

GROUP B: GRASSES & GRASS-LIKE PLANTS

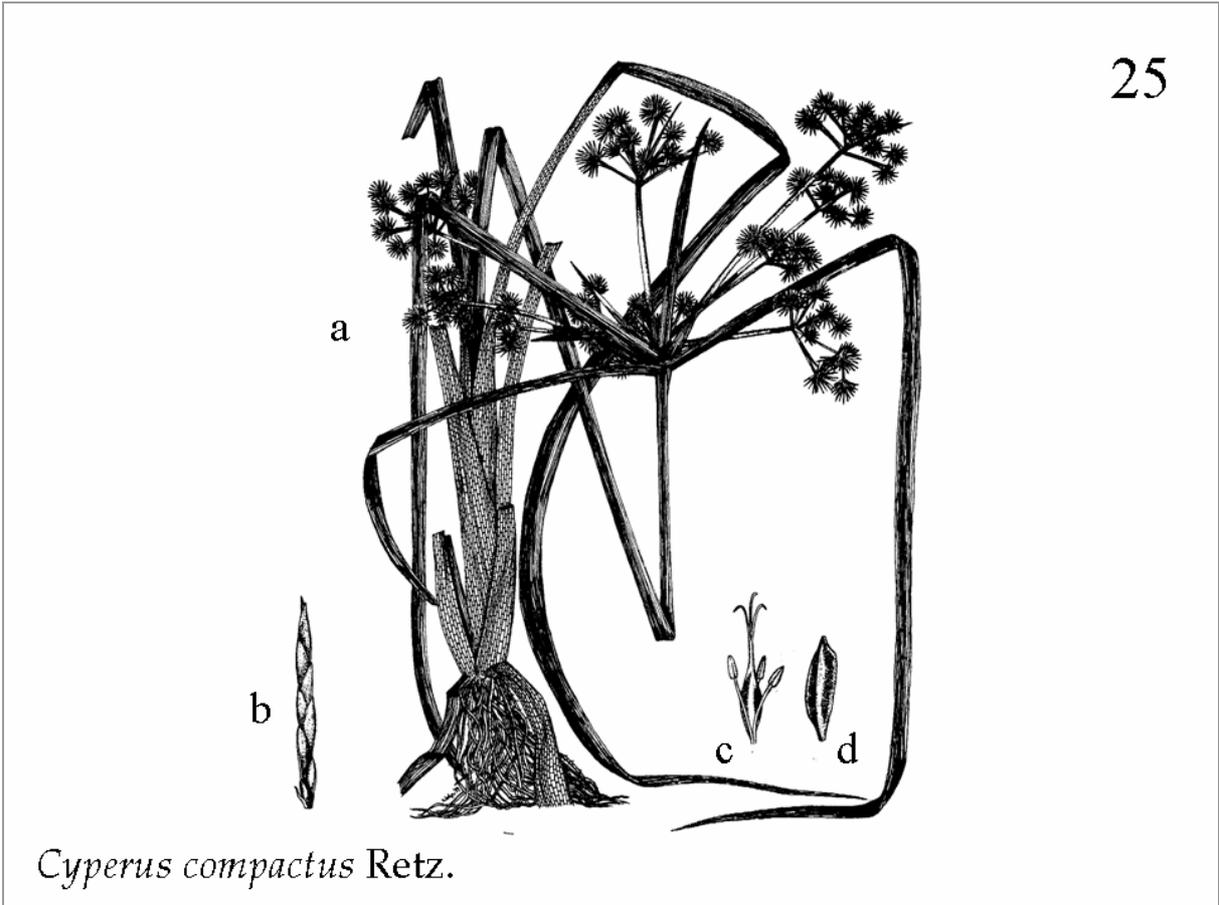


Fig. 25. *Cyperus compactus* Retz. (a) Habit, (b) spikelet, (c) flower and (d) nut.

CYPERACEAE

25

***Cyperus compactus* Retz.**

Synonyms : *Cyperus dilutus* Vahl., *Cyperus grabowskianus* Bolck., *Cyperus luzonensis* Llanos, *Cyperus septatus* Steud., *Duraljouvea diluta* Palla, *Mariscus compactus* Boldingh, *Mariscus dilutus* Nees, *Mariscus microcephalus* Presl., *Sphaeromariscus microcephalus* Camus

Vernacular name(s) : Prumpungan, Jekeng, Suket (Ind.), Wampi lang (PNG), Baki-baking-pula, Durugi, Giron (Phil.).

Description : A robust, perennial herb, 15-120 cm tall. Does not have stolons, and the rhizome is either very short or absent altogether. Stems are bluntly 3-angular, sometimes almost round, smooth, and with a diameter of up to 6 mm. The stem, leaves and sheath have numerous air-chambers. Leaves are 5-12 mm wide, stiff, deeply channelled, and as long as or shorter than the stem. Leaf edges and midrib are coarse towards the end of the leaf. Lower leaves are spongy and reddish-brown. Flowers are terminal and grouped in a large, up to 30 cm diameter umbrella-shaped cluster that has a reddish-brown colour. Large leaflets at the base of the flower cluster are up to 100 cm long. Spikelets (see illustration) are stemless and measure 5-15 by 1-1.5 mm.

Ecology : Occurs in a variety of wetlands, including swamps, wet grasslands, coastal marshes, ditches, riverbanks, and occasionally in the landward margin of mangroves. Occurs up to altitudes of 500 (rarely 1,000) m. Also a common weed of ricefields. Mangrove associate species.

Distribution : From India to southern China and Taiwan; occurs throughout Southeast Asia, from Myanmar to Papua New Guinea.

Abundance : Common.

Use(s) : Unknown

Source of illustration : Soerjani *et al.* (1987).

Reference(s) : Backer & Bakhuizen van den Brink (1963-8), Kern (1974), Soerjani *et al.* (1987).

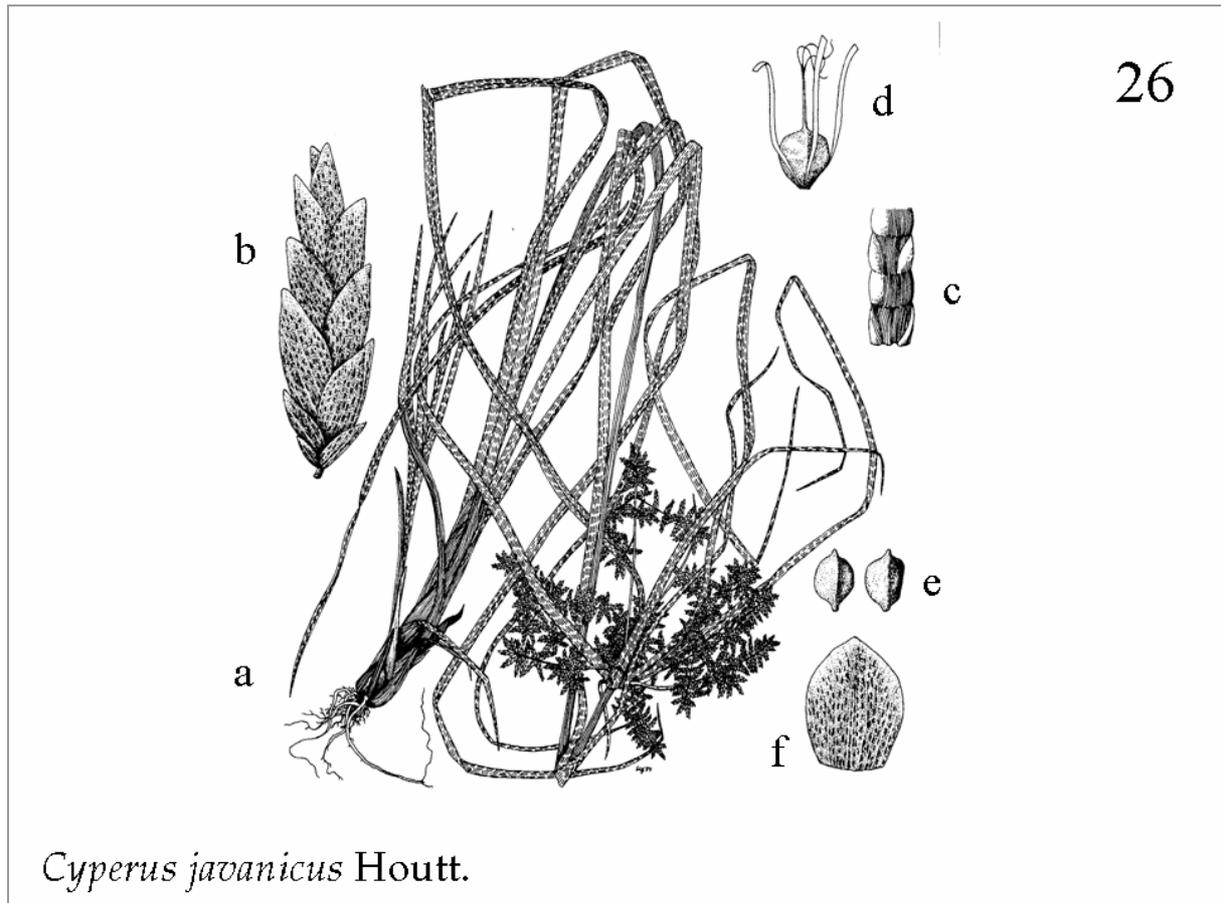


Fig. 26. *Cyperus javanicus* Houtt. (a) Habit, (b) spikelet, (c) detail of spikelet, (d) flower, (e) nut, and (f) leaflet sheathing the nut.

CYPERACEAE

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***Cyperus javanicus* Houtt.**

Synonyms : *Cyperus anomalus* Steud., *Cyperus canescens* Vahl., *Cyperus firmus* Presl., *Cyperus holciflorus* Presl., *Cyperus parviflorus* Vahl., *Cyperus pennatus* Lamk., *Cyperus stigmatosus* Steud., *Cyperus stuppeus* Forst., *Duvaljouvea pennata* Palla., *Mariscus javanicus* Merr. & Metc., *Mariscus pennatus* Domin., *Mariscus stuppeus* Merr..

Vernacular name(s) : Rumput Lingsing, Sarai, Sulengseng (Mal.), Jekeng, Dekeng, Sosa, Kikisa (Ind.), Wapi lang (PNG), Kai-kai (Phil.), Sosa (ET)

Description : Perennial herb with a very short rhizome and no stolons, 30-70 (rarely 110) cm tall. Stems are stout, bluntly 3-angular or nearly round, up to 4 mm wide. Leaves are 5-10 mm wide, rigid, channelled, coarse and with a drooping, pointed top. Lower leaves are reddish-brown at the base. Flowers are terminal and grouped in a large, up to 15 cm diameter umbrella-shaped cluster. Spikelets (see illustration) are 5-9 (rarely 13) by 2-2.5 mm, brownish to slightly purple. Very similar to *Cyperus ligularis* L. of West Africa and South America, and possibly the same species.

Ecology : Occurs in exposed, sunny wetlands, usually under brackish or saline conditions such as sandy foreshores, along dikes of brackish water fishponds, muddy banks of creeks and landward margins of mangroves. Coastal, rarely occurring inland, up to altitudes of 250 m. Mangrove associate species.

Distribution : Tropical Africa (very rare), Madagascar, South Asia, southern China, Taiwan, Ryukus, throughout Southeast Asia, Taiwan, to tropical Australia and the Pacific islands.

Abundance : Common.

Use(s) : Unknown.

Source of illustration : Bogor Herbarium specimen.

Reference(s) : Backer & Bakhuizen van den Brink (1963-8), Kern (1974).

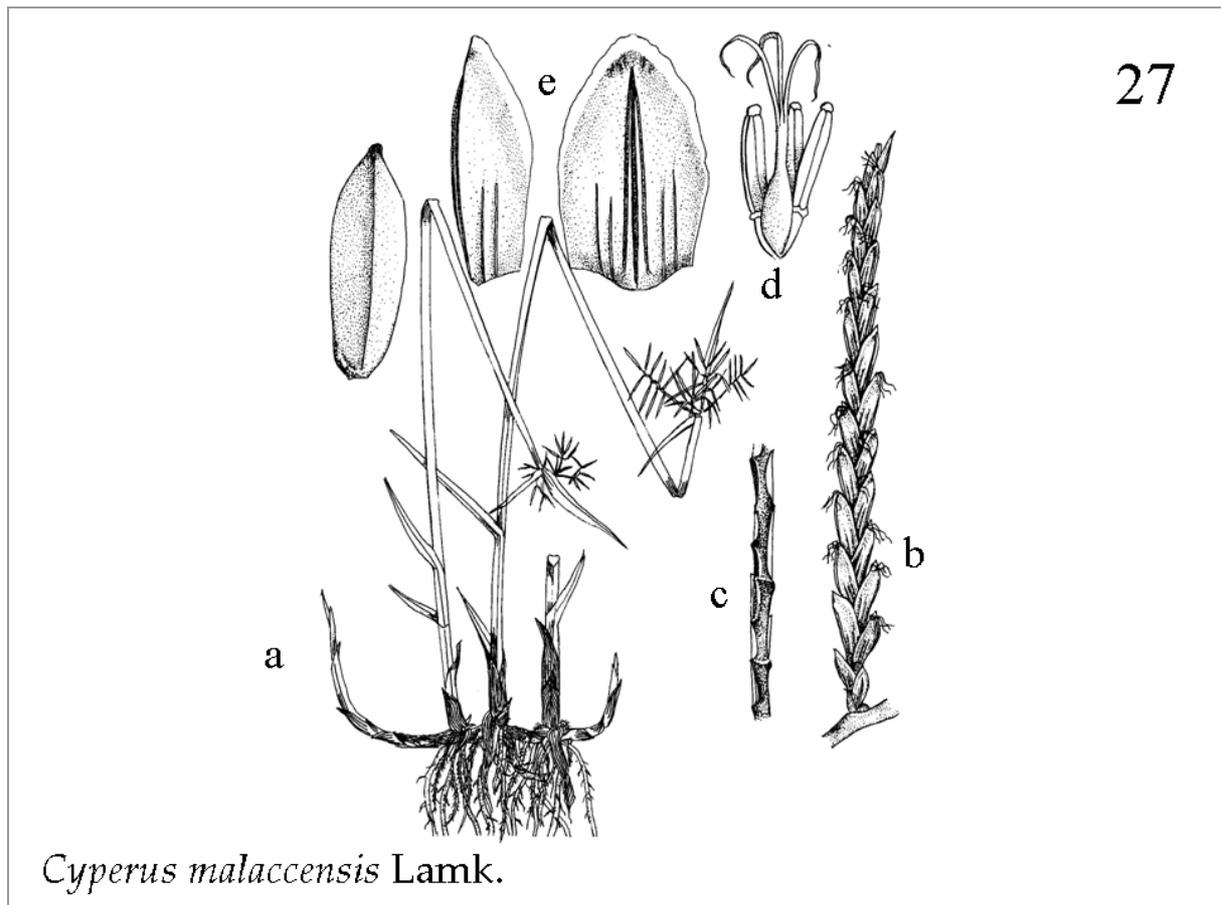


Fig. 27. *Cyperus malaccensis* Lamk. (a) Habit, (b) spikelet, (c) stalk of spikelet, (d) flower, and (e) leaflets sheathing the nut.

CYPERACEAE

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***Cyperus malaccensis* Lamk.**

Synonyms : *Chlorocyperus malaccensis* Palla, *Cyperus spaniophyllus* Steud., *Cyperus tegetiformis* (non Roxb.) Benth., *Cyperus tegetum* (non Roxb.) Ridl.

Vernacular name(s) : Bundung, Bunyung, Wlingi Laut (Mal.), Darendeng, Kedot, Suket Dem, Kumbu, Pea-pea, Rumput Kuluwing, Geida (Ind.), Geida (PNG), Baga-as (Phil.), Lác, Cói (Viet.)

Description : Large, perennial species, up to 175 cm tall. Stems are robust, spongy, sharply 3-angled, towards the top almost 3-winged, 12-15 mm diameter. Stolons are well-developed, pale, covered with large, membranous, dark brown scales. As they age the stolons harden into a dark brown, woody rhizome. There are only a few, short leaves. The lower ones are reduced to spongy, bladeless, purplish sheaths, while the upper ones may have a 20 cm-long sheath. Leaves may reach up to about halfway up the stem. Flower clusters are terminal and (very) dense, up to 10 by 15 cm. The leaflets at the base of the flower cluster measure 8-15 mm by 10-30 cm. Spikelets (see illustration) measure 1-3 cm by 1.3-1.8 mm and are pale green, later turning brown.

Ecology : Coastal wetland species, occurring in muddy estuaries, sandy fore-shores, mudflats, often forming a dense, fringe vegetation. Also found in tidal rice fields. The plant prefers light (sandy) and medium (loamy) soils and can grow well in saline soil. It does not tolerate shady conditions and requires moist or wet soil, often colonising new terrain, especially in brackish waters. Mangrove associate species.

Distribution : From the Middle East though South Asia to southern China, throughout Southeast Asia (except for parts of Indonesia [Lesser Sunda Islands, Moluccas] and East Timor) to northern Australia and Polynesia. In Vietnam it is usually recorded as *Cyperus tegetiformis*.

Abundance : Common.

Use(s) : Stems are used for making mats and baskets. Also used as binding material. In Central Java, stems are plaited into ropes that are strung in the sea to attract fish fry. A fibre is obtained from the stalks or the leaves, and this is used for weaving mats. The whole leaves can also be used for weaving mats and other items. It is cultivated for its fibre, especially in China.

Source of illustration : Soerjani *et al.* (1987).

