, 3:352). http://gallica.bnf.fr/ark:/12148/bpt6k98408m/f25.item.r=Decaisne%20Timor
DÖLL, J. C. 1877. Gramineae II. In: DE MARTIUS, C. F. P., *Flora Brasiliensis* 2, 2: 273. Fleischer. Leipzig. http://www.biodiversitylibrary.org\item/9650#page/306/mode/1up
DRUCE, G. C. Second supplement to Botanical Society and Exchange Club report for 1916: 648.
DRURY, H. 1869. Hand-book of the Indian flora 3: 584–585. Higginbotham and Co., Madras; Richardson & Co., Cornhill. http://www.biodiversitylibrary.org/item/118583#page/594/mode/1up
DUISTERMAAT, H. 2005. Field guide to the grasses of Singapore. *Gard. Bull. Singapore* 57, *Suppl.*: 80—83.
DUVALL, M. R., DAVIS, J. I., CLARK, L. G., NOLL, J. D., GOLDMAN, D. H. & SA´NCHEZ-KEN, J. G. 2007. Phylogeny of the grasses (*Poaceae*) revisited. *Aliso* 23: 237–247.
EDGAR, E. & CONNOR, H. E. 2010. Flora of New Zealand 5. *Gramineae*, 2nd edition. Manaaki Whenua Press, Lincoln. Pp. 596–598, t. 23.
ELMER, A. D. E. 1908. Three score of new plants.