Reference(s) : Heyne (1950), Backer & Bakhuizen van den Brink (1963-8), Kern (1974), Soerjani *et al.* (1987), <http://plants.usda.gov/>, www.comp.leeds.ac.uk

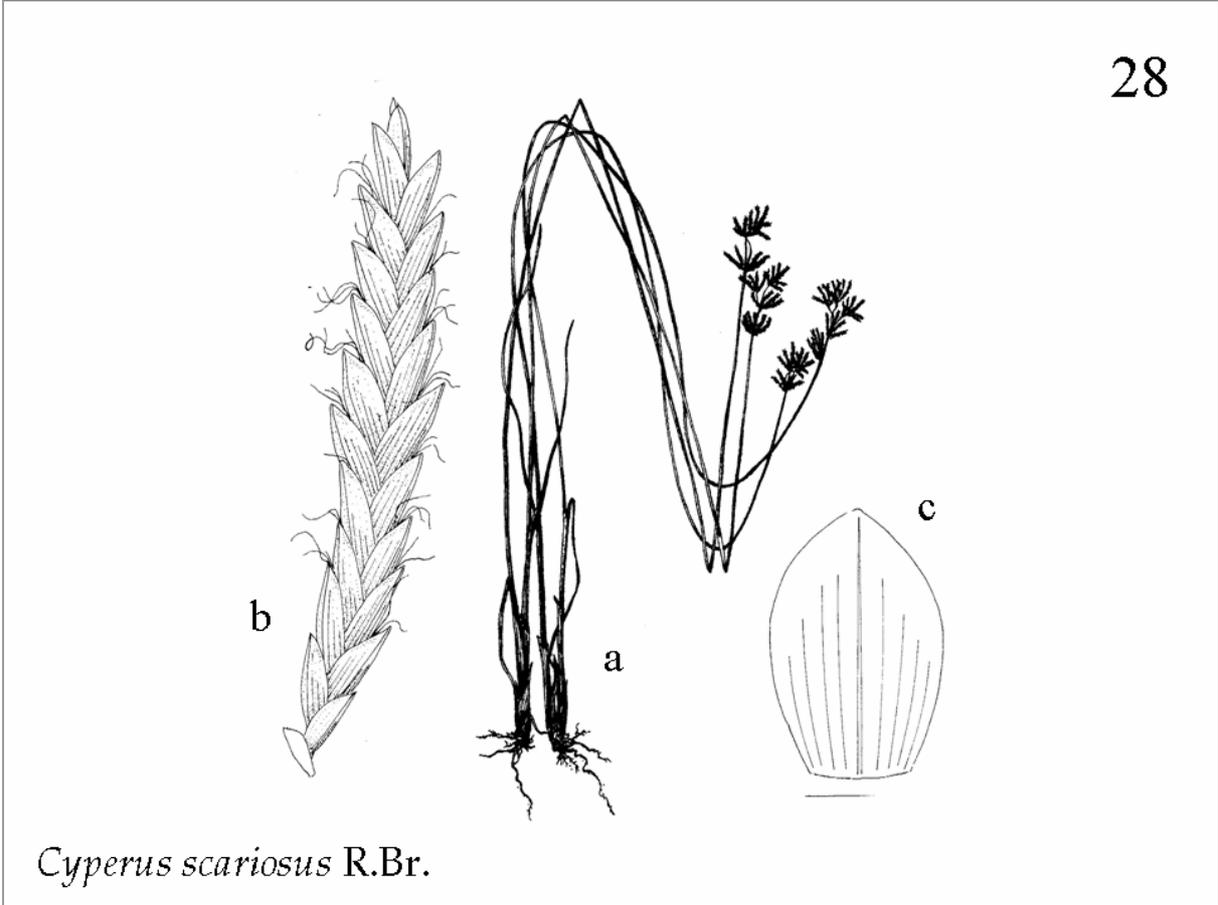


Fig. 28. *Cyperus scariosus* R.Br. (a) Habit, (b) spikelet, and (c) leaflet sheathing the nut.

CYPERACEAE

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***Cyperus scariosus* R.Br.**

Synonyms : *Cyperus corymbosus* Rottb. var. *scariosus* Kük., *Cyperus diphyllus* (Retz) Valck., *Cyperus rotundus* L. var. *pallidus* Benth.

Vernacular name(s) : Unknown.

Description : Perennial herb, 50-80 cm tall, with a creeping rhizome and slender, short stolons that may be up to 5 cm long. Stems are slender, 1.5-2 mm wide, almost round in the lower parts, and rounded 3-angular in the upper part. There are usually at most only three, short leaves, that are barely half as long as the stem, measuring 0.5-12 cm by about 2 mm. Flower clusters are usually small and simple, usually thrust to one side by the lowermost leaflet at the base of the cluster. Flower cluster leaflets are variable in size, and are 0.5-6 cm long. Spikelets are strongly compressed, 1-2 (rarely 2.5) cm by 2-2.5 mm.

Ecology : Coastal species, virtually restricted to swampy, brackish localities. Mangrove associate species.

Distribution : From eastern India to tropical Australia. In Southeast Asia it is known only from the island of New Guinea (Indonesian Papua and Papua New Guinea).

Abundance : Uncommon.

Use(s) : Unknown.

Source of illustration : Drawn from herbarium specimen, Bogor Herbarium.

Reference(s) : Kern (1974).



Fig. 29. *Cyperus stoloniferus* Retz. (a) Habit, (b) spikelet, and (c) nut.

CYPERACEAE

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***Cyperus stoloniferus* Retz.**

Synonyms : *Cyperus bulbosus* (non Vahl.) Camus., *Cyperus bulboso-stoloniferus* Steud., *Cyperus lamprocarpus* Nees, *Cyperus litoralis* R.Br., *Cyperus mayeri* Kük, *Cyperus rotundus* (non L.) Benth., *Cyperus tuberosus* (non Rottb.) Kunth.

Vernacular name(s) : Có gâ'u bién (Viet.)

Description : A perennial species, with long, creeping stolons, which harden into a woody rhizome that forms stout tubers. Stems are slender, 15-50 cm tall and 1-2 (occasionally 3) mm wide. Leaves are pointed and coarse in the upper part. In dry localities, leaves are rigid and narrow (1-1.5 mm), in wetter areas they are limper and may be up to 4 mm wide. Flower clusters are variable, and may be either dense or loose, often small, and rarely up to 5-6 cm across. Spikelets measure 5-15 by 2-2.5 mm and are round in cross-section. The 2-3 leaflets at the base of the cluster may be up to 30 cm long.

Ecology : On coastal sands, often acting as a sand binder on dunes and beaches. Occasionally it also occurs in saline, muddy places, such as landward margins of mangroves. Mangrove associate species.

Distribution : Mauritius, Madagascar, to Melanesia and northern Australia. Occurs throughout Southeast Asia.

Abundance : Relatively common.

Use(s) : Unknown, but because of the sand binding characteristics it may be useful in stabilizing coastal sands.

Source of illustration : Backer (1918).

Reference(s) : Backer (1918), Backer & Bakhuizen van den Brink (1963-8), Kern (1974).

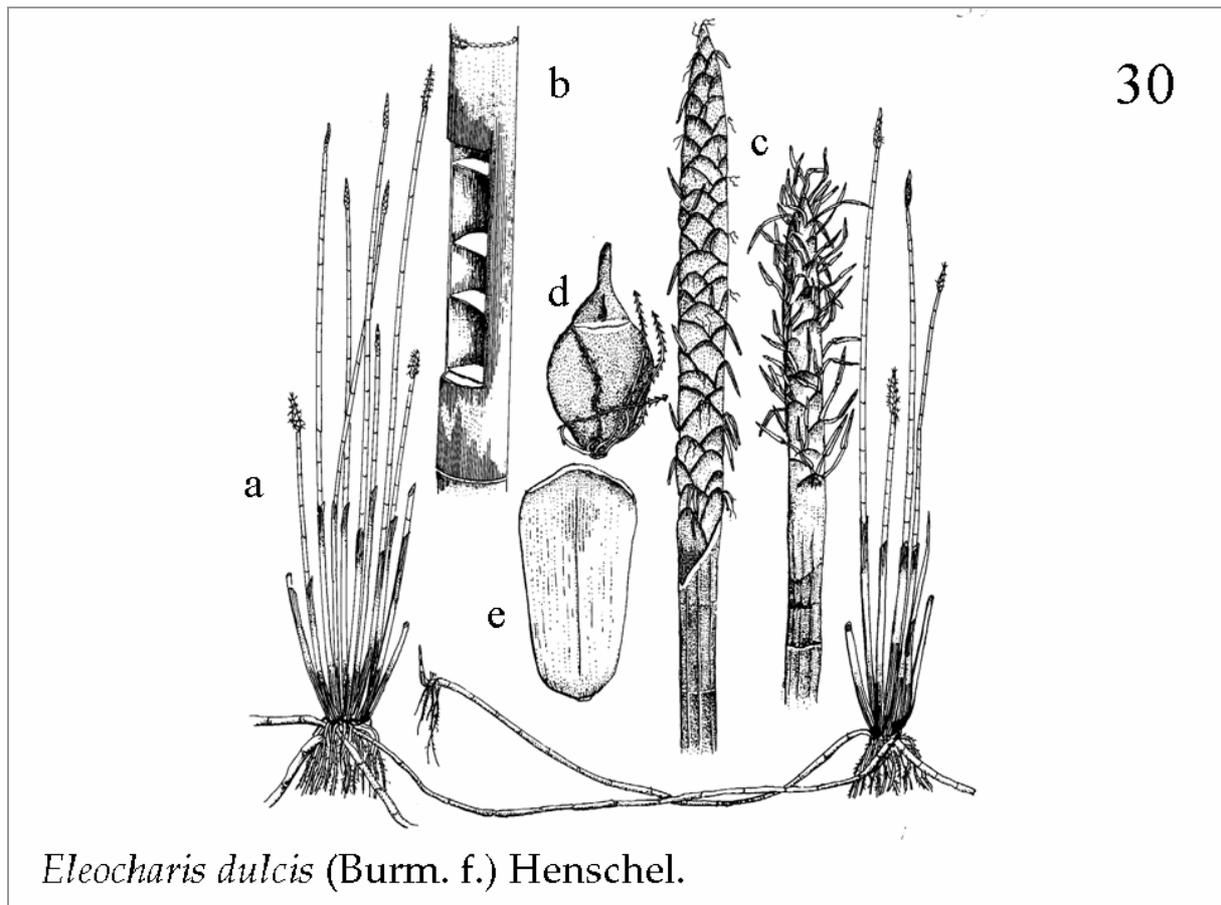


Fig. 30. *Eleocharis dulcis* (Burm. f.) Henschel. (a) Habit, showing mature plants linked by stolon, (b) detail of stem, showing partitions, (c) flowering spikelets, (d) nut, and (e) leaflet sheathing the nut.

CYPERACEAE

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***Eleocharis dulcis* (Burm. f.) Henschel**

Synonyms : *Andropogon dulce* Burm., *Carex tuberosa* (non Degl.) Blanco, *Cyperus dulcis* Rumph., *Eleocharis dulcis* Trin., *Eleocharis equisetina* Presl., *Eleocharis indica* Druce, *Eleocharis plantaginea*, *Eleocharis plantaginoidea* Domin., *Eleocharis tuberosa* R & S Mant., *Hippuris indica* Lour., *Scirpus plantagineus* Retz., *Scirpus tuberosus* Roxb., *Scirpus tumidus* Roxb.

Vernacular name(s) : Chinese Water Chestnut (E), Begau, Biga (Mal.) Peperetan, Teki, Tike, Babawangan, Beureum, Dekeng, Teki Tike, Cikai, Pangoke, Tekere, Pagoro, Peru-peru (Ind.), Biagi (PNG), Cabezas de negro (Phil.), Nâng bôp (Viet.)

Description : A very variable, erect perennial sedge, 40-200 cm tall. The rhizome is short, with long stolons and sometimes with a 1-4 cm-long (to rounded) tuber. Stems are usually round, smooth, grey to glossy-green, 1.5-10 mm wide. They are hollow and have characteristic partitions. Leaves are virtually absent, being reduced to a bladeless, purplish sheath along the base of the stem. Flower clusters consist of a single, terminal spike (see illustration), 15-60 by 3-6 mm, brownish.

Ecology : Occurs in open wetlands, both in freshwater and saline environments, in freshwater swamps, rice fields, ponds, pools and landward margins of mangroves. Often forming dense, pure stands. Occurs up to 1,350 m, occasionally up to 2,000 m (Dieng Plateau, Java; not flowering at this altitude). Mangrove associate species.

Distribution : Tropical West Africa, throughout Asia to Melanesia and northern Australia. Found throughout Southeast Asia, but not (yet) reported from Borneo.

Abundance : Common, but local.

Use(s) : Tubers are eaten throughout Southeast and East Asia. In West Java, boiled tubers are made into chips (*kripik*, *emping teki*). In Sumatra, sleeping mats are woven out of this sedge. In Indonesian Papua and Papua New Guinea the stems are used for making grass skirts. A cultivated variety with much larger tubers that taste vaguely like apples has been introduced into Indonesia from China. At Chinese New Year these are imported from China, and sold on the Jakarta market as *Ma ti*.

Source of illustration : Soerjani *et al.* (1987).

Reference(s) : Heyne (1950), Backer & Bakhuizen van den Brink (1963-8), Kern (1974), Soerjani *et al.* (1987).

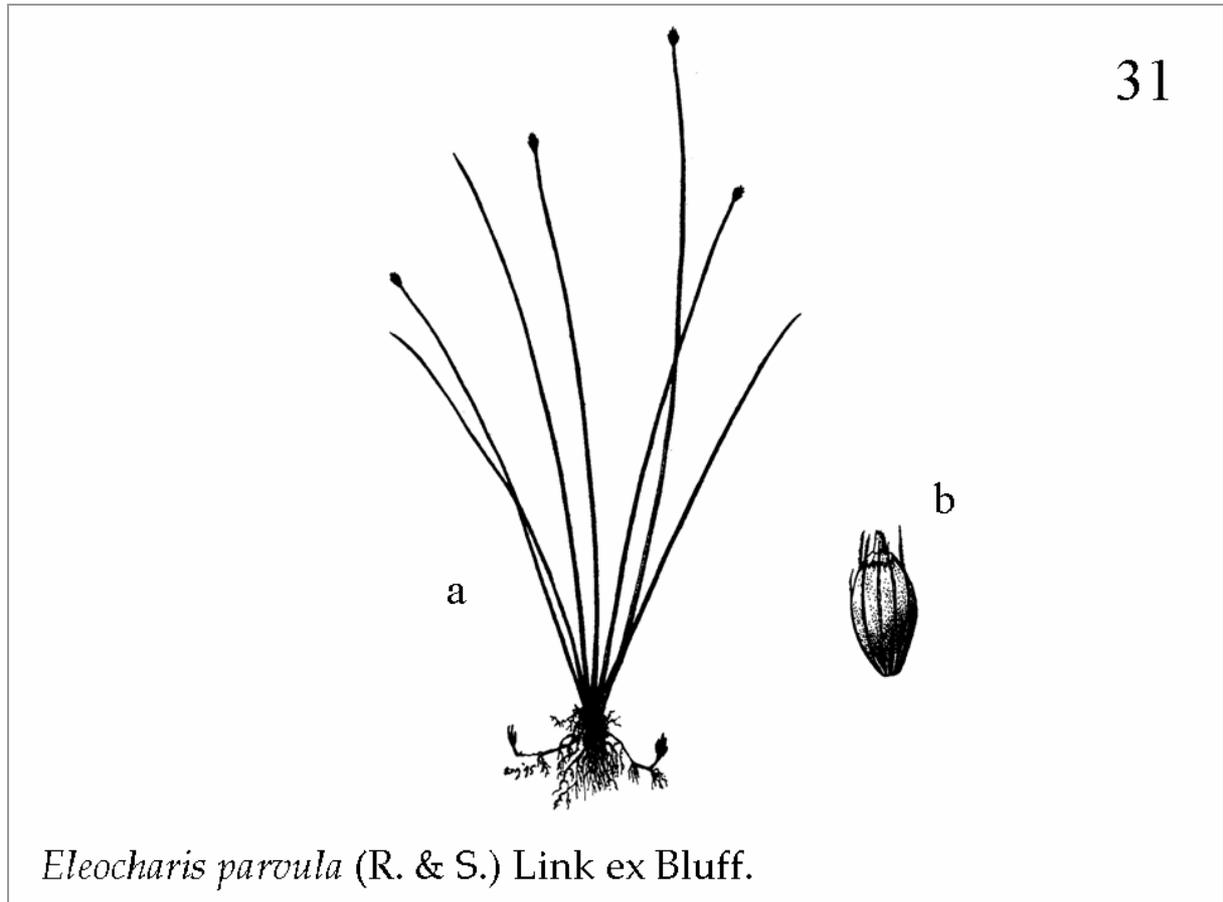


Fig. 31. *Eleocharis parvula* (R. & S.) Link ex Bluff. (a) Habit, and (b) nut.

CYPERACEAE

31

***Eleocharis parvula* (R. & S.) Link ex Bluff**

Synonyms : *Scirpus nanus* (non Poir.) Spreng., *Scirpus parvulus* R. & S., *Scirpus pusillus* Vahl.

Vernacular name(s) : Unknown.

Description : Dwarf sedge, with stems measuring only 1-7 cm by 0.25-0.35 mm. Has small, 3-6 mm long, brown or purplish tubers at the end of thread-like stolons. Leaves are reduced to membranous sheaths. The spikelets (see illustration) are egg-shaped, compressed, few-flowered (2-9), and measure 2-4 by 1.5-2 mm, brownish. The nut is triangular, with prominent angles, obovate, smooth and shiny. Often treated as a species of *Scirpus*, but according to Kern (1974), it is more closely related to *Eleocharis* and is perhaps the most primitive member of *section Pauciflorae*.

Ecology : Found in salt marshes and brackish mud along the coast, both in temperate and tropical climates. In the tropics it is decidedly rare. In Indonesia known only from iodine salt wells near Bangil, south of Surabaya. It forms mats, propagating by small, fused tubers located at the end of thread-like stolons. Mangrove associate species.

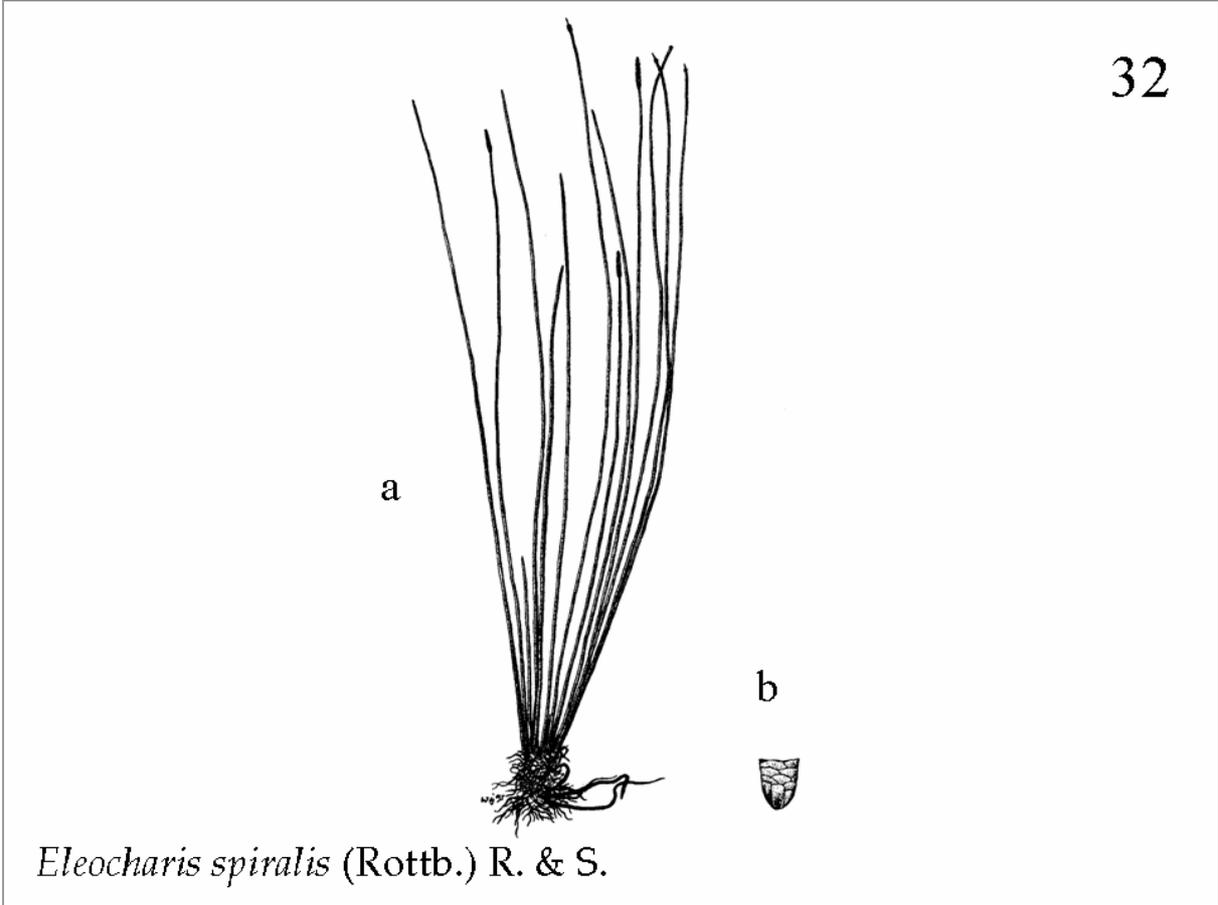
Distribution : Found both in temperate and tropical regions, in the Americas, Europe, northern Africa and scattered in Asia. From Southeast Asia known only from Cambodia (once collected) and Indonesia, where it is known only from the Bangil salt wells, south of Surabaya in East Java.

Abundance : In the tropics it is rare, and in Southeast Asia it is very rare.

Use(s) : Unknown.

Source of illustration : Svenson (1929).

Reference(s) : Backer & Bakhuizen van den Brink (1963-8), Kern (1974).



Eleocharis spiralis (Rottb.) R. & S.

Fig. 32. *Eleocharis spiralis* (Rottb.) R. & S. (a) Habit and (b) detail of spikelet tip.

CYPERACEAE

32

***Eleocharis spiralis* (Rottb.) R. & S.**

Synonyms : *Eleocharis variegata* (non Presl., nec Kunth.) Merr., *Scirpus spiralis* Rottb.

Vernacular name(s) : Boroslanang, Endong (Ind.)

Description : Perennial, with a short rhizome and creeping stolons. Stems erect, rather robust, 3-angular in the upper part, smooth, without partitions, and measuring 25-60 cm by 2-4 mm. Leaf reduced to a thin sheath that may be loose at the end, green to brownish. Spikelets (see illustration) are round in cross-section, yellowish-green, with many flowers, 1.5-3.5 cm by 3-5 mm. Nut is swollen biconvex, obovate, shiny, deep brown when ripe, 1.5-1.75 by 1.25 mm. This species is closely related to *Eleocharis mutata* of America and tropical Africa, and may eventually be recognised as a sub-species of this pan-tropical species.

Ecology : In open, exposed wetlands at low altitudes (below 100 m), preferring clayey soils. Virtually restricted to coastal brackish and saline habitats, where it sometimes forms extensive pure stands. In Indonesia it is known inland only from a saline mud well near Kesongo (Java). Mangrove associate species.

Distribution : From tropical Africa, Madagascar, Mauritius and South Asia to northern Australia and New Caledonia. Found in a few scattered localities in Southeast Asia: Malay Peninsula, Singapore, Indonesia (Madura, Java, Papua), the Philippines (Luzon, Rizal) and Papua New Guinea.

Abundance : Uncommon to rare.

Use(s) : Used for making mats in Indramayu (Java).

Source of illustration : Drawn from herbarium specimen, Bogor Herbarium.

Reference(s) : Backer & Bakhuizen van den Brink (1963-8), Kern (1974).

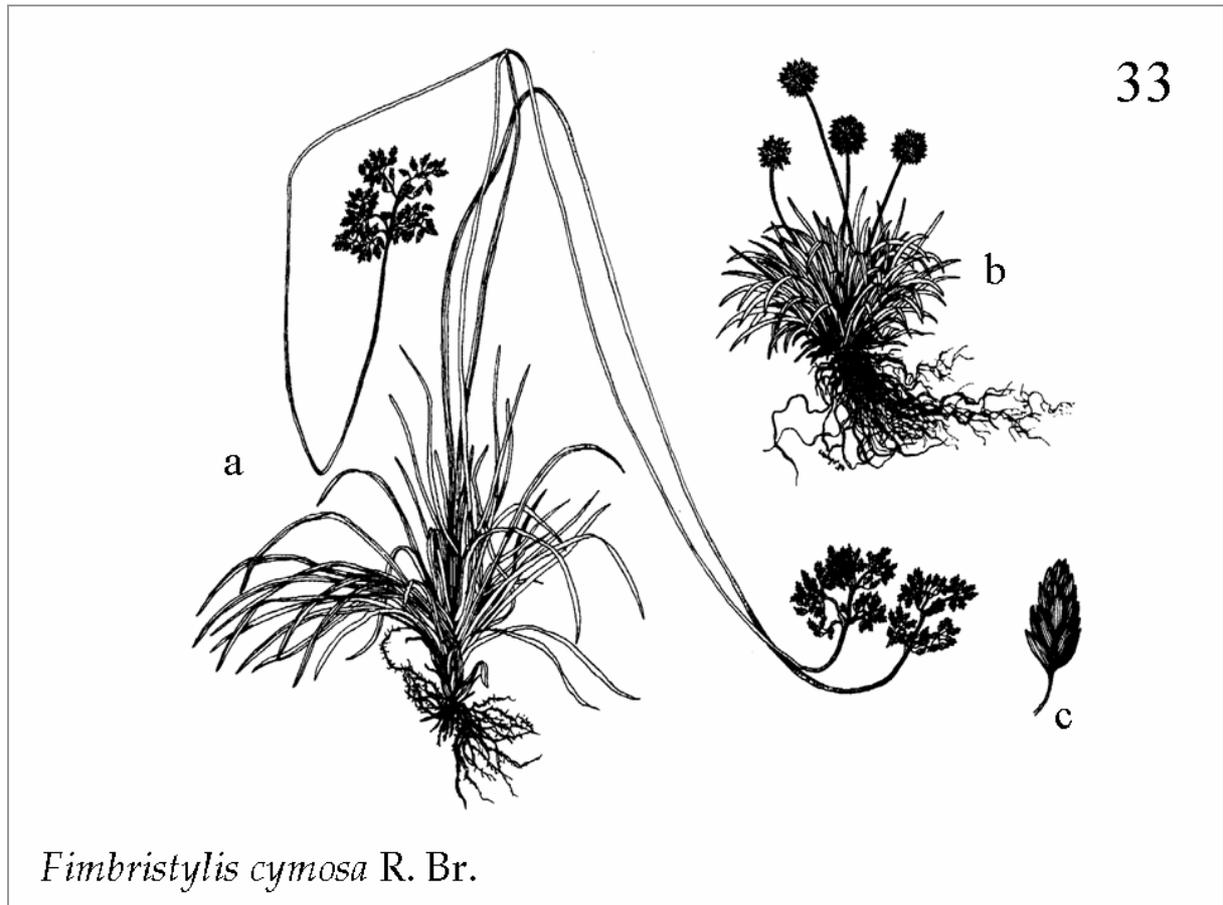


Fig. 33. *Fimbristylis cymosa* R. Br. (a) Habit of large specimen, (b) habit of diminutive specimen, and (c) spikelet.

CYPERACEAE

33

***Fimbristylis cymosa* R. Br.**

Synonyms : *Fimbristylis atollensis* St. John, *Fimbristylis ciliolata* Steud., *Fimbristylis glomerata* Nees ex Kunth., *Fimbriatylus laevisissima* Steud., *Fimbristylis pycnocephala* Hillebr., *Fimbristylis rigida* Kunth., *Fimbristylis spathacea* Roth., *Fimbristylis warburgii* K. Sch., *Iriha cymosa* O.K., *Iriha glomerata* Nees, *Isolepis haenkei* Presl.

Vernacular name(s) : Kodokan, Sulang Watu, Teki Parang (Ind.)

Description : Perennial species with a short rhizome. Stems are smooth, rigid, flattened 3-angular to almost round, 10-50 cm by 1-2 mm. There are many leaves at the base, which are all much shorter than the stems. Leaves are 1-2 (rarely 3) mm wide, and do not have a tongue. Spikelets (see illustration) are either solitary or occur in clusters, and measure 3-6 by 2 mm. Nut is biconvex or rounded-triangular, smooth or slightly rough, chestnut to black when ripe, 0.8 by 0.7 mm maximum size. A very variable species, as flower clusters may consist of well-developed rays, or contracted into a single head. Flower and fruit parts are also very variable in size.

Ecology : In open, sandy, clayey or rocky places by the sea, on beaches, wet dune hollows and mangroves. Sometimes inland near hot springs. Mangrove associate species.

Distribution : Pan-tropical, occurring throughout Southeast Asia.

Abundance : Relatively common, and locally abundant.

Use(s) : Unknown.

Source of illustration : Drawn from herbarium specimen, Bogor Herbarium.

Reference(s) : Backer & Bakhuizen van den Brink (1963-8), Kern (1974).

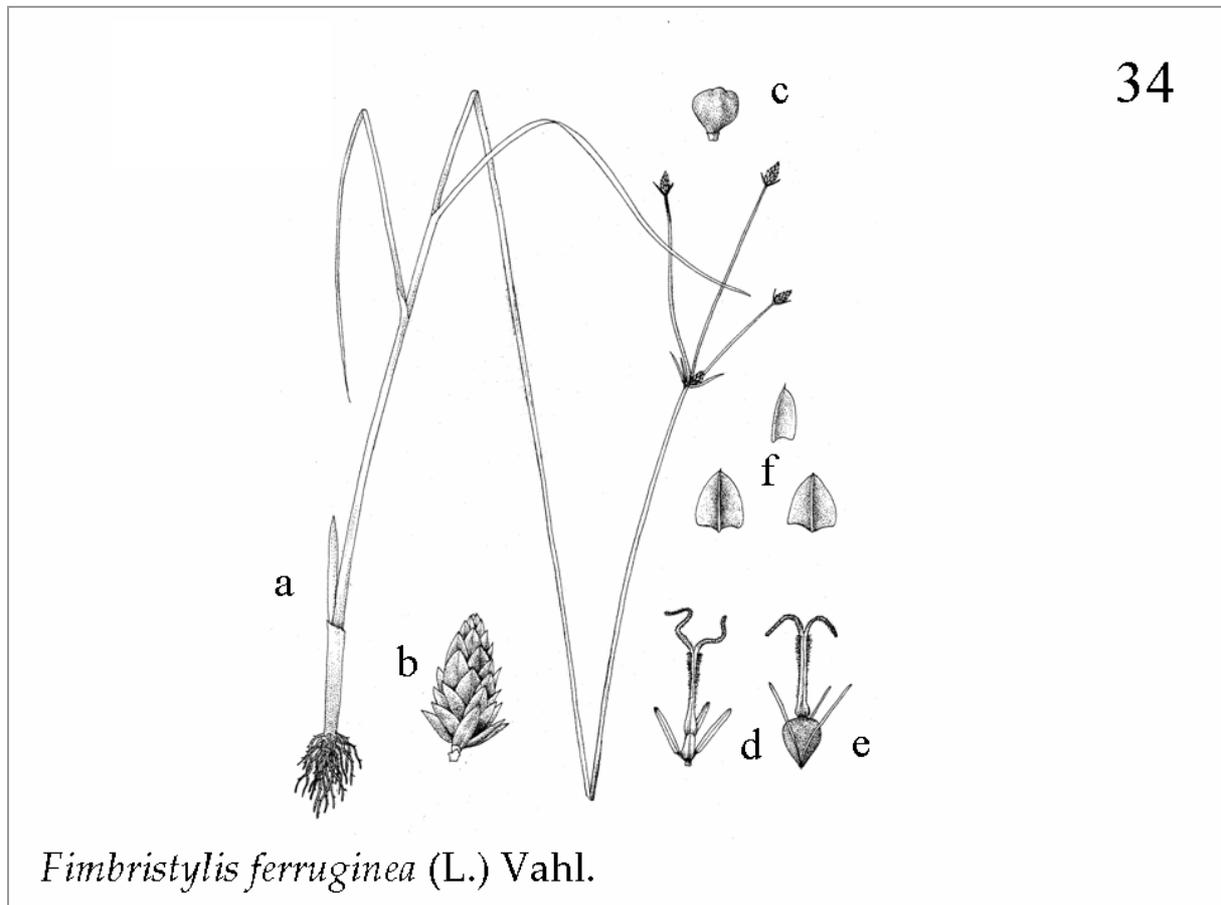


Fig. 34. *Fimbristylis ferruginea* (L.) Vahl. (a) Habit, (b) spikelet, (c) nut, (d) style and stamens, (e) young nut, with stigma still attached, (f) leaflets covering the nut.

CYPERACEAE

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***Fimbristylis ferruginea* (L.) Vahl**

Synonyms : *Fimbristylis cyrtophylla* Miq., *Fimbristylis longispicata* (non Steud.) Camus, *Fimbristylis marginata* Labill., *Fimbristylis polytrichoides* (non R.BR.) Ridl., *Fimbristylis trispicata* Steud., *Iriha ferruginea* O.K., *Scirpus arvensis* Retz., *Scirpus ferrugineus* L.

Vernacular name(s) : Rumput Ruchut (Mal.), Purun, Suket Dot, Suket Godokan, Kodokan, Ba'ileu (Ind.), Cồ' cây (Viet.)

Description : Perennial species, with a short, woody, creeping rhizome. Stems are rigid, compressed, smooth, greyish-green, measuring 20-80 cm by 1.5-3 mm. Leaves are much shorter than the stems, measuring 2-10 cm by 0.5-1.5 mm. They have a tongue, consisting of a dense fringe of short hairs. Flower clusters are simple and usually contracted into a dense head, 3-5 cm long. There are 2-3 leaflets at the base of the flower cluster. Spikelets (see illustration) are solitary, dull brown and measure 5-20 by 3-4 mm. Nut biconvex, strongly compressed, obovate to oblong-obovate, straw like to dark, greyish-brown, 1-1.25 by 0.75-1 mm.

Ecology : Found in sunny, wet localities with clayey soils, especially in areas subjected to regular inundation by brackish water. More rarely it occurs inland near saline pools and mud-wells. From sea level to about 100 m above sea level. Mangrove associate species.

Distribution : Pan-tropical, and occurs throughout Southeast Asia. As yet not recorded in the Lesser Sunda Islands of Indonesia or in East Timor.

Abundance : Locally abundant.

Use(s) : Unknown.

Source of illustration : Backer (1934).

Reference(s) : Backer (1934), Backer & Bakhuizen van den Brink (1963-8), Kern (1974).

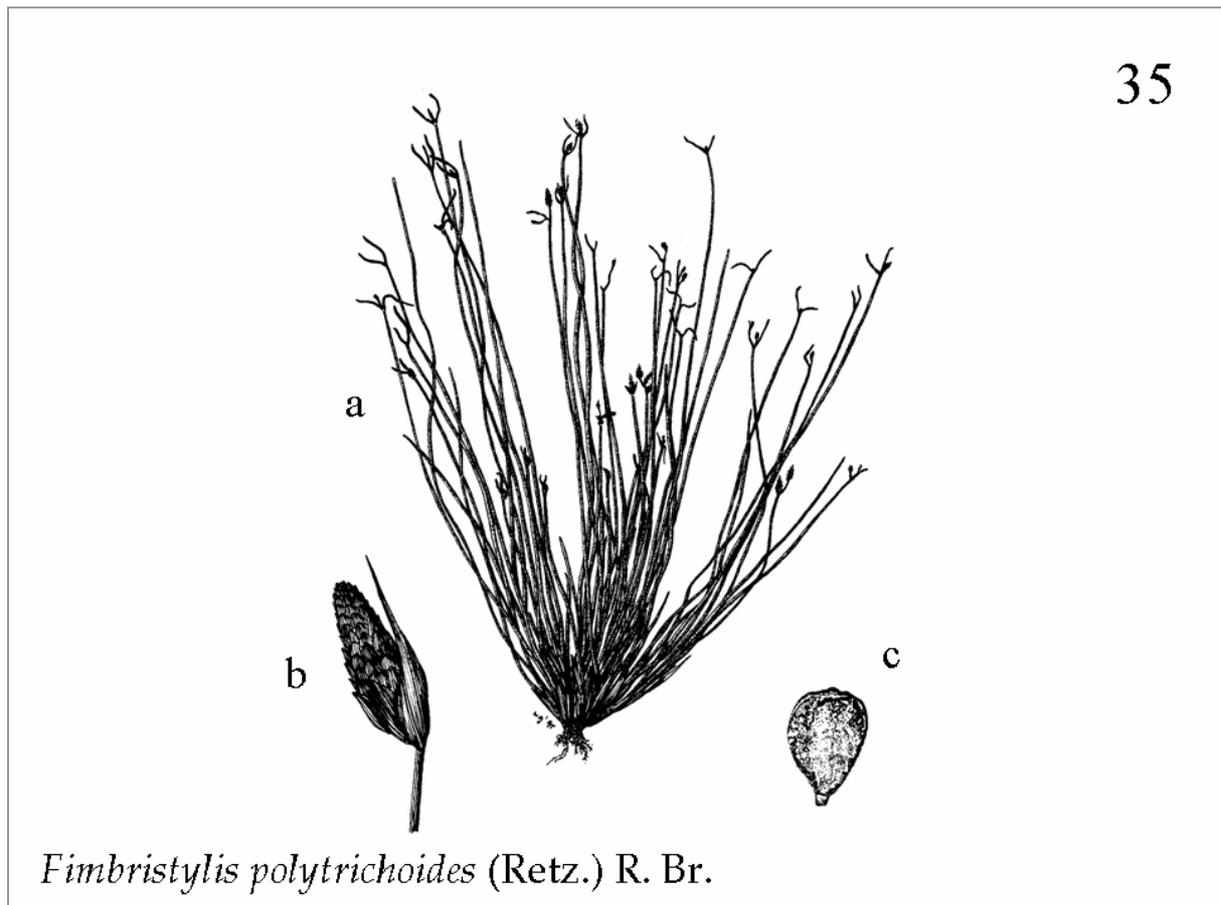


Fig. 35. *Fimbristylis polytrichoides* (Retz.) R. Br. (a) Habit, (b) spikelet, and (c) nut.