Leafl. Philipp. Bot. 2: 463–464.
ELMER, A. D. E. 1915. Two hundred twenty six new species. *Leafl. Philipp. Bot.* 7: 2676–2678.
FANG, W.-Z. 1984. Notes on the genus *Isachne* R. Br. of China. *Acta Phytotax. Sin.* 22: 306–311.
FISCHER, C. E. C. 1928. *Flora of the Presidency of Madras* 8. West Newman & Co, Adlard & Son, London. Pp. 1794–1797.
FOSBERG, F. R. & SACHET, M. 1984 ("1982"). Micronesian Poaceae: critical and distributional notes. *Micronesica* 18: 51–56.
FOSBERG, F. R. & SACHET, M. 1987. A geographical checklist of Micronesian Monocotyledoneae. *Micronesica* 20: 45.
GAUDICHAUD, C. 1829. *Panicum*, L. In: FREYCINET, L. DE. *Voyage autour du monde. l'Uranie. Botanique*: 410. Pillet-Ainé, Paris. http://www.biodiversitylibrary.org/item/98627#page/426/mode/1up
GILLILAND, H. B. 1971. Grasses of Malaya. *A Revised Flora of Malaya* 3. Lim Bian Han, Singapore. Pp. 119–125.
GLASSMAN, S. F. 1952. The flora of Ponape. *Bull. Bernice P. Bishop Mus.* 209: 128–130, t. 20, 21.
GRIFFITH, W. 1851. *Notulae ad Plantas Asiaticas* 3: 41–43, t. 148, f. 2; t. 149, f. 206. C.A. Serrao, Calcutta.
HACKEL, E. 1887. Gramineae. In: ENGLER, A. & PRANTL, K., *Die natürlichen Pflanzenfamilien* II, 2: 35. Engelmann, Leipzig. http://bibdigital.rjb.csic.es/ing/Libro.php?Libro=1636
HACKEL, E. 1889. Gramineae. In: BÜTTNER, R. Neue Arten von Guinea, dem Kongo und dem Quango. *Verh. Bot. Vereins Prov. Brandenburg* 31: 69–70. http://www.biodiversitylibrary.org/item/104936#page/158/mode/1up
HACKEL, E. 1891. *Gramineae*, In: SCOTT ELLIOTT, G. F., New and little-known Madagascar plants. *J. Linn. Soc., London, Bot.* 29: 65. http://www.biodiversitylibrary.org/item/8386#page/73/mode/1up
HACKEL, E. 1899. Enumeratio graminum Japoniae. *Bull. Herb. Boissier* 7: 721. http://www.biodiversitylibrary.org/item/104952#page/769/mode/1up
HACKEL, E. 1901a. Neue Gräser. *Oesterr. Bot. Z.* 51: 459–460.
HACKEL, E. 1901b ('1902'). Gramineae. In: SCHMIDT, E. J. Flora of Koh Chang. *Bot. Tidsskr.* 24: 96–97.
HACKEL, E. 1906a ('1905'). Notes on Philippine grasses. *Publ. Gov. Lab. Philipp.* 35: 79–80.
HACKEL, E. 1906b. Notes on Philippine Gramineae, II. *Philipp. J. Sci.* 1, *Suppl.* 4: 268. http://www.biodiversitylibrary.org/item/1112#page/338/mode/1up
HACKEL, E. 1908. Notes on Philippine grasses, III. *Philipp. J. Sci.* 3: 167. http://www.biodiversitylibrary.org/item/1114#page/189/mode/1up
HASSKARL, J. K. 1844. *Catalogus Plantarum in Horto Botanico Bogoriensi Cultarum*: 16. http://www.biodiversitylibrary.org/item/151076#page/24/mode/1up
HATUSIMA, S. & KOYAMA, T. 1956. An addition to the knowledge of the Monocotyledones from Liukiu. *J. Jap. Bot.* 31: 235–238, t. 1.
HAYATA, B. 1918. *Icones Plantarum Formosanarum* 7. Government of Formosa, Taihoku. Pp. 55–58, t. 29.
HENRARD, J. T. 1940. Notes on the nomenclature of some grasses. *Blumea* 3: 463–473.
HENRARD, J. T. 1941. Notes on the nomenclature of some grasses II. *Blumea* 4: 530.
HENTY, E. E. 1969. A manual of the grasses of New Guinea. *Bot. Bull. Lae* 1: 112–114.
HITCHCOCK, A. S. 1920. The North American species of *Isachne*. *Contr. U.S. Natl. Herb.* 22: 115–121. http://www.biodiversitylibrary.org/item/13782#page/166/mode/1up
HITCHCOCK, A. S. 1929. Papuan grasses collected by L.J. Brass. *Proc. Linnean Soc. New S. Wales* 54: 146.
HITCHCOCK, A. S. 1936. Botanical results of the Archbold Expedition. No. 1. *Brittonia* 2: 123.
HONDA, M. 1924. Revisio graminum Japoniae IV. *Bot. Mag. (Tokyo)* 38: 58–59.
HONDA, M. 1930. Monographia *Poacearum japonicarum*. *Bambusoideis* exclusis. *J. Fac. Sci. Imp. Univ. Tokyo* III, 3: 258–259, 277–282.
HOOKER, J. D. 1896 ('1897'). *The Flora of British India* 7. L. Reeve & Co. Pp. 21–26. Brook nr. Ashford. http://www.biodiversitylibrary.org/item/13820#page/250/mode/1up
HOSOKAWA, T. 1934. Materials of the botanical research towards the flora of Micronesia. *Trans. Nat. Hist. Soc. Formosa* 24: 200.
HUBBARD, C. E. 1939. Mauritius grasses. *Bull. Misc. Inf.* 1939: 654–655.
HUBBARD, C. E. 1949. Notes on African grasses: XXIII. *Kew Bull.* 4: 360.
ISKANDAR, E. A. P. & VELDKAMP, J. F. 2004. A revision of Malesian *Isachne* sect. *Isachne* (Gramineae, Panicoideae, Isachneae). *Reinwardtia* 12: 159–179. file://fs-smb-018.ad.naturalis.nl/homedir/Jan-Frits.Veldkamp/Downloads/64-132-2-PB%20(1).pdf
JANSEN, P. 1953. Notes on Malaysian grasses – I. *Reinwardtia* 2: 279–292.
KENG, P.-C. 1965. Revision of the genus *Isachne* R. Br. (Gramineae) of China. *Acta Phytotax. Sin.* 10: 6–24.
KENG, Y.-L. 1933. Two grasses. *Sunyatsenia* 1: 129–130, t. 33.
KOYAMA, T. 1962. Nomenclatorial remarks on some grasses. *J. Jap. Bot.* 37: 236.

KOYAMA, T. 1976. Gramineae. In: WALKER, E. H. *Flora of Okinawa and the Southern Ryukyu Islands*: 203. Smithsonian Institution Press. Washington (DC).