CYPERACEAE

35

***Fimbristylis polytrichoides* (Retz.) R. Br.**

Synonyms : *Abildgaardia javanica* Nees., *Abildgaardia javanica* Steud., *Fimbristylis albescens* Steud., *Fimbristylis juncea* (non R. & S.) Boeck, *Fimbristylis subbulbosa* Boeck., *Iriha polytrichoides* O.K., *Scirpus polytrichoides* Retz.

Vernacular name(s) : Rebha Kaproleam (Ind.)

Description : Perennial herb, forming dense tufts, with erect, smooth stems that are 5-30 cm tall and 1 mm in diameter. Leaves are up to half as long as the stem, wiry, 0.5-1 mm wide, and with a tongue consisting of a row of short hairs. Flower clusters consist of a single, terminal spikelet (see illustration), that is pale brown and measures 5-15 by 2-3 mm. Nut biconvex, with sharp angles, wedge-shaped/obovate or oblong-obovate, rounded at the tip, smooth or warty, delicately covered with net-like pattern, greyish or blackish-brown, 0.8-1.1 by 0.5-0.75 mm.

Ecology : In open, wet places, especially on sandy or muddy sea-shores and in rock crevices near the sea, including landward margins of mangroves. Sometimes it occurs further inland on saline soil. Mangrove associate species.

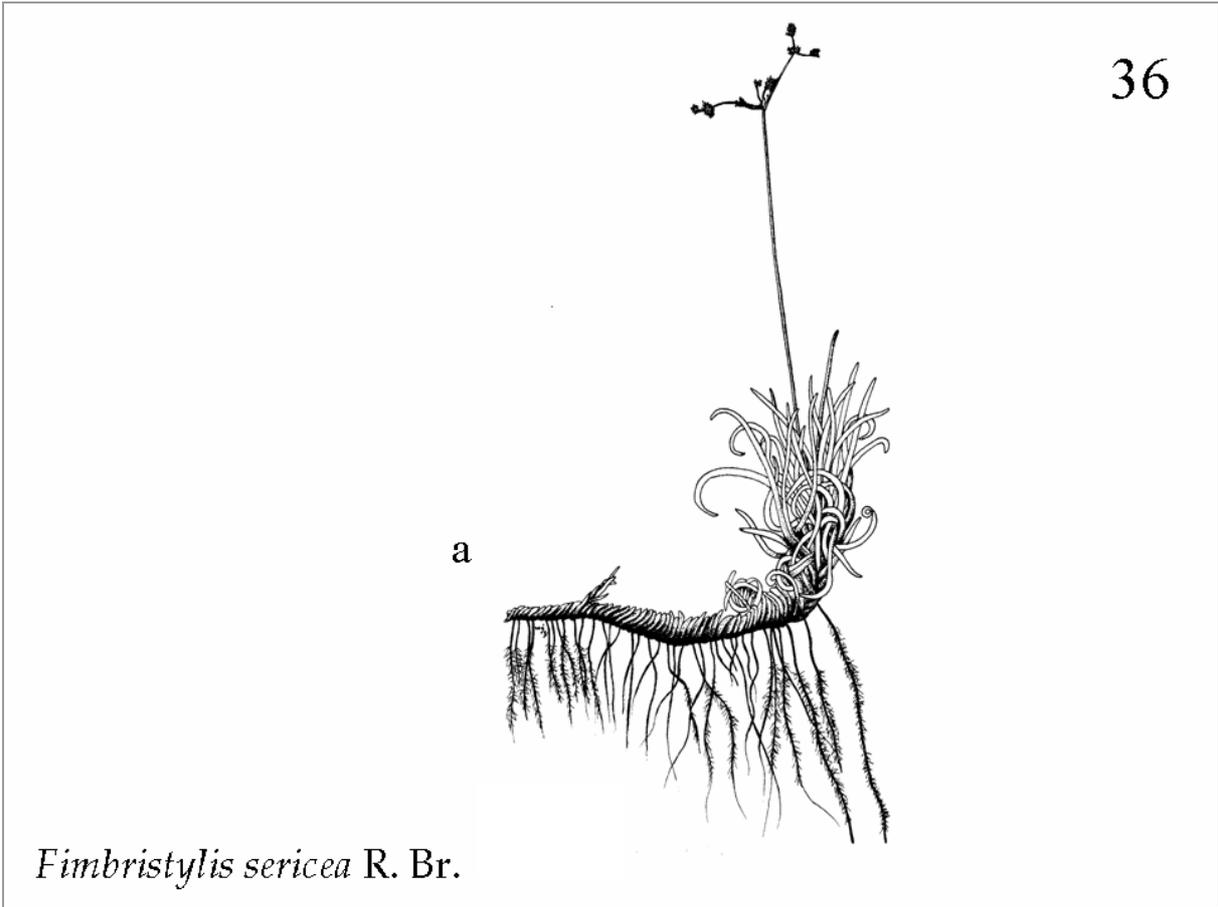
Distribution : Tropical Africa, Asia and Australia. In Southeast Asia recorded in Malaysia (Peninsular), the Philippines (Luzon, Panay), Indonesia (Sumatra, Java, Madura and Papua) and Papua New Guinea (Port Morseby).

Abundance : Locally common.

Use(s) : Unknown.

Source of illustration : Backer (1934).

Reference(s) : Backer (1934), Backer & Bakhuizen van den Brink (1963-8), Kern (1974).



Fimbristylis sericea R. Br.

Fig. 36. *Fimbristylis sericea* R. Br. (a) Habit.

CYPERACEAE

36

***Fimbristylis sericea* R. Br.**

Synonyms : *Fimbristylis dasyphylla* Miq., *Fimbristylis decora* Nees & Mey. ex Nees, *Fimbristylis junciformis* var. *latifolia* (non Clarke) Camus, *Iriha sericea* O.K..

Vernacular name(s) : Unknown.

Description : Perennial herb, with a thick, woody, creeping or ascending often-branched rhizome. This is often densely clad with the remains of old leaf sheaths. The rhizome smells of varnish when bruised. Stems are solitary, erect, bluntly 3-angular or almost round, occasionally (partially) covered with short hairs, and 10-30 (rarely 60) cm long and 1-2.5 mm wide. The lower 5-15 cm of the stem is surrounded by 2-3 tubular leaf sheaths. Leaves are much shorter than the stem, rigid, covered with short silky hairs. They have incurved edges, are pointed and 2-4 mm wide. Flower clusters are loose, 5-10 cm long, with 2-3 hairy leaflets at their base. Spikelets (see illustration) are silvery-grey to brownish, 6-10 by 2.5-3 mm. Nut is biconvex, more-or-less stalkless, smooth, dark greyish-brown, 1-1.3 by 0.8-1 mm.

Ecology : Occurs on sandy sea-shores, coastal dunes, (sandy) landward margins of mangroves and dikes in brackish-water fishponds. Acts as a sand-binder. Mangrove associate species.

Distribution : From India, through Southeast Asia to southern China, Taiwan, Japan and northern Australia. In Southeast Asia it has been recorded in Thailand, Malaysia (Peninsular, Sarawak) and Indonesia (Bangka, Java, Madura and Kalimantan).

Abundance : Locally common.

Use(s) : Sand-binding characteristic may be an important potential use for stabilizing dunes.

Source of illustration : Backer (1919).

Reference(s) : Backer (1919), Backer & Bakhuizen van den Brink (1963-8), Kern (1974).

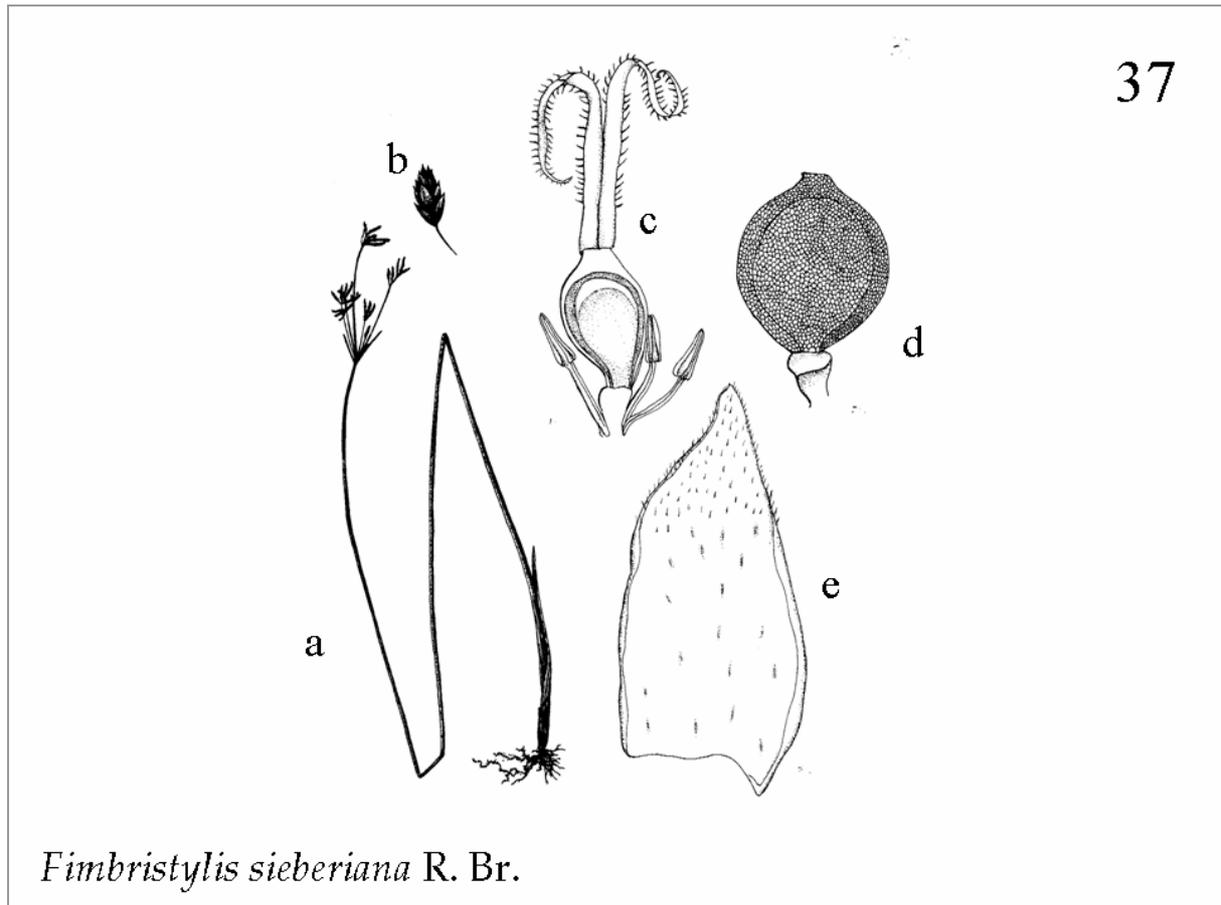


Fig. 37. *Fimbristylis sieberiana* R. Br. (a) Habit, (b) spikelet, (c) flower, (d) nut, and (e) leaflet sheathing the nut.

CYPERACEAE

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***Fimbristylis sieberiana* R. Br.**

Synonyms : *Fimbristylis arvensis* Vahl., *Fimbristylis ferruginea* (non Vahl.) Decne, *Fimbristylis ferruginea* var. *foliata* Benth., *Fimbristylis ferruginea* var. *sieberiana* Boeck., *Fimbristylis paucispicata* F.v.M., *Fimbristylis tristachya* R.Br.

Vernacular name(s) : Unknown.

Description : Perennial herb, with erect stems 20-80 cm, and a woody, creeping rhizome. Leaves are stiff, flat, up to 35 cm long and 1.5-2 mm wide. Lowest of the 2-3 leaflets at the base of the flower cluster is as long as, or overtops the cluster. Spikelets are blunt, solitary, dull brown, measuring 5-20 by 3-4 mm. Nut broadly obovate or orbicular, distinctly borne on a stalk, 1.25-1.5 by 1.1-1.25 mm. It is often confused with *Fimbristylis ferruginea*, from which, however, it is clearly distinguished by its larger leaves (2-10 cm by 1-1.5 mm versus up to 35 cm by 1.5-2 mm).

Ecology : Occurs in brackish marshes at low altitudes. Mangrove associate species.

Distribution : From Africa, Madagascar, Middle East and South Asia, through Southeast Asia to northern Australia. In Southeast Asia it has been recorded in the Philippines, Indonesia (Lesser Sunda Islands) and East Timor.

Abundance : Uncommon; very rare in Southeast Asia.

Use(s) : Unknown.

Source of illustration : Icones Rijksherbarium Leiden, and herbarium specimens, Bogor Herbarium.

Reference(s) : Backer & Bakhuizen van den Brink (1963-8), Kern (1974).

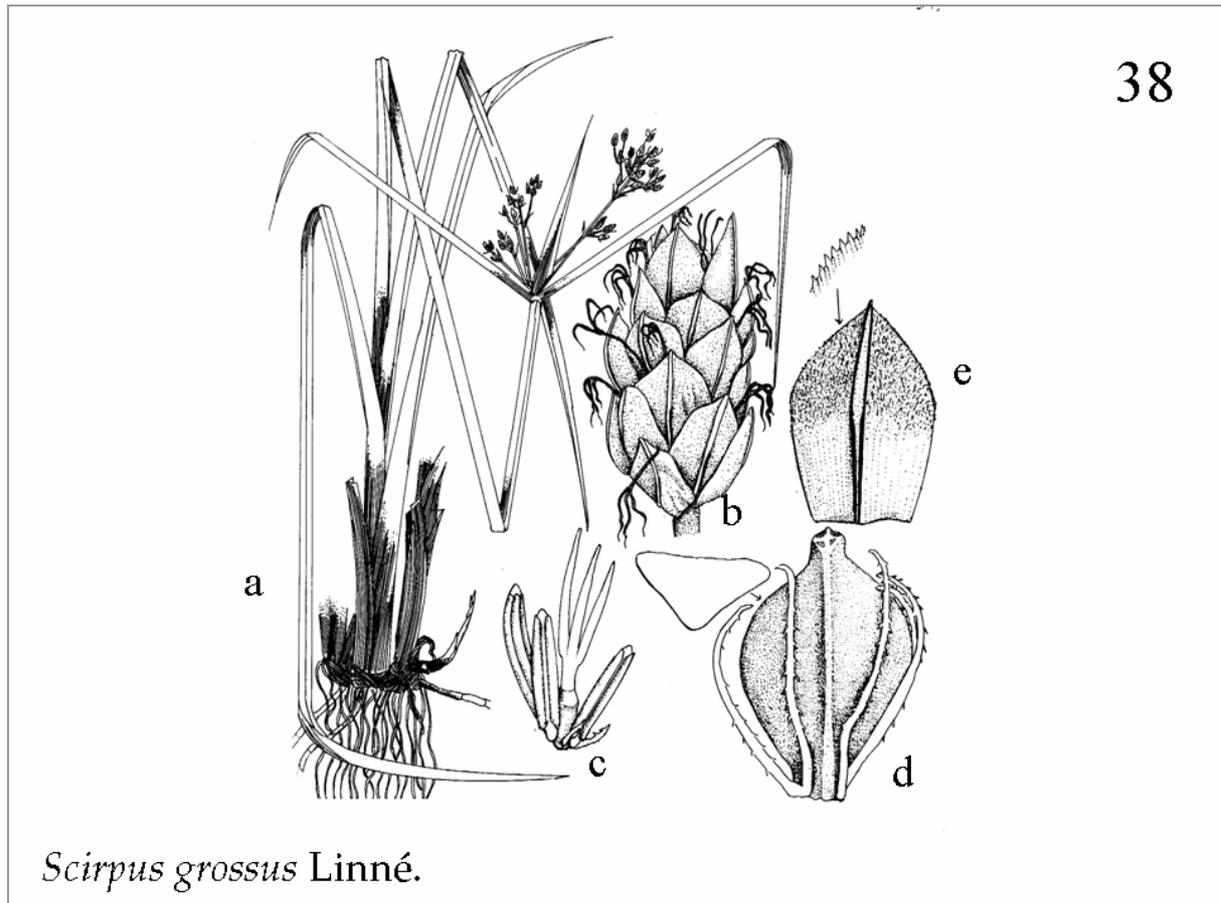


Fig. 38. *Scirpus grossus* Linné. (a) Habit, (b) spikelet, (c) flower, (d) nut, and (e) leaflet sheathing the nut.

CYPERACEAE

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***Scirpus grossus* Linné**

Synonyms : *Cyperus difformis* (non L.) Blanco, *Schoenoplectus grossus* Palla, *Scirpus aemulans* Steud., *Scirpus grossus* var. *kysoor* (non Clarke), *Scirpus kysoor* (non Roxb.) Llanos., *Scirpus maritimus* var. *aemulans* Miq.

Vernacular name(s) : Mendarong, Mensiang, Masiang, Murong, Menurong (Mal.), Bebawangan, Walingi, Lingi, Wlingen, Wlingian, Bundung, Reduk (Ind.), Agás, Bungkuang, Ragiudiu (Phil.)

Description : Erect and stout perennial herb, up to 2 m tall, with an erect, sharply 3-angular stem, up to 2.5 cm (at top 0.5-1 cm) thick. Leaves emerge from the base, and are 50-180 cm long and up to 3 cm wide. Flower clusters are terminal, loose and large, with leaflets that are up to 70 cm long. Spikelets (see illustration) are solitary, stemless, and measure 4-10 by 3.5-4 mm. Nut rounded-triangular, obovate, ending abruptly in a small point, smooth, brown, 1.25-1.75 by 1 mm. Specimens of *Scirpus kysoor* and *Scirpus grossus* var. *kysoor* are from India, and vary in finer characteristics of the fruiting head.

Ecology : In swampy or inundated localities, pools, ditches, rice fields and landward margins of mangroves. Often coastal, but may occur well inland up to altitudes of 850 m. Mangrove associate species.

Distribution : From India, through Southeast Asia and southern China to northern Australia. Found throughout Southeast Asia except East Timor and parts of Indonesia (Lesser Sunda Islands and the Moluccas).

Abundance : Locally common.

Use(s) : Often used for making sleeping mats, bags and baskets. Stems are dried, flattened and bleached in the sun.

Source of illustration : Soerjani *et al.* (1987).

Reference(s) : Heyne (1950), Backer & Bakhuizen van den Brink (1963-8), Kern (1974) Soerjani *et al.* (1987).

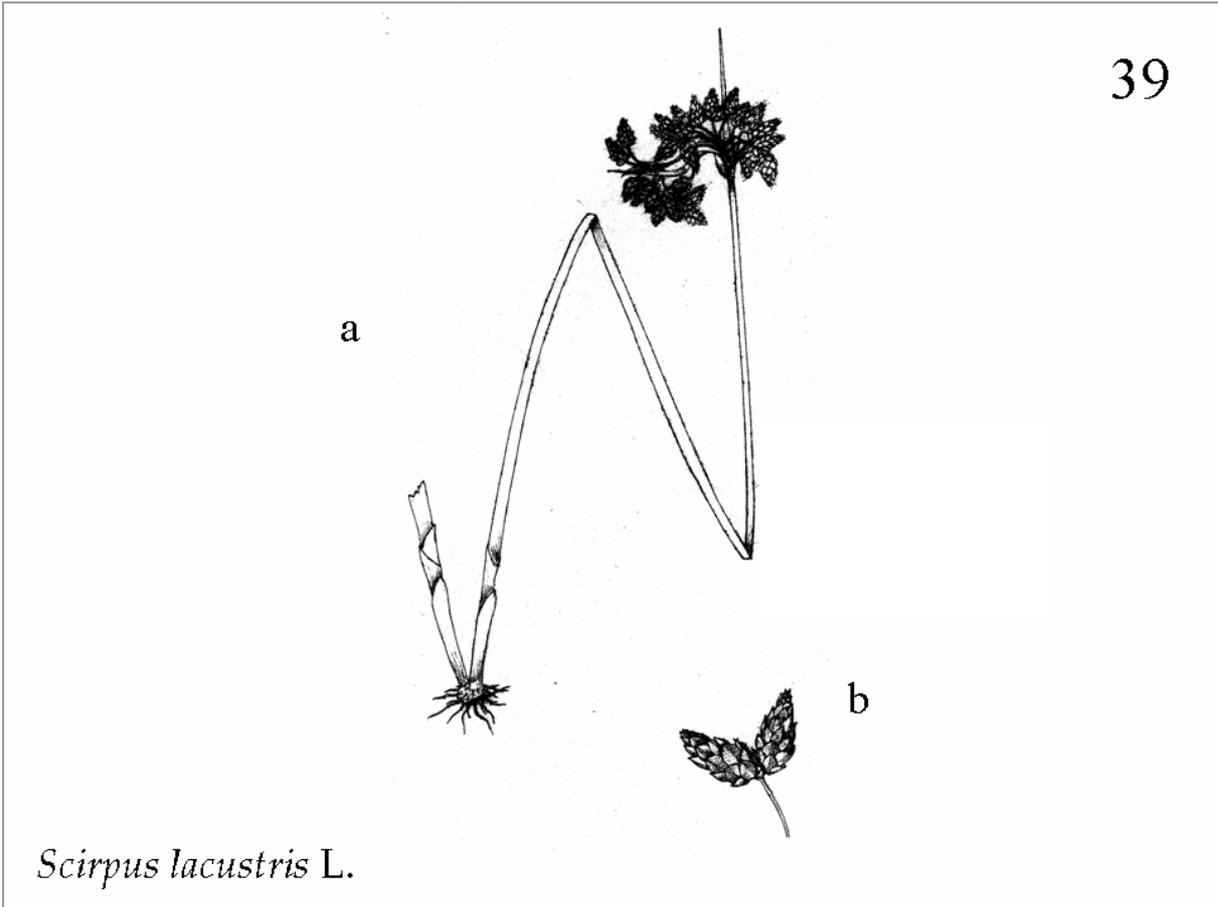


Fig. 39. *Scirpus lacustris* L. (a) Habit, and (b) inflorescence.

CYPERACEAE

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***Scirpus lacustris* L.**

Synonyms : *Hymenochaeta lacustris* (L.) Nakai, *Schoenoplectus lacustris* (L.) Palla., *Scirpus lacustris* subsp. *validus* (Vahl.) T. Koyama, *Scirpus pterolepis* (Nees) Kunsch., *Scirpus triqueter* var. *segregatus* Clarke, *Scirpus validus* Vahl.

Vernacular name(s) : Tiker (Phil.)

Description : Perennial herb with a stout, scaly rhizome, creeping horizontally. Stems borne rather closely together, erect, (nearly) round, soft and easily compressed, smooth, 5-20 mm at base, 50-200 cm tall. Leaves reduced to sheathing bases, rarely the uppermost with an up to 10 cm long blade. Flower clusters (well) below the top of the stem, 5-10(-15) cm long, consisting of many spikelets. Leaflets at the base of the flower cluster is shorter than the cluster, 2-5 cm. Spikelets solitary or partly in clusters of 2-3, ovoid to oblong-ovoid, rather pointed, densely many flowered, deep brown, 4-5 by 5-10 mm. Nuts with low rounded back, obovate, ending abruptly in a short point, smooth, greyish black, 1.25-1.5 by 2 mm.

Ecology : In open marshes, landward margins of mangroves, open sandy foreshores and freshwater swamps. From 0-1900 m asl. Highly variable cosmopolitan species, found from temperate to tropical areas. Mangrove associate species.

Distribution : Cosmopolitan, from temperate to tropical regions. In Southeast Asia recorded in Vietnam, the Philippines (Luzon) and Papua New Guinea.

Abundance : Very locally distributed in Southeast Asia. Common in temperate regions.

Use(s) : Used for weaving mats in northern Luzon.

Source of illustration : Linnean Herbarium.

Reference(s) : Kern (1974).

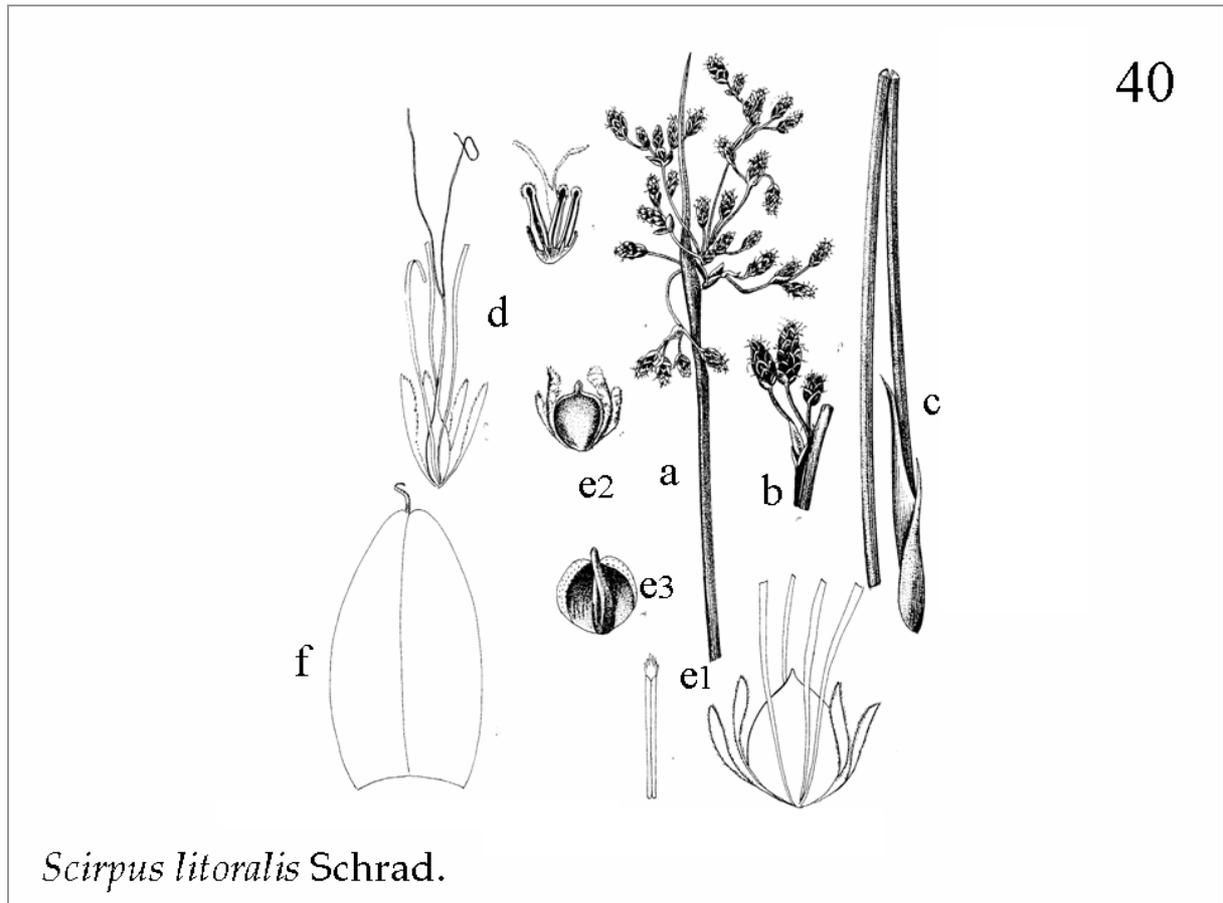


Fig. 40. *Scirpus litoralis* Schrad. (a) Inflorescence, (b) cluster of spikelets, (c) base of stem showing sheathing leaves, (d) flowers, (e) nuts, and (f) leaflet sheathing the nut.

CYPERACEAE

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***Scirpus littoralis* Schrad.**

Synonyms : *Scirpus lacustris* (non L.) Merr., *Scirpus littoralis* (sic), *Scirpus subulatus* Vahl., *Scirpus thermalis* Trab., *Scirpus validus* (non Vahl.) Beetle.

Vernacular name(s) : Endong, Penjalinan (Ind.)

Description : Large, perennial herb with a short rhizome. Stems are erect, stout, 60-150 cm tall and 3-10 mm wide, round, to bluntly 3-angular near the top. Leaves are reduced to short leaf sheaths, without blades. Flower clusters are 2-8 cm long, and spikelets (see illustration) are solitary, measuring 8-15 by 3-4 mm. It appears very similar to *Scirpus lacustris*, but has looser, less compound flower clusters.

Ecology : Occurs in brackish swamps and saline pools near the sea; habitat includes landward margins of mangroves and brackish water fish ponds. Up to 800 m near Mt. Guntur hot springs (W. Java), and up to 1,000 m along Lake Batur (Bali). Mangrove associate species.

Distribution : From the Mediterranean through South Asia to Australia and Africa. Found in only a few localities in Southeast Asia, in the Philippines (Luzon), Indonesia (a few localities in Java, Bali, Madura, Kangean and the Lesser Sunda Islands, possibly Papua) and Papua New Guinea (Northeast).

Abundance : Rare in Southeast Asia, but locally common.

Use(s) : In Java (Indramayu) it is used for making mats.

Source of illustration : Icones Rijksherbarium Leiden.

Reference(s) : Backer & Bakhuizen van den Brink (1963-8), Kern (1974).

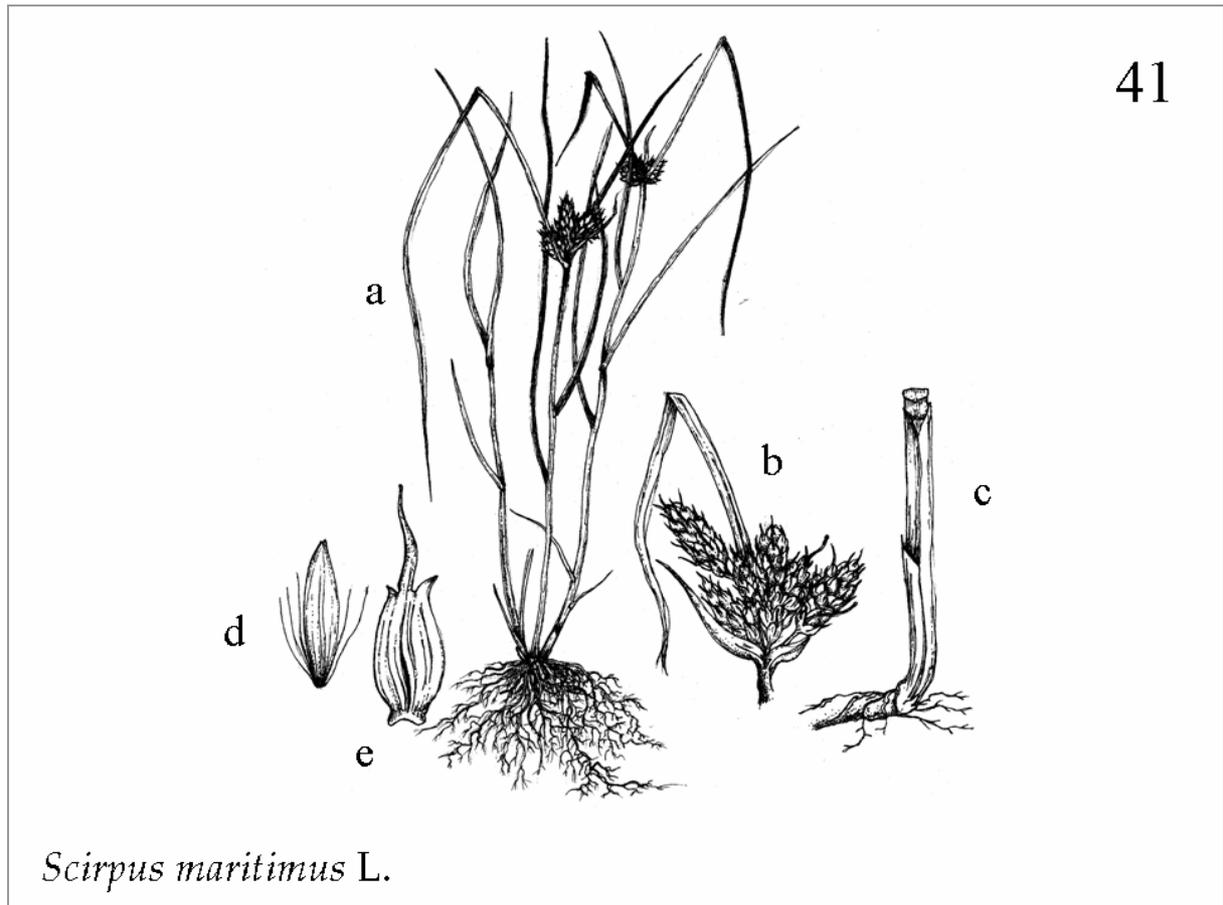


Fig. 41. *Scirpus maritimus* L. (a) Habit, (b) inflorescence, (c) base of stem, (d) nut, and (e) leaflet covering the nut.

CYPERACEAE

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Scirpus maritimus* L.*Synonyms :** Unknown.**Vernacular name(s) :** Zeebies (NL)

Description : Extremely variable perennial sedge, 15-180 cm tall, erect. Stem sharply triangular, usually smooth, 1-15 mm thick towards the base, with horizontally creeping rhizome forming hard, round tubers at the nodes. Leaves stiff, flat, long and (1-)2-12 mm wide, the uppermost overtopping the flower clusters. Flowers grouped in terminal clusters or umbels, 1-4(10) cm long, rust-coloured to brownish; spikelets solitary or in groups of 3-10; ovoid to oblong-ovoid, round 1-2(-4) cm long. Fruit a nut, two-sided or bluntly triangular, 2.5-4 mm long, shiny, brown to blackish. Leaflets enveloping the nut are incised, and are armed with one long spike.

Ecology : Generally occurs in brackish habitats. In Southeast Asia it is known from lowland ricefields, tall reed swamps, loose sands on foreshores, and in moist localities. Occurs from sea level to 2500 m asl. Lower Fly River specimens in Papua New Guinea are all very slender. Mangrove associate species.

Distribution : Cosmopolitan, found in temperate, subtropical and tropical regions world-wide. In Southeast Asia it is known from only a few coastal localities namely Laguna de Bay (Philippines) and the Lower Fly River (Papua New Guinea).

Abundance : Common to very common world-wide, but uncommon in Southeast Asia where it is known from four localities only, including the aforementioned two coastal sites. The other two sites are not coastal.

Use(s) : Unknown.

Source of illustration : van Oostroom (1975), Linnean Herbarium
www.linnaeus.nrm.se/botany/fbo

Reference(s) : Kern (1974), van Oostroom (1975).