KOYAMA, T. 1987. *Grasses of Japan and Its Neighboring Regions Kodansha, Tokyo*. Pp. 125–136, 511.

KUNTZE, O. 1891. *Revisio Generum Plantarum* 2: 778. Felix, Leipzig, *etc.* http://www.biodiversitylibrary.org/item/7554#page/404/mode/1up

LAMARCK, J. B. A. P. MONNET DE. 1791. *Tableau Encyclopédique et Méthodique, Botanique* 1 Panckoucke, Paris. Pp. 173–174. http://www.biodiversitylibrary.org/item/6086#page/193/mode/1up

LAMARCK, J. B. A. P. MONNET DE. 1798. *Encyclopédie Méthodique* 4. Agasse, Paris. Pp. 743–745. http://bibdigital.rjb.csic.es/ing/Libro.php?Libro= 269

LIU, H-Y. 2000. *Isachne*. In: HSU, C.-C. (Ed.). *Flora of Taiwan* 2nd edision, 5. Editorial Committee of the Flora of Taiwan, National Taiwan University, Taipei. Pp. 446–453.

MERRILL, E. D. 1906. An enumeration of Philippine Gramineae with keys to genera and species. *Philipp. J. Sci.* 1, *Suppl.* 5: 349–350. http://www.biodiversitylibrary.org/item/1112#page/420/mode/1up

MERRILL, E. D. 1910. New or noteworthy Philippine plants, VIII. *Philip. J. Sci., Bot.* 5: 168–170. http://www.biodiversitylibrary.org/item/1115#page/187/mode/1up

MERRILL, E. D. 1917. Contributions to our knowledge of the flora of Borneo. *J. Straits Branch Roy. Asiat. Soc.* 76: 76–77.

MERRILL, E. D. 1923. An enumeration of Philippine flowering plants 1: 58. Bureau of Science. Manila. http://www.biodiversitylibrary.org/item/104421#page/70/mode/1up

MERRILL, E. D. & MERRITT, M. L. 1910. The flora of Mount Pulog (concluded). *Philipp. J. Sci.* 5: 327. http://www.biodiversitylibrary.org/item/1115#page/348/mode/1up

MEZ, C. *s.d.* Gramineae tribus Paniceae. 1750 *pp msc*. Original in B, photocopies in *e.g.* BRI, K, L, US, University Library, Wageningen.

MIQUEL, F. A. W. 1857. *Flora van Nederlandsch Indië* 3. Van der Post, Amsterdam; Van der Post Jr., Utrecht; Fleischer, Leipzig. Pp. : 459–463. http://www.biodiversitylibrary.org/item/1863#page/469/mode/1up

MONOD DE FROIDEVILLE, C. 1968. Poaceae (Gramineae) In: BACKER, C. A. & BAKHUIZEN VAN DEN BRINK *f.*, R. C. *Flora of Java* 3 Wolters-Noordhoff, Groningen. Pp. 580–582.

MORITZI, A. 1846. Systematische Verzeichniss: 102. Moritzi. Solothurn.

NAIK, V. N. & PATUNKAR, O. 1976 (‘1973’). Two new grasses from Marathwada. *Bull. Bot. Surv. India* 15: 157 159.

NEES, C. G. D. 1850. Gramineae herbarii lindleyani. *Hooker's J. Bot. Misc.* 2: 98. http://www.biodiversitylibrary.org/item/6320#page/103/mode/1up

NOLTIE, H. J. 2000. *Flora of Bhutan* 3 (2). Royal Botanic Garden, Edinburgh/Royal Government of Bhutan. Pp. 743 747.

OHWI, J. 1935. Symbolae ad floram Asiae orientalis, 11. *Acta Phytotax. Geobot.* 4: 30–31.

OHWI, J. 1941. Grasses of Micronesia. *Bot. Mag. Tokyo* 50: 541.

OHWI, J. 1942. Gramina japonica III. *Acta Phytotax. Geobot.* 11: 54–55.

OHWI, J. 1942. The Kanehira-Hatusima 1940 collection of New Guinea plants. VI. Gramineae. *Bot. Mag. (Tokyo)* 56: 4–5.