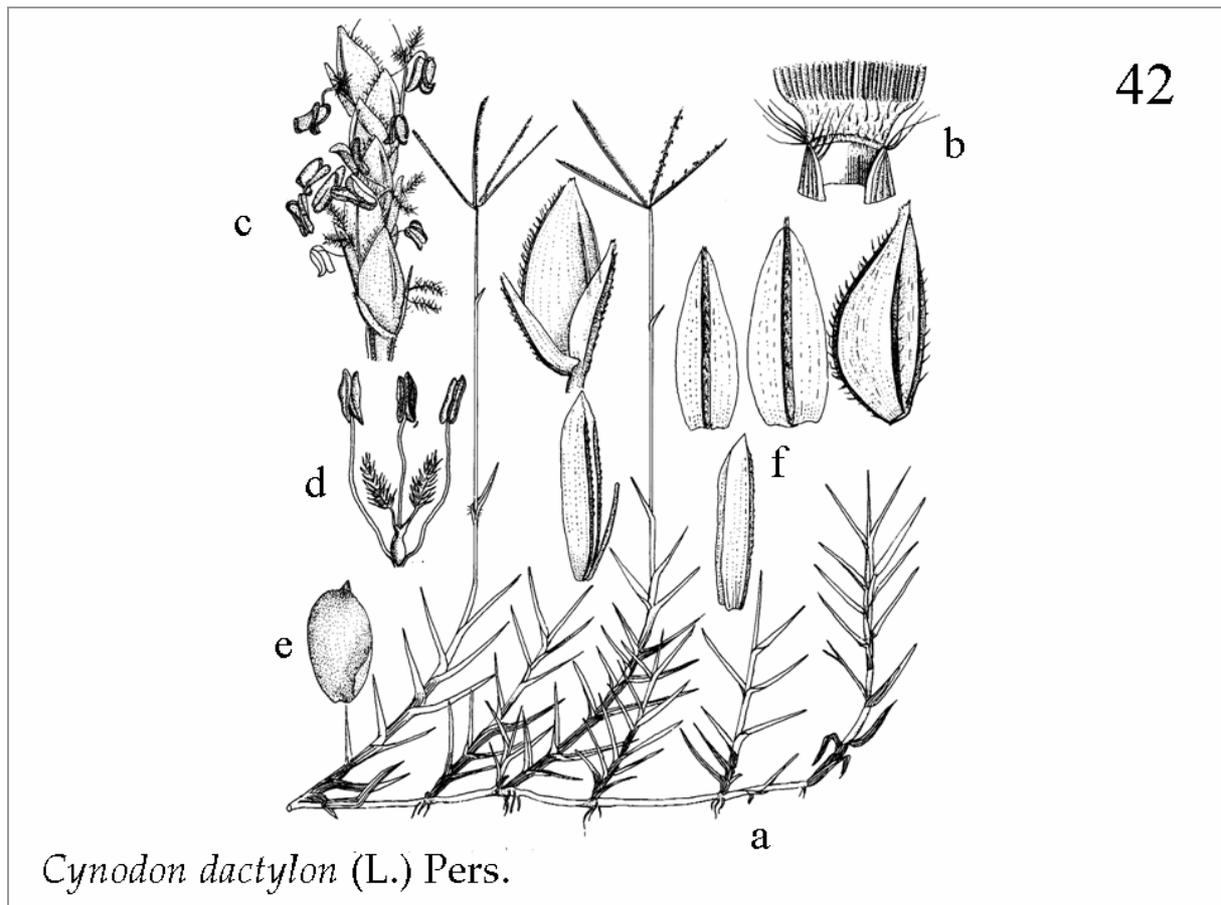


Fig. 42. *Cynodon dactylon* (L.) Pers. (a) Habit, showing creeping stolon, (b) detail of leaf base showing the ligula, (c) detail of spikelet, (d) flower, (e) nut, and (f) various leaflets sheathing the nut.

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***Cynodon dactylon* (L.) Pers.**

Synonyms : *Capriola dactylon* (L.) O.K., *Cynodon arcuatus* J.S. Presl. ex C.B. Presl., *Cynodon dactylon* var. *glabratus* (Steud.) Chiov., *Cynodon glabratus* Steud., *Cynodon parviglumus* Ohwi, *Cynodon polevansii* Stent., *Panicum dactylon* L.

Vernacular name(s) : Bermuda grass, Carpet grass, Couch grass (E), Jukut Kakawatan, Jukut Raket (Mal.), Gikirintangan, Suket Grinting, Padang Lepas, Padang Kawat, Rebha Core Koko – *Grintangan* (Ind.), Cò'gà (Viet.)

Description : Perennial herb, with wiry, creeping stems that root from the internodes. Flowering stems are erect or ascending, 10-40 cm tall. These flowering stems are slender, compressed, smooth and hollow (in older stems). Leaves occur in two rows, often paired, are pointed, bluish-green, and measure 25-150 by 2-7 mm. Leaves are sparsely covered with long hairs, and have a very short tongue at their base. The flower cluster consists of 3-9 spikelets all located at the end of the flower stalk. Individual spikelets measure 1.5-11 cm, and are sometimes purplish-green. Parts of the plant may produce hydrogen cyanide in their tissues when allowed to wilt under certain conditions, and under such circumstances it may be toxic to cattle.

Ecology : Occurs in sunny to lightly shaded, dry or moist (not marshy) sites, also on hardened soils. Occurs on fallow lands, roadsides and grasslands, sometimes in drier, landward parts of mangroves. Up to an altitude of 2,100 m. Prefers medium to heavy soils, grows on both alkaline and acid soils, and survives both floods and droughts. Mangrove associate species.

Distribution : Pan-tropical, sub-tropical and warm temperate. Found throughout Southeast Asia, but in Indonesia it has not yet recorded in Sulawesi.

Abundance : Common.

Use(s) : Reported by Soerjani *et al.* (1987) as perhaps the most serious weed of the grass family. However, it is a very suitable species for lawns, sports fields and as cattle fodder. It is also a good soil binder.

Source of illustration : Soerjani *et al.* (1987).

Reference(s) : Heyne, (1950), Backer & Bakhuizen van den Brink (1963-8), Gilliland *et al.* (1971), Clayton *et al.* (1974), Soerjani *et al.* (1987).

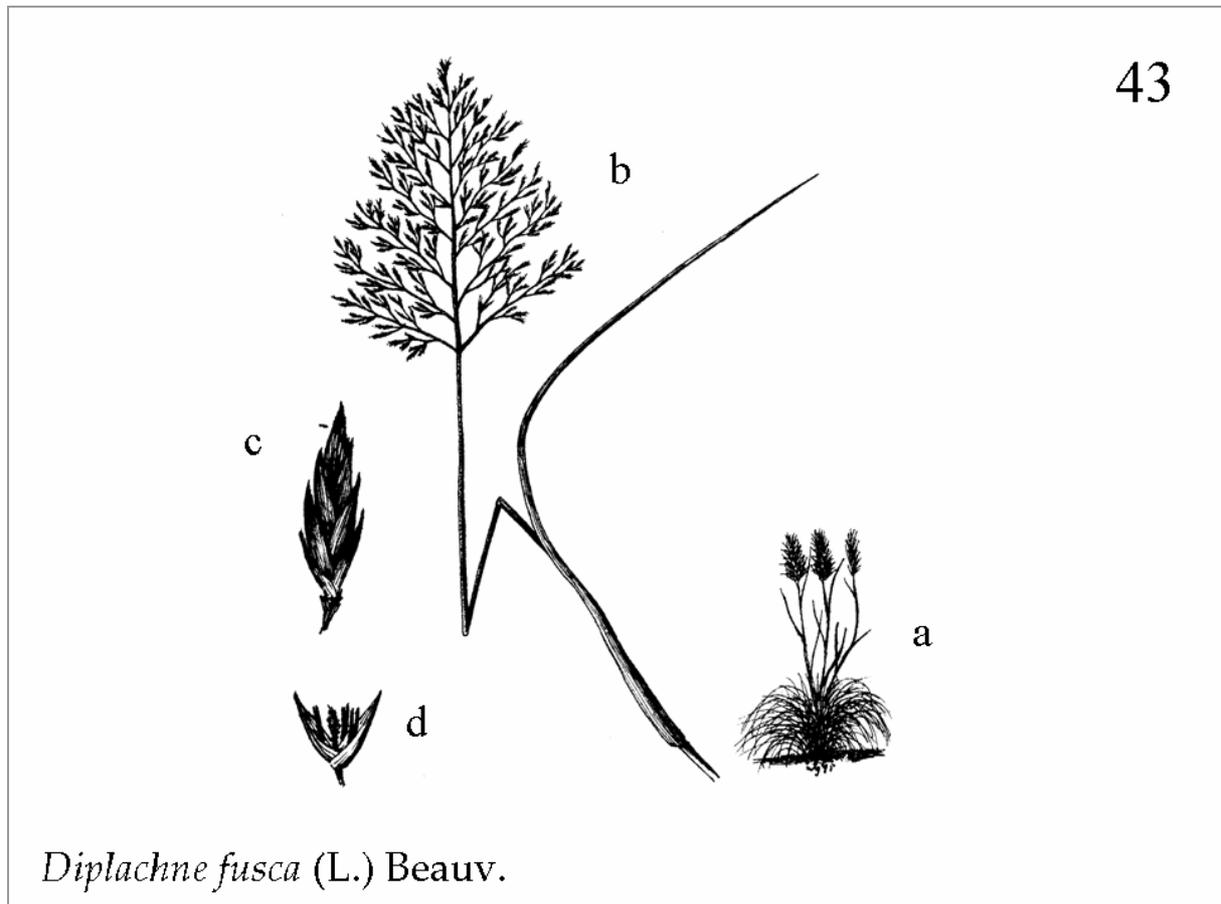


Fig. 43. *Diplachne fusca* (L.) Beauv. (a) Habit, (b) inflorescence, (c) spikelet, and (d) detail of base of spikelet.

POACEAE

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***Diplachne fusca* (L.) Beauv.**

Synonyms : *Bromus polystachyos* Forsk., *Diplachne polystachya*, *Festuca fusca* L..

Vernacular name(s) : Unknown.

Description : Ascending to erect grass, 30-100 cm tall, that often forms large tussocks. Stems are smooth and without hairs. Leaf blades are 10-25 cm by 6 mm, and are inrolled along the edges and wiry. Leaf sheaths are 10-25 cm long. The tongue at the base of the leaf consists of a 2-5 mm long, finely hairy membrane. The flower cluster is terminal, and about 20 cm long. There are usually 6-10 spikelets (see glossary), 5-10 mm long.

Ecology : Salt-loving grass, occurring in sunny, saline, moist or marshy sites, especially in littoral areas, but also further inland along saline pools and lakes. According to Heyne (1950) it occurs at sea level only, but Sastrapradja & Afriastini (1980) report that it occurs up to 750 m altitude. May form very large, spreading tussocks. Flowering occurs all year round in Indonesia. Mangrove associate species.

Distribution : Tropical and subtropical old world species. Occurs from Africa, Sri Lanka and India, to Southeast Asia and Australia. In Southeast Asia it has been recorded in Myanmar, Thailand, Malaysia (Peninsular), Singapore and Indonesia (known only from Java and Madura).

Abundance : Locally it may be common, but on the whole it is rather uncommon.

Use(s) : Fodder, but perhaps of inferior quality.

Source of illustration : Sastrapradja & Afriastini (1980).

Reference(s) : Heyne, (1950), Backer & Bakhuizen van den Brink (1963-8), Gilliland *et al.* (1971), Clayton *et al.* (1974), Sastrapradja & Afriastini (1980).

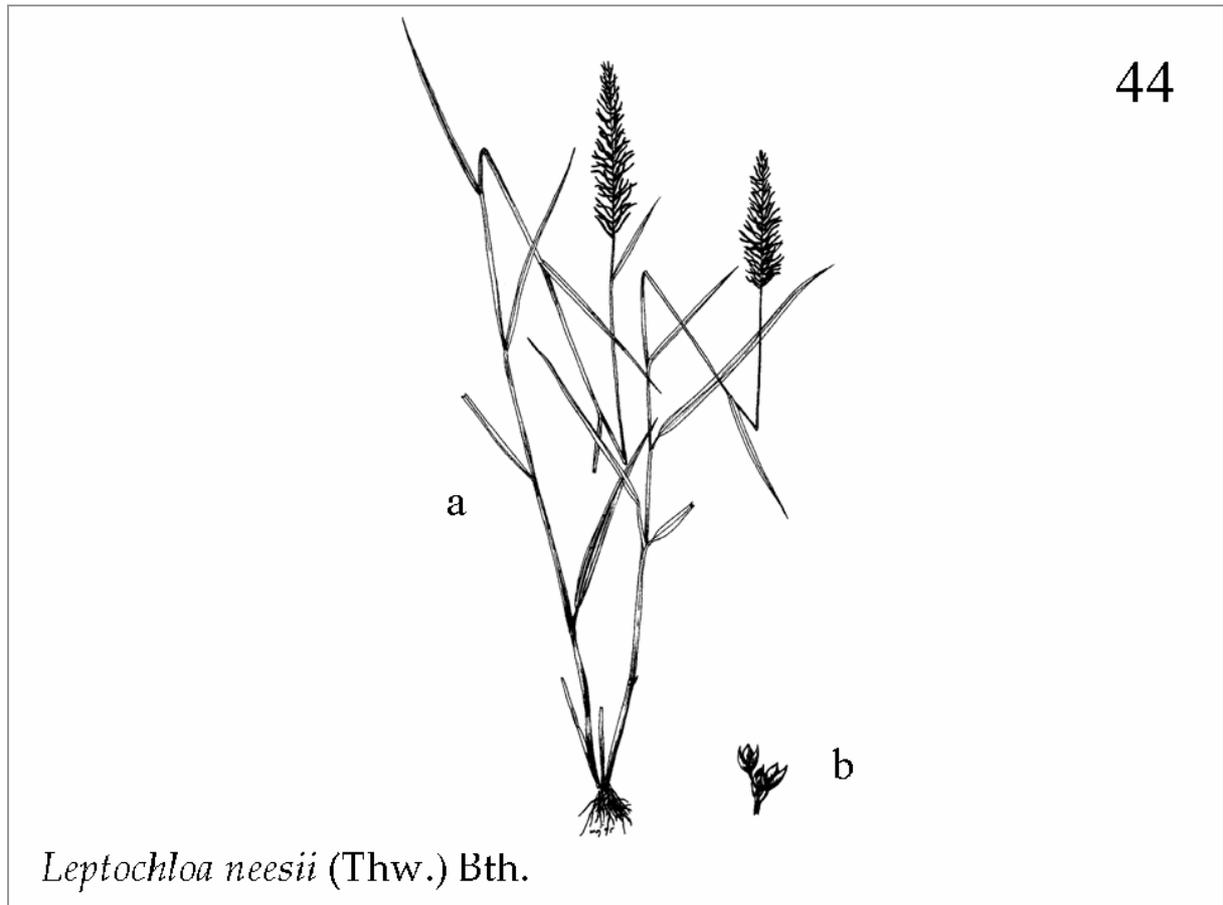


Fig. 44. *Leptochloa neesii* (Thw.) Bth. (a) Habit, and (b) detail of spikelet.

POACEAE

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***Leptochloa neesii* (Thw.) Bth.**

Synonyms : *Leptochloa panicea* (Retz.) Ohwi, *Leptochloa polystachya* Retz., *Poa panicea* Retz.

Vernacular name(s) : Unknown.

Description : Annual herb, with round, smooth stems, 50-150 cm tall. Leaf sheaths are keeled, smooth, with some long hairs on the nodes. Leaf blades are narrowly linear, pointed, flat, smooth and measure 10-45 cm by 3-6 mm. The irregularly-toothed tongue at the base of the leaf is 2-3 mm long. Flower clusters measure 15-25 cm across.

Ecology : Occurs on heavy, wet clayey soils in coastal areas, preferring saline soils, but also found on inundated rice fields. Flowering recorded in Indonesia (Java) from March-April. Mangrove associate species.

Distribution : Found from Africa to South and Southeast Asia. In Southeast Asia is has been recorded in Myanmar, Thailand, Brunei, Singapore, Malaysia (Peninsular) and Indonesia (Java, but likely to also occur in Sumatra).

Abundance : Uncommon.

Use(s) : Unknown.

Source of illustration : Backer (1934).

Reference(s) : Backer (1934), Backer & Bakhuizen van den Brink (1963-8), Gilliland *et al.* (1971).

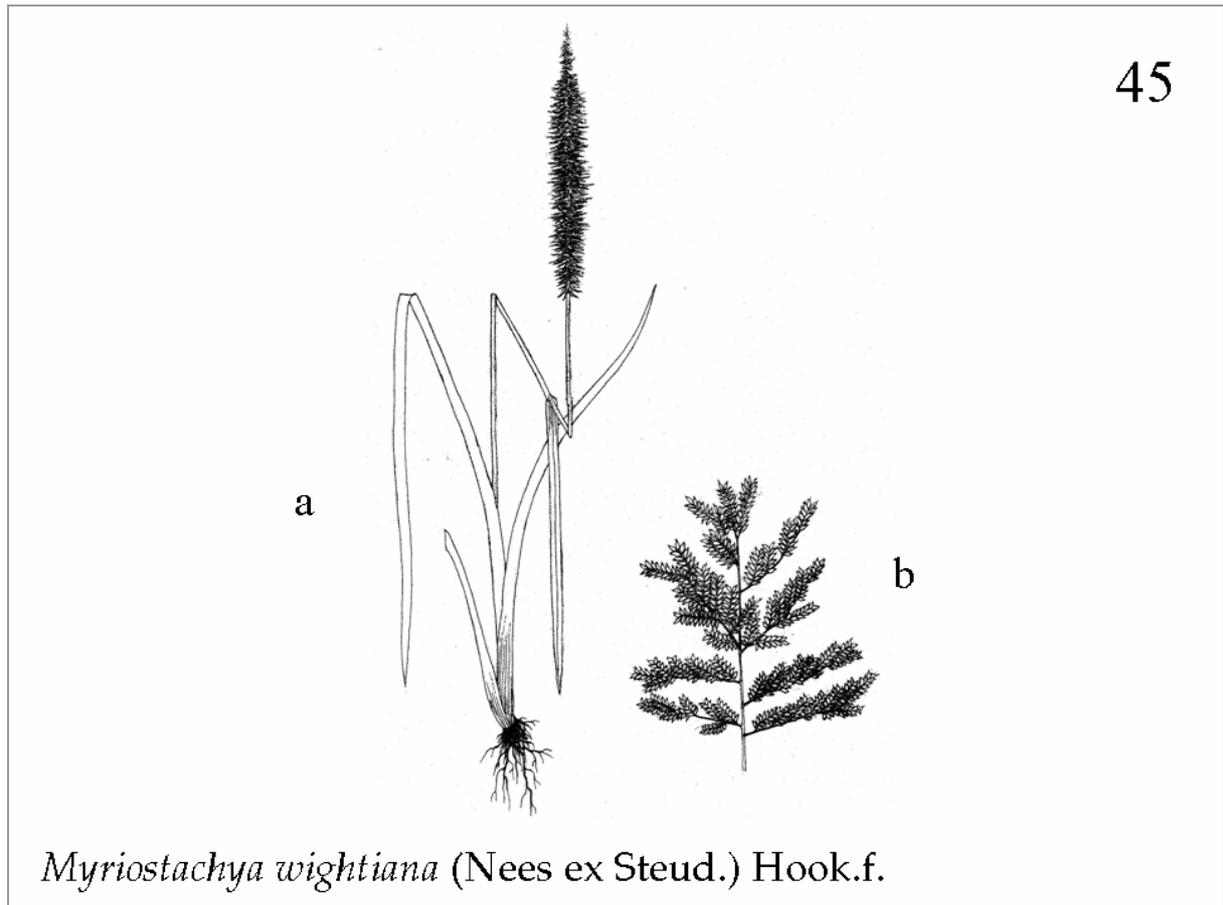


Fig. 45. *Myriostachya wightiana* (Nees ex Steud.) Hook.f. (a) Habit, and (b) inflorescence.

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***Myriostachya wightiana* (Nees ex Steud.) Hook.f.**

Synonyms : *Dinebra verticillata* Wight ex Steud., *Eragrostis wightiana* Benth., *Leptochloa wightiana* Nees ex Steud., *Myriostachya wightiana* var. *longispiculata* Hook.f., *Myriostachya wightiana* var. *wightiana*

Vernacular name(s) : Rumput laut (Mal.)

Description : Large, densely tufted grass up to 3m tall, stem round, but compressed at the base. Leaf sheaths quite smooth, keeled. Leaf blades usually flat, smooth, long, linear-pointed, up to 80 cm long by 2.6 cm wide; upper leaves narrower; leaf tongue (ligule) is reduced to a very narrow rim. Inflorescence a long narrow panicle, 25-60 cm long by 4-10 cm wide; common stalk of inflorescence is angular and covered with short hairs; primary branches are short and hairy; secondary branches arranged in a numerous spiral. Spikelets are 7-15 mm long by 2.5-3 mm wide, 3-11(-13) flowered. Glumes 1 & 2 unequal, 1-nerved, keeled with a long awn ; stamens 3. Grain obliquely ovoid with a large scutellum. Malayan plants were formerly called var. *longispiculata* by Hooker, their only distinction being that the spikelets are up to (more than) 12 mm long, while the type is 6-8 mm.

Ecology : Estuarine grass in mud or soil influenced by the tides. Often occurring together with *Nypa fruticans*. Mangrove associate species.

Distribution : From South Asia (India, Bangladesh, Sri Lanka) to Southeast Asia, where it has been recorded in Myanmar, Thailand, Cambodia, Vietnam, Peninsular Malaysia and Indonesia (Sumatra).

Abundance : Locally common to very common.

Use(s) : Fodder grass.

Source of illustration : Kindt & Burn (2002)

Reference(s) : Gilliland *et al.* (1971), Kindt & Burn (2002), Missouri Botanical Garden TROPICOS database (www.mobot.org).

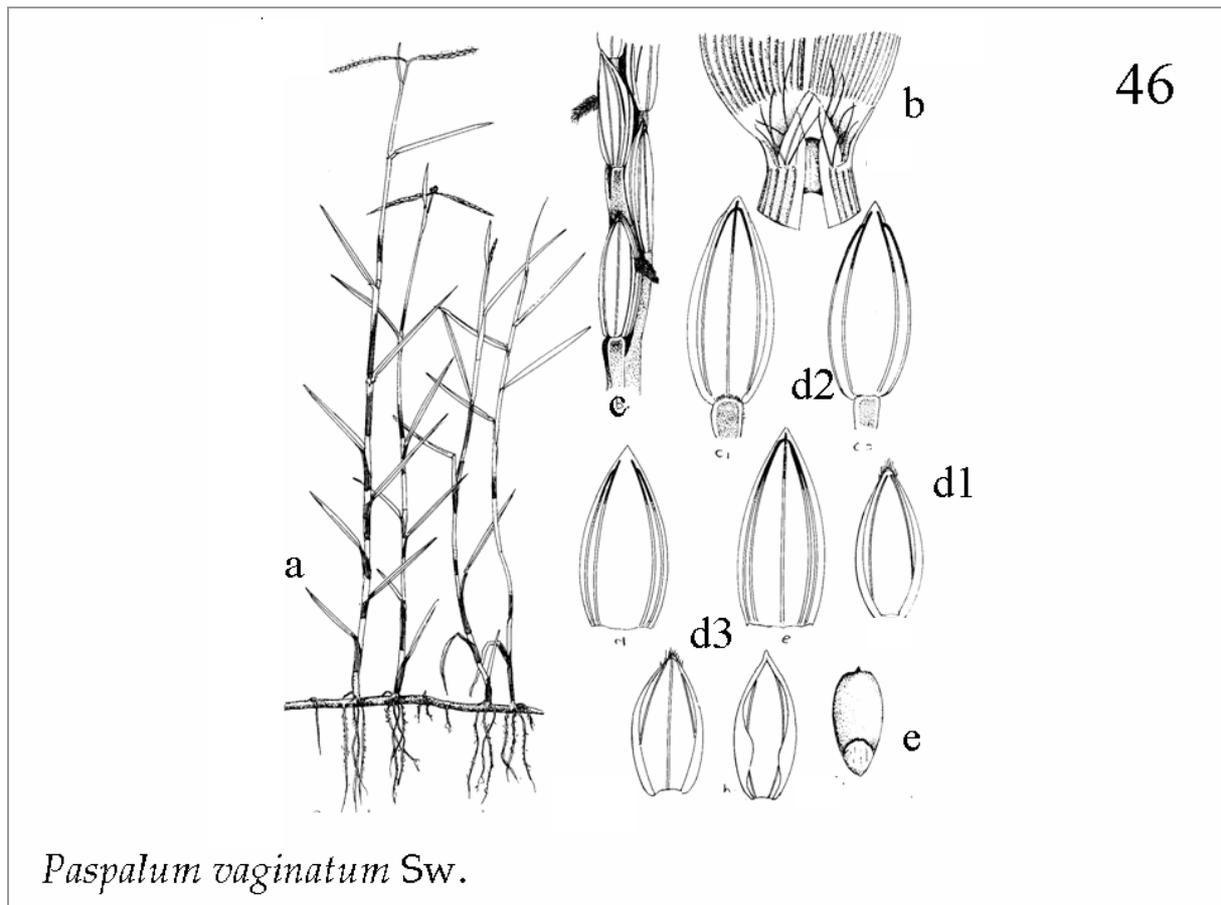


Fig. 46. *Paspalum vaginatum* Sw. (a) Habit, (b) detail of leaf base showing the ligula, (c) detail of spikelet, (d) various leaflets sheathing the nut, and (e) nut.

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***Paspalum vaginatum* Sw.**

Synonyms : *Paspalum distichum sensu* Ridley, *Paspalum littorale*

Vernacular name(s) : Water Couch Grass, Saltwater Couch, Seaside Millet, Silt Grass (E), Asinan (Mal.), Asinan – *Rumput asinan* (Ind.)

Description : Perennial herb, with creeping, often reddish stolons and erect flowering stems, 12-50 cm tall. Leaves are hairless, bluish-green, 5-17 cm long and 1.5-3.5 (-6) mm wide. Leaf sheaths are smooth, 2.5 cm long. Tongues at the base of the leaves are 0.75-1.25 mm long and membranous, flanked by a few long hairs. The flower clusters are terminal, and usually consist of two spikelets (see glossary), each 15-65 mm long. Occasionally there may be a third, located somewhat lower on the stem.

Ecology : Found on saline mud flats in coastal areas, or inland along saline pools and on wet, waterlogged, or inundated clayey soils. Often in and around mangroves, around brackish-water fish ponds and lagoons. Rarely found on sandy beaches and in tidal rice fields. Rarely occurs in non-saline environments. May form dense stands. Flowering occurs all year round. Mangrove associate species.

Distribution : Pan-tropical and sub-tropical. Recorded throughout Southeast Asia.

Abundance : Relatively common.

Use(s) : Fodder grass, though not of great quality. Used for stabilizing frequently flooded, saline soils. In Taiwan it is reported to be a good salt-binder.

Source of illustration : Soerjani *et al.* (1987).

Reference(s) : Heyne (1950), Backer & Bakhuizen van den Brink (1963-8), Gilliland *et al.* (1971), Soerjani *et al.* (1987).

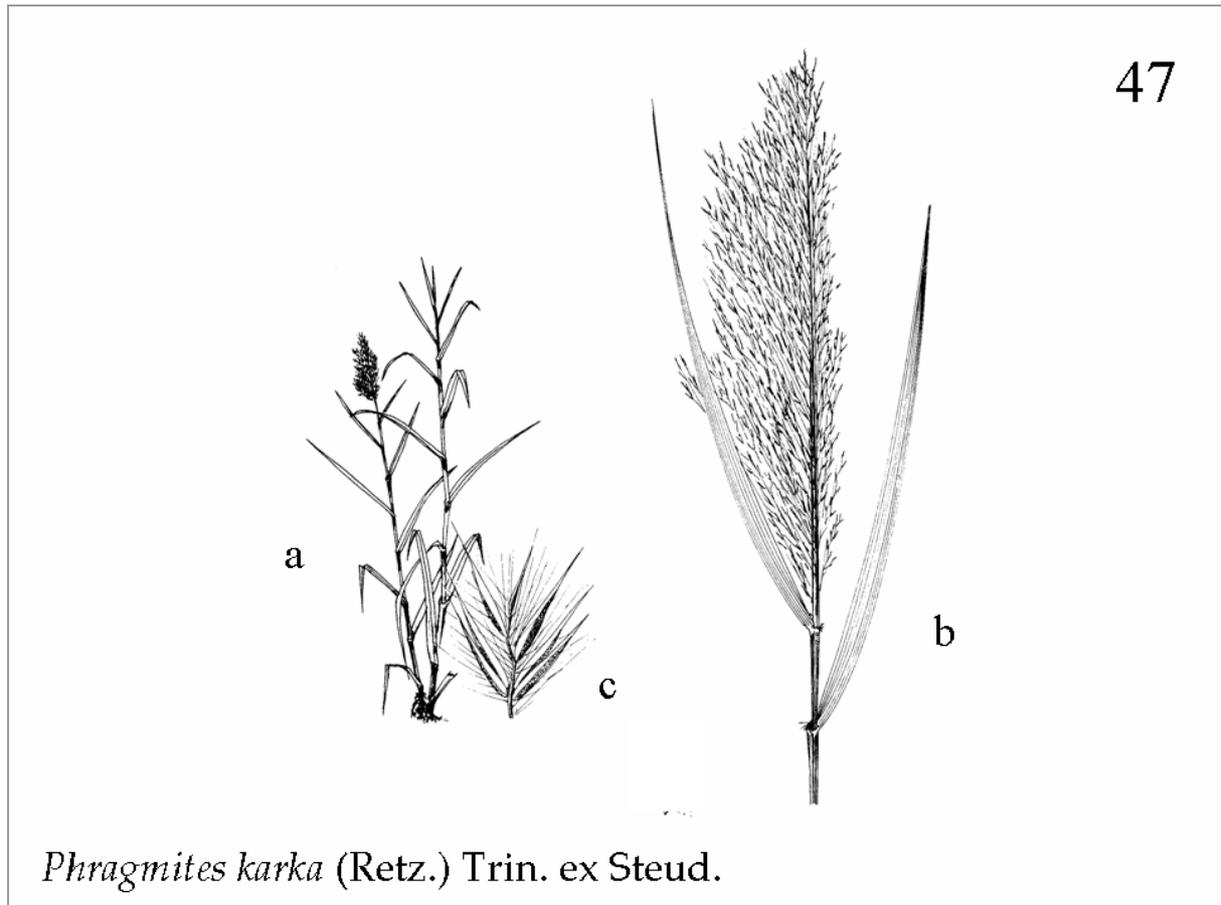


Fig. 47. *Phragmites karka* (Retz.) Trin. ex Steud. (a) Habit, (b) inflorescence, and (c) spikelet.

POACEAE

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***Phragmites karka* (Retz.) Trin. ex Steud.**

Synonyms : *Arundo karka* Retz., *Phragmites communis sensu* Ridley, *Phragmites filiformis*, *Phragmites roxburghii*

Vernacular name(s) : Reed (E), Riet (NL), Tebu Salah (Mal.), Perumpung, Bajongbong, Gajonggong, Kasongket, Palungpung, Glagah Asu, Prumpung, Parongpong, Gumulong, Tatepal, Tatupele, Biet, Weda – *Palungpung* (Ind.), Sây (Viet.)

Description : Very tall, robust, erect, perennial herb 2-4 m tall with creeping stolons that may be up to 20 m long. Stems are hollow and up to 1.5 cm diameter. Leaves do not have rough edges, and blades measure 20-60 cm by 8-35 mm. Leaf sheaths are smooth, and 15-25 cm long. The leaf tongue or ligule consists of a minute rim, at least on older and larger leaves. Leaves usually have 2-3 shallow depressions, caused by the pressure of mouths of older sheaths. The flower cluster is a 20-75 cm-long, silvery plume, with very many hairy spikelets. *Phragmites karka* is very similar to the temperate *Phragmites communis*, but differs in the presence of hairs on the stems.

Ecology : Occurs from sea level to 1,700 (rarely 2,200) m, in moist and water-logged areas, both freshwater and brackish, along lake shores, streams and walls of moist ravines, and on landward margins of mangroves. Often gregarious. Flowering occurs all year round. Favoured site for nesting or roosting birds, and a number of important bird colonies are located in reed beds (e.g. Javan Pond-herons, Great Egrets and Black-capped Night-herons along the Tulang Bawang River in Lampung, Sumatra; Javan Pond-herons in lakes near Negara, along the Negara River in South Borneo). Mangrove associate species.

Distribution : From India and Sri Lanka, through Southeast Asia to northern Australia. In Southeast Asia it has been recorded in Myanmar, Thailand, Cambodia, Brunei, Malaysia, Vietnam, the Philippines, East Timor, Indonesia (Sumatra, Java, Kalimantan, the Lesser Sundas, the Moluccas and Papua) and Papua New Guinea.

Abundance : Common, locally very common.

Use(s) : Used as thatch, but not very durable. Sometimes flattened with a mallet and used for coarse weaving.

Source of illustration : Adapted from Gilliland *et al.* (1971) and Melisch *et al.* (1993).

Reference(s) : Heyne (1950), Backer & Bakhuizen van den Brink (1963-8), Gilliland *et al.* (1971), Sastrapradja & Afriastini (1980), Melisch *et al.* (1993).

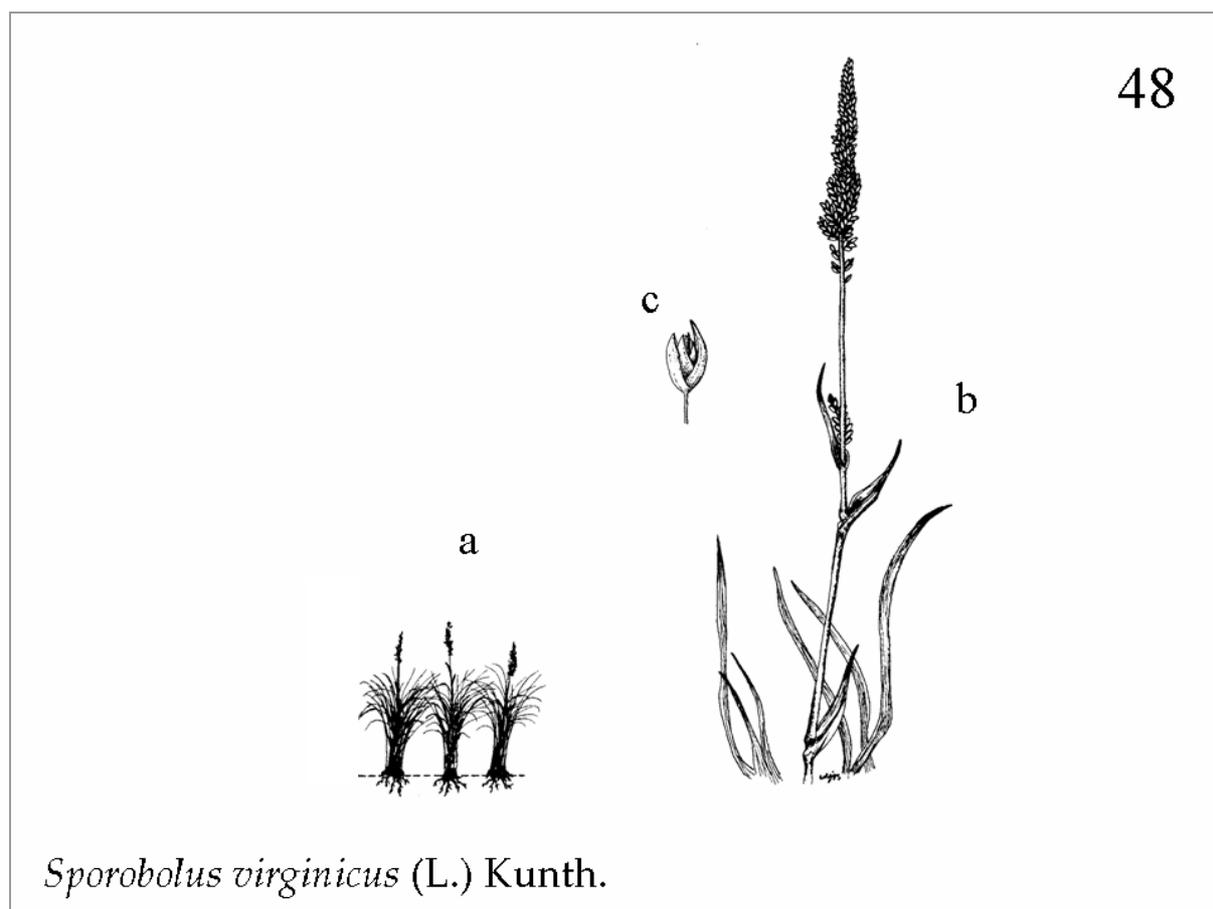


Fig. 48. *Sporobolus virginicus* (L.) Kunth. (a) Habit of several specimens connected by stolons, (b) inflorescence, and (c) spikelet.