OHWI, J. 1947. New or noteworthy grasses from Asia. *Bull. Tokyo Sci. Mus.* 18: 14.

OHWI, J. 1960. Flora of Japan. Smithsonian Institution, Washington (D.C.). Pp. 186 – 187.

PARHAM, J. W. 1979. Poaceae. In: SMITH, A. C. *Flora Vitiensis Nova* 1. Pacific Tropical Botanic Garden, Lawai. Pp. 374–365, t. 78 C—E.

PETER, A. 1931. Flora von Deutsch-Ostafrika. *Fedde’s Repert. Spec. Nov. Regni Veg., Beih.* 40: 164.

PHILLIPS, S. M. 1995. Poaceae (Gramineae). In: I. HEDBERG & EDWARDS, S. (Eds.). *Flora of Ethiopia and Eritrea* 7: 283. National Herbarium, Addis Ababa; Department of Systematic Botany, Uppsala.

PILGER, R. 1940. Gramineae III. Unterfamilie Panicoideae, In: ENGLER, A. & PRANTL, K. *Nat. Pfl.-Fam.*, 2nd edition, 14e. Engelmann, Leipzig. Pp. 85–88.

POIRET, J. L. M. 1810. In: LAMARCK, J. B. A. P. MONNET DE. Encyclopédie méthodique, Supplément 1: 257. Agasse, Paris. http://www.biodiversitylibrary.org/item/104113#page/285/mode/1up

POIRET, J. L. M. 1813. In: LAMARCK J. B. A. P. MONNET DE. *Encyclopédie Méthodique*. Supplément 3: 185. http://www.biodiversitylibrary.org/item/104525#page/195/mode/1up

PRAKASH, V. & JAIN, S. K. 1984. Poaceae: Tribe – Isachneae. *Fasc. Fl. India* 14: 7–42.

PRAKASH, V. & JAIN, S. K. 1987. On the phytogeography of the tribe Isachneae (Poaceae). *J. Indian Soc. Bot.* 66: 107–115.

PRESL, J. S. 1830. In: PRESL, C. B. Reliquiae haenkeanae 1: 310. J.G. Calve, Prague. http://www.biodiversitylibrary.org/item/10047#page/326/mode/1up

RASPAIL, F. V. 1825. Classification générale des Graminées, seconde partie. *Ann. Sci. Nat.* 5: 299. http://www.biodiversitylibrary.org/item/19865#page/293/mode/1up

REEDER, J. R. 1948. The Gramineae-Panicoideae

of New Guinea. *J. Arnold. Arbor.* 29: 308 – 316. http:www.biodiversitylibrary.org/item/33605#page/343/mode/1up

RENDLE, A. B. 1904. Gramineae. In: FORBES, F. B. & HEMSLEY, W. B. An enumeration of all the plants known from China proper, *etc. J. Linn. Soc. London, Bot.* 36: 322. http://www.biodiversitylibrary.org/item/8401#page/349/mode/1up

RENDLE, A. B. 1909. Gramineae. In: GIBBS, L. S. A contribution to the montane flora of Fiji (including cryptogams), with ecological notes. *J. Linn. Soc. Bot.* 39: 181–182. http://www.biodiversitylibrary.org/item/8404#page/208/mode/1up

RENVOIZE, S. A. 1984. New combinations of grasses from Bahia. *Kew Bull.* 39: 184.

RENVOIZE, S. A. 1986. A new *Isachne* (Gramineae) from Brazil. *Kew Bull.* 42: 929–930.

RIDLEY, H. N. 1905. New and little known Malayan plants. Series II. *J. Straits Branch Roy. Asiat. Soc.* 44: 206–207.

RIDLEY, H. N. 1907. *Materials for a Flora of the Malayan Peninsula* 3. Methodist, Singapore. Pp. 127–130.

RIDLEY, H. N. 1915. The botany of Gunong Tahan Pahang. *J. Fed. Malay States Mus.* 6: 196.

RIDLEY, H. N. 1916. Report of the botany of the Wollaston Expedition to Dutch New Guinea, 1912–13. *Trans. Linn. Soc., London II, 9, Bot.*: 247–248.