POACEAE

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Sporobolus virginicus* (L.) Kunth.*Synonyms :** *Agrostis virginica* L.**Vernacular name(s) :** Cồ' cây (Viet.)**Description :** Perennial herb, with a creeping stolon (Gilliland *et al.*, 1971) or horizontally creeping, deep-lying rhizome (Backer & Bakhuizen van den Brink, 1968) which roots at the nodes. Flowering stems are erect, round, hollow, hard and smooth, 25-50 cm tall. Alternately there are one long and two short internodes. Leaf sheaths are hairy near the blade, and sometimes also along the edge. The leaf tongue (or ligule) consists of a very short rim and is hair-like. Leaf blades are linear, pointed, hairless, fairly rigid, and measure 4-16 cm by 1.5-4 mm. The flower cluster is 10 cm long. The light green leaves are conspicuous.**Ecology :** Sand-binding, salt-loving species, occurring on beaches just above high tide levels. Also known from open, sunny, clayey sites that are irregularly inundated with brackish water. Usually occurs gregariously. Flowering probably occurs all year round, but is scarce. Mangrove associate species.**Distribution :** From Africa, via Sri Lanka, India, through Southeast Asia to Australia. In Southeast Asia it has been recorded in the Philippines, Myanmar, Cambodia, Peninsular Malaysia, Singapore, Vietnam and Indonesia (Java). According to Heyne (1950) it also occurs in Jamaica. In Indonesia it is rare, and known only from Java and several adjacent small islands.**Abundance :** Locally abundant, but rather rare in Indonesia.**Use(s) :** Good fodder grass, though rather coarse. Provides a good soil cover on saline soils.**Source of illustration :** Wightman (1989).**Reference(s) :** Heyne (1950), Backer & Bakhuizen van den Brink (1963-8), Gilliland *et al.* (1971), Wightman (1989), Nguyen *et al.* (2000).

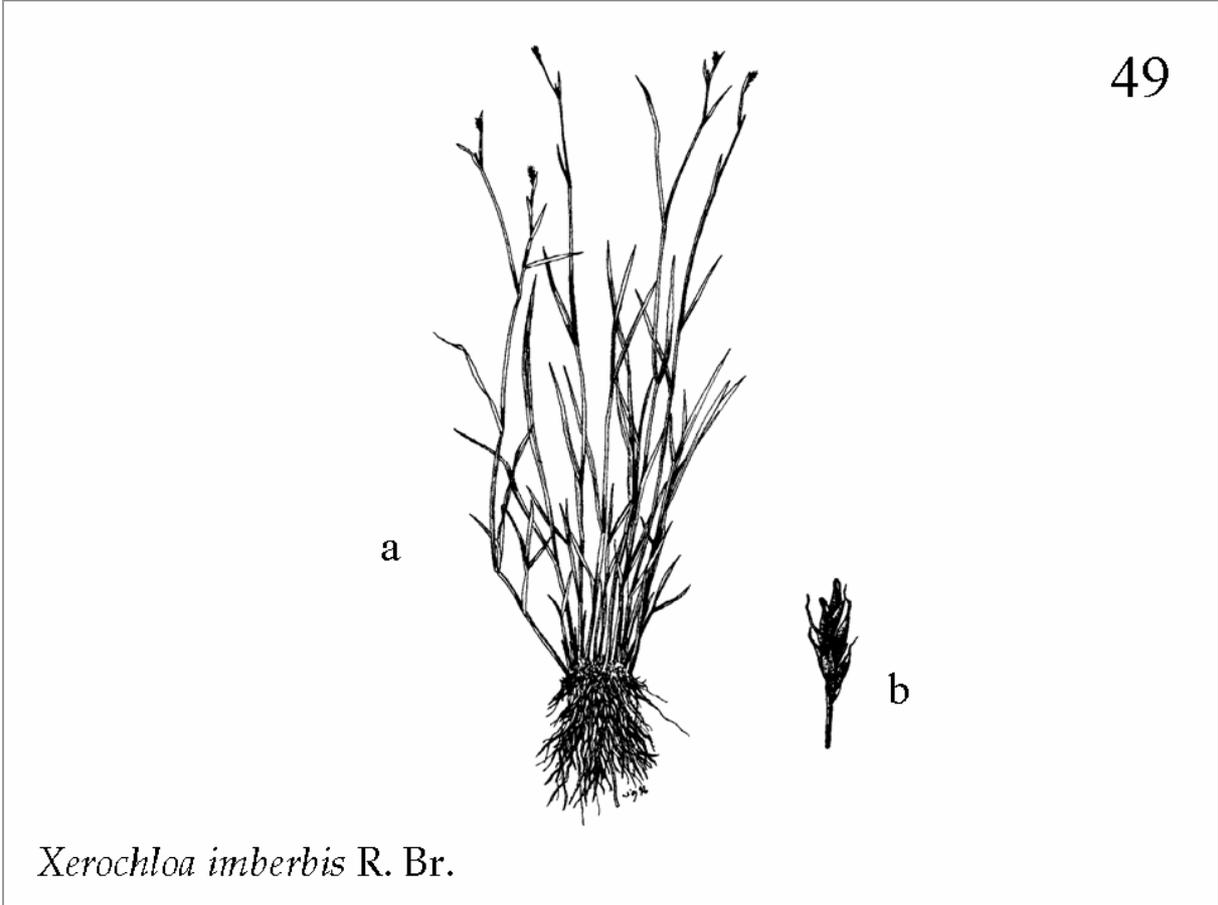


Fig. 49. *Xerochloa imberbis* R. Br. (a) Habit, and (b) spikelet.

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***Xerochloa imberbis* R. Br.**

Synonyms : *Kerinozoma cheribon* Steud., *Kerinozoma collina* Zoll., *Kerinozoma littoralis* Zoll., *Kerinozoma suraboja* Steud., *Xerochloa littoralis* Baill.

Vernacular name(s) : Rumput bilulang (Ind.)

Description : Perennial herb with creeping stolons and erect flowering stems that are 10-45 cm tall. Stems are slender, round, smooth, solid and hard. Leaf sheaths are short and smooth. Leaf blades are dark green, pointed, narrow, channelled, and measure 1.5-12 cm by 1.5-3 mm. The leaf tongue (or ligule) is very short and hair-like.

Ecology : Salt loving species. Found around salt-wells and on heavy, moist, saline clays that desiccate in the dry season. Especially common around brackish-water fish ponds, along shallow, saline pools and edges of mangroves. In the latter it may form a typical vegetation, characterized by the pale colour of the desiccated leaves. Flowering occurs all year round. Avoided by cattle, as up to 11% of the dry weight may consist of salt. Mangrove associate species.

Distribution : From Southeast Asia to northern Australia, in dry tropical regions. In Southeast Asia it has been recorded from Thailand and Indonesia (dry parts of Java and Madura).

Abundance : Locally not uncommon, but on the whole relatively rare in Indonesia.

Use(s) : May be used to bind soil, and to remove salt from the soil.

Reference(s) : Heyne (1950), Backer & Bakhuizen van den Brink (1963-8), Watson and Dallwitz (2004).

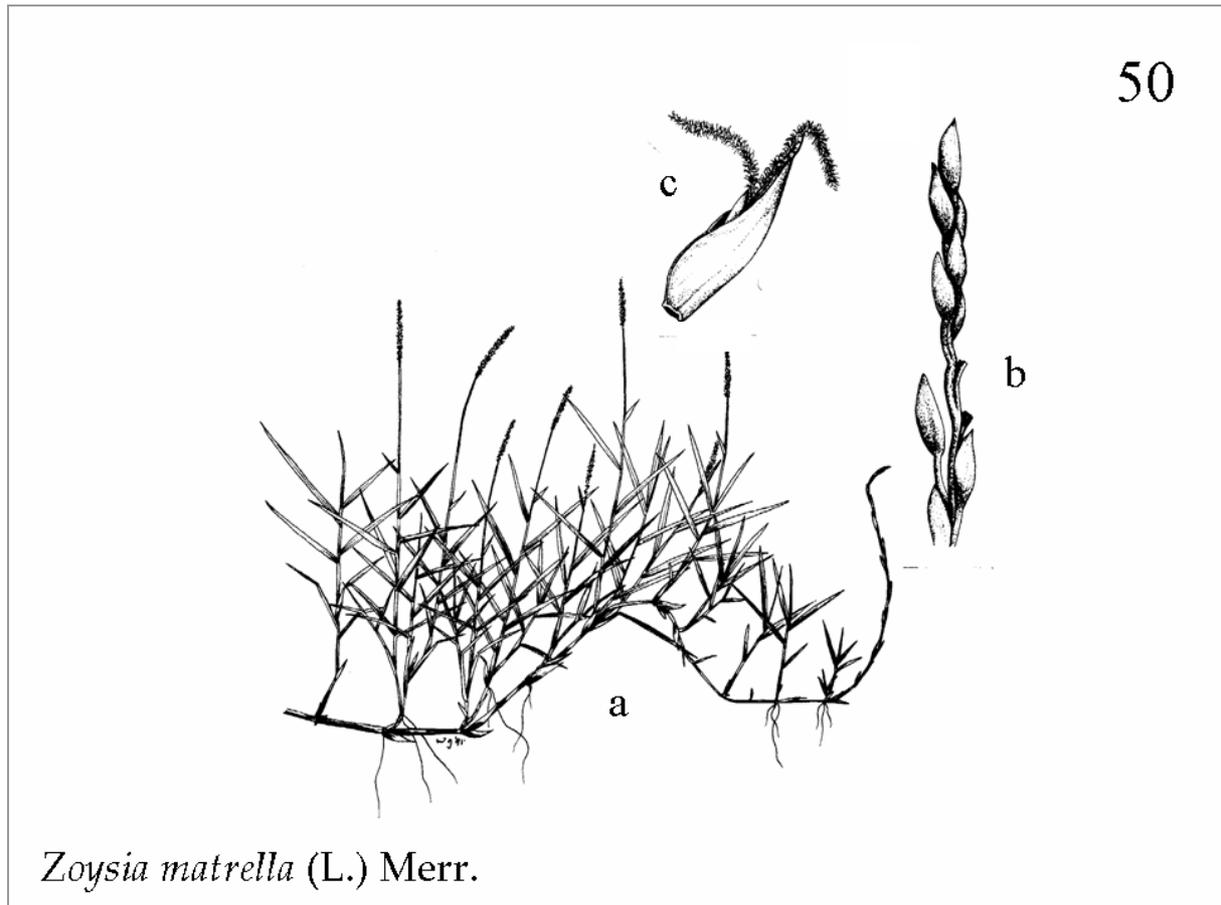


Fig. 50. *Zoysia matrella* (L.) Merr. (a) Habit, showing creeping stolon, (b) spikelet, and (c) detail of flowering.

POACEAE

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***Zoysia matrella* (L.) Merr.**

Synonyms : *Agrostis matrella* L., *Zoysia malaccensis* Gandoger, *Zoysia pungens* Willd.

Vernacular name(s) : Rebha sekem-sekeman – *Rumput peking* (Ind.)

Description : Small, perennial grass with a creeping rhizome of variable length, or partly with stolons. From the latter arise a large number of erect, flowering stems that are 10-40 cm tall. Rhizomes are 2-3 mm thick, with 2-5 cm-long internodes. Stems are smooth, and partially filled with foamy pith. Leaf sheaths are 1-2.5 cm long, at first tight, later loosening. Leaf blades are linear, pointed, usually inrolled along the edges, smooth, hairless, and measure 3-10.5 cm by 1.5-3 mm. The leaf tongue (or ligule) is very short, about 0.1 mm, and membranous. Spikelets (see glossary) are 2.5-3.5 mm long. May be confused with *Cynodon dactylon* or *Digitaria timorensis*.

Ecology : Occurs in sunny to slightly shaded localities, in moist to dry places, along the coast. From sea level to 300 m altitude, on both saline and non-saline soils, especially on loam, sandy loam or soils with abundant calcium carbonate. Occasionally found near salt-wells. May form dense, extensive stands, but usually with a low biomass. Occasionally it occurs in the landward parts of mangroves. Flowering occurs all year round. Mangrove associate species.

Distribution : Tropical and subtropical Asia and Australia, introduced elsewhere (e.g. Kenya). Recorded in Southeast Asia in Peninsular Malaysia, Singapore and Indonesia (Sumatra, Bangka, Kalimantan, Java and the Moluccas).

Abundance : Common.

Use(s) : In coastal areas it is useful as a lawn grass. Low biomass and nutritive value make it a poor fodder grass.

Source of illustration : Gilliland *et al.* (1971).

Reference(s) : Heyne (1950), Backer & Bakhuizen van den Brink (1963-8), Gilliland *et al.* (1971), Clayton *et al.* (1974), Sastrapradja & Afriastini (1980).

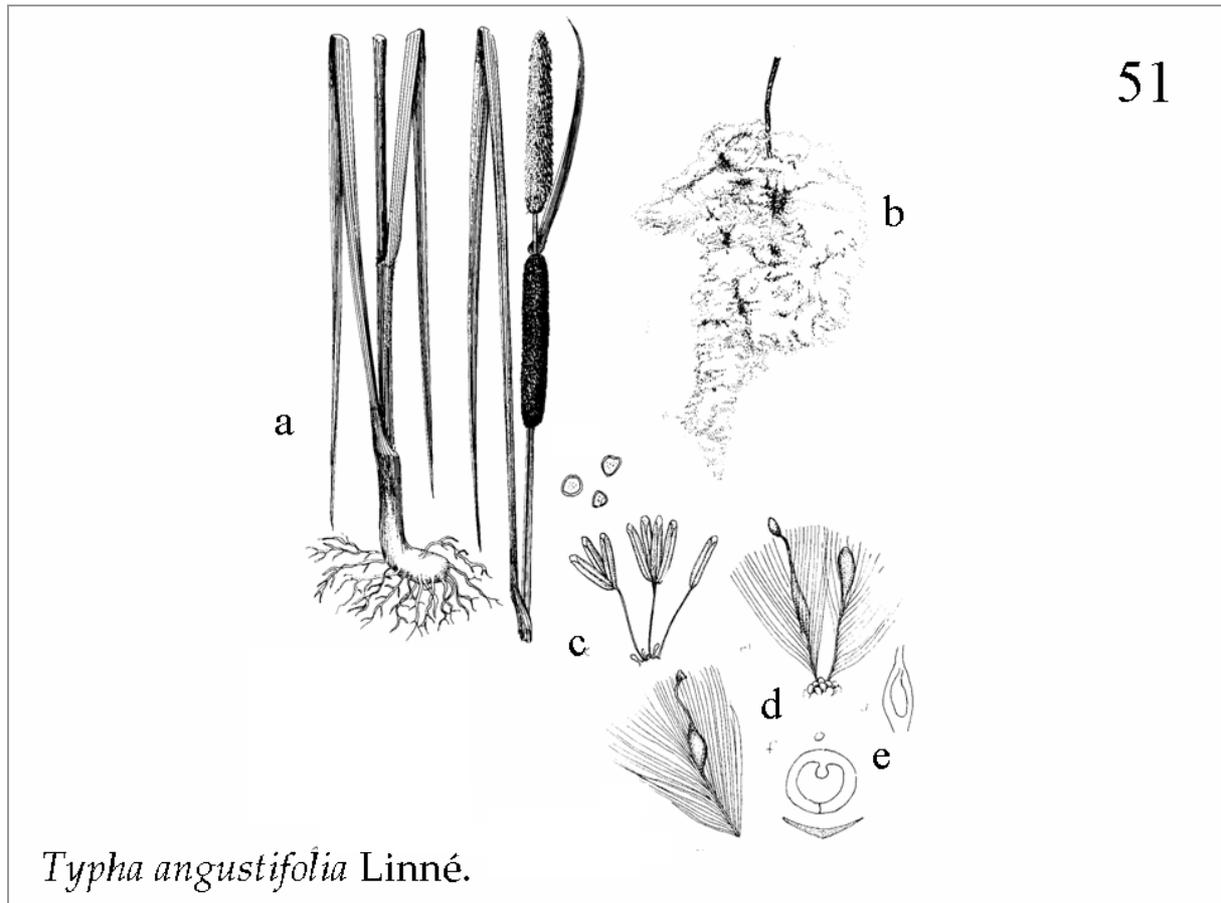


Fig. 51. *Typha angustifolia* Linné. (a) Habit, (b) ripe inflorescence, (c) stamens, (d) flowers interspersed with long, woolly hairs, and (e) cross sections of embryo (nut).

TYPHACEAE

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***Typha angustifolia* Linné**

Synonyms : *Typha angustata*, *Typha angustifolia* ssp. *javanica*, *Typha capensis* (non Rohrb.) Hall., *Typha domingensis* Pers., *Typha domingensis* var. *javanica* Geze, *Typha javanica* Schnizl., *Typha orientalis* Briggs & Johnson.

Vernacular name(s) : Cattail, Bulrush (E), Lisdodde (NL), Lembang (Mal.), Embet, Walini, Asiwung raja matri, Wawalingian, Heikre (Ind.), Balangot (Phil.), Taktenas (ET), Bô'n bô'n (Viet.)

Description : Robust, erect, perennial herb, 1.5-3 m tall, with a round stem. Leaves are linear, rather pointed, 8-22 cm by 6-16 mm, very convex beneath, and divided by partitions into a great number of compartments. Flowers are arranged on a brown, cigar-like spike, the males on the top 15-30 cm, and the females on a slightly shorter section below this. They are separated by 0.5-12 cm without flowers. Flowers are interspersed with long, fluffy, woolly hairs. Briggs & Johnson (in van Steenis, 1972) are of the opinion that Malesian *Typha angustifolia* differs from northern hemispheric material. On the basis of material from Australia and the Philippines they established that the former is *Typha domingensis* (2n = 30), different from the Southeast Asian material (2n = 60), which they term *Typha orientalis*.

Ecology : Occurs at low altitudes, often growing gregariously, and in brackish waters. Also in mountainous areas up to an altitude of 1,725 m. Found along brackish-water fish ponds, and on landward margins of mangroves. Mangrove associate species.

Distribution : The genus occurs between the arctic circle and 35°S, and *Typha angustifolia* reportedly occurs throughout this range. In Southeast Asia it has been recorded from the Philippines, Myanmar, Brunei, Thailand, Malaysia, Vietnam, Cambodia, Singapore, Indonesia (Sumatra, Java, Karimunjawa, Bawean, Madura, Kangean and Papua), East Timor and Papua New Guinea.

Abundance : Common, but with a very local distribution.

Use(s) : Rhizomes are rich in starch, and are eaten in many regions when food is scarce. Leaves are used for thatching, matting and coarse basket work. The spikes (flower/fruit clusters) are often used for decoration. Plush of the ripe spike was formerly used for stuffing pillows. Unripe plush is used for making fuses.

Source of illustration : van Steenis (1972), and Icones Rijksherbarium Leiden.

Reference(s) : Heyne (1950), Backer (1951), van Steenis (1972).