RIDLEY, H. N. 1920. New and rare species of Malayan plants *J. Straits Branch Roy. Asiat. Soc.* 82: 203.

RIDLEY, H. N. 1925. *The Flora of the Malay Peninsula* 5. Reeve & Co, London. Pp. 236–239.

ROEMER, J. J. & SCHULTES, J. A. 1817. *Systema Vegetabilium* 2. J.G. Cotta, Stuttgart. : 475–476. http://www.biodiversitylibrary.org/item/15268#page/266/mode/1up

ROBYNS, W. 1932. Contribution à l'étude des Graminées du Congo Belge et du Ruanda-Urundi II. – Panicées. *Bull. Jard. Bot. Brux.* 9: 199–201.

ROBYNS, W. 1934. Flore agrostologique de Congo belge et du Ruanda-Urundi. II. Panicées: 364–370, t. 54. Goemaere, Brussels.

ROTH, A. W. 1821. *Novae Plantarum Species*. Vogler, Halberstad. Pp. 57–59.http://www.biodiversitylibrary.org/item/41813#page/61/mode/1up

SÁNCHEZ-KEN, J. G. & CLARK, L. G. 2007. Phylogenetic relationships within the Centothecoideae + Panicoideae clade (Poaceae) based on ndhF and rpl16 intron sequences and structural data. *Aliso* 23: 487–502.

SÁNCHEZ-KEN, J. G. & CLARK, L. G. 2010. Phylogeny and a new tribal classification of the Panicoideae *s.l.* (Poaceae) based on plastid and nuclear sequence data and structural data. *Amer. J. Bot.* 97: 1732–1748.

SÁNCHEZ-KEN, J. G., CLARK, L. G., KELLOGG, E. A. & KAY, E. E. 2007. Reinstatement and emendation of subfamily Micrairoideae (Poaceae). *Syst. Bot.* 32: 71–80.

SANTOS, J. V. 1943. New grasses from the Philippines and South India. *J. Washington Acad. Sci.* 33: 140. t. 3.

SCHUMANN, K. & LAUTERBACH, K. 1900. *Nachträge zur Flora der deutschen Schutzgebiete in der Südsee*: 57. Borntraeger, Leipzig. http://www.biodiversitylibrary.org/item/14420#page/58/mode/1up

SENERATNA, S. D. J. E. 1956. The grasses of Ceylon: 107–110. Government Press, Peradeniya.

SIMON, B. K. 1993. A key to Australian grasses, ed. 2: 125–126. Queensland Department of Primary Industries, Brisbane.

SORENG, R. J., PETERSON, P. M., ROMASCHENKO, K., DAVIDSE, G., ZULOAGA, F.O., JUDZIEWICZ, E. J., FILGUEIRAS, T. S., DAVIS, J. I. & MORRONE, O. 2015. A worldwide phylogenetic classification of the Poaceae (Gramineae). *J. Syst. Evol.* 53: 117–137.

STAPF, O. 1914. Gramineae, In: GIBBS, L. S. A contribution to the flora and plant formations of Mount Kinabalu and the highlands of British North Borneo. *J. Linn. Soc. London. Bot.* 42: 185–191. http://www.biodiversitylibrary.org/item/8407#page/192/mode/1up

STEUDEL, E. G. 1854. Synopsis plantarum glumacearum. Pars I. Gramineae: 38, 79, 94–98. Metzler, Stuttgart. http://www.biodiversitylibrary.org/item/9723#page/ 97/mode/1up

TATEOKA, T. 1976. Gramineae. In: WALKER, E. H. *Flora of Okinawa and the Southern Ryukyu Islands*: 203. Smithsonian Institution Press. Washington (DC).

THIELE, F. L. 1834. Einige Notate über Gräser. *Linnaea* 9: 307.

THWAITES, G. H. K. 1864. Enumeratio plantarum zeylaniae: 361–362. Dulau & Co., London. http://www.biodiversitylibrary.org/item/10372#age/368/mode/1up

TRIMEN, H. 1868. Hermann's Ceylon herbarium and Linnaeus's "Flora zeylanica". *J. Linn. Soc. London. Bot.* 24: 186.

TRIMEN, H. 1900. *A Hand-book to the Flora of Ceylon* 5. Dulau & Co., London. 126–130.

TRINIUS, C. B. VON. 1828. *Species Graminum Iconibus et Descriptionibus*: t. 85, 86. Academia Imperialis Scientiarum, St. Pétersburg. http://www.biodiversitylibrary.org/item/52977#page/410/mode/1up

TRINIUS, C. B. VON. 1834. Panicearum genera. *Mém. Acad. Imp. Sci. Saint-Pétersbourg, Sér. 6, Sci. Math., Seconde Pt. Sci. Nat.* 3: 328. http://www.biodiversitylibrary.org/item/52973#page/

246/mode/1up
TURNER, I. M. 1997 ('1995'). A catalogue of the vascular plants of Malaya. *Gard. Bull. Singapore* 47: 544.
VAN DER ZON, A. P. M. 1992. *Graminées du Cameroun* Volume 2, Flore. Agric. Univ. Wageningen Papers 92-1: 335.
VAN ROYEN, P. 1979. *The Alpine Flora of New Guinea* 2. Cramer, Vaduz. 1201–1208.
VANDERYST, H. 1919. Prodrome d'Agrostologie agricole, Bas et Moyen-Congo Belge. *Bull. Agric. Congo Belge* 10: 246–247.
VANDERYST, H. 1925. Aide-mémoire pour faciliter la recherche de Paniceae. *Bull. Agric. Congo Belge* 16: 688–689.
VELDKAMP, J. F. 2016. New status and combinations for the two East African taxa of *Isachne* R. Br. (Gramineae). *Bot. Lett*. 163 (1): 1–6. http://www.tandfonline.com/doi/pdf/10.1080/12538078.2015.1127772
WALLICH, N. 1848. A numerical list of dried specimens: # 8658. Wallich, London. http://www.biodiversitylibrary.org/item/15503#page/292/mode/1up
WARBURG, O. 1920. Zwei neue Pflanzen aus den Liu-kiu-Inseln. *Fedde's Repert. Spec. Nov. Regni Veg.* 16: 352. http://www.biodiversitylibrary.org/item/7040#page/372/mode/1up
WEBSTER, R. D. 1987. The Australian Paniceae (Poaceae). Cramer, Stuttgart. Pp. 101-104.
WILLIAMS, F. N. 1904. Liste des plantes connues du Siam. *Bull. Herb. Boiss.* II, 4: 222.

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Journal : KRAENZLIN, F. 1913. *Cyrtandraceae* novae Philippinenses I. *Philipp. J. Sci.* 8: 163–179.
MAYER, V., MOLLER, M., PERRET, M. & WEBER, A. 2003. Phylogenetic position and generic differentiation of *Epithemateae* (Gesneriaceae) inferred from plastid DNA sequence data. *American J. Bot.* 90: 321–329.

Proceedings : TEMU, S. T. 1995. Peranan tumbuhan dan ternak dalam upacara adat "Djoka Dju" pada suku Lio, Ende, Flores, Nusa Tenggara Timur. In: NASUTION, E. (Ed.). Prosiding Seminar dan Lokakarya Nasional Etnobotani II. LIPI & Perpustakaan Nasional: 263–268. (In Indonesian).
SIMBOLON, H. & MIRMANTO, E. 2000. Checklist of plant species in the peat swamp forests of Central Kalimantan, Indonesia. In: IWAKUMA, T. *et al*. (Eds.) Proceedings of the International Symposium on: Tropical Peatlands. Pp.179 – 190.

Book : RIDLEY, H. N. 1923. *Flora of the Malay Peninsula 2*. L. Reeve & Co. Ltd, London.

Part of Book : BENTHAM, G. 1876. *Gesneriaceae*. In: BENTHAM, G. & HOOKER, J. D. *Genera Plantarum 2*. Lovell Reeve & Co., London. Pp. 990–1025.

Thesis : BAIRD, L. 2002. *A Grammar of Kéo: An Austronesian language of East Nusantara*. Australian National University, Canberra. [PhD. Thesis].

Website : http://www.nationaalherbarium.nl/fmcollectors/k/KostermansAJGH.html. (Accessed 15 February 2012).

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