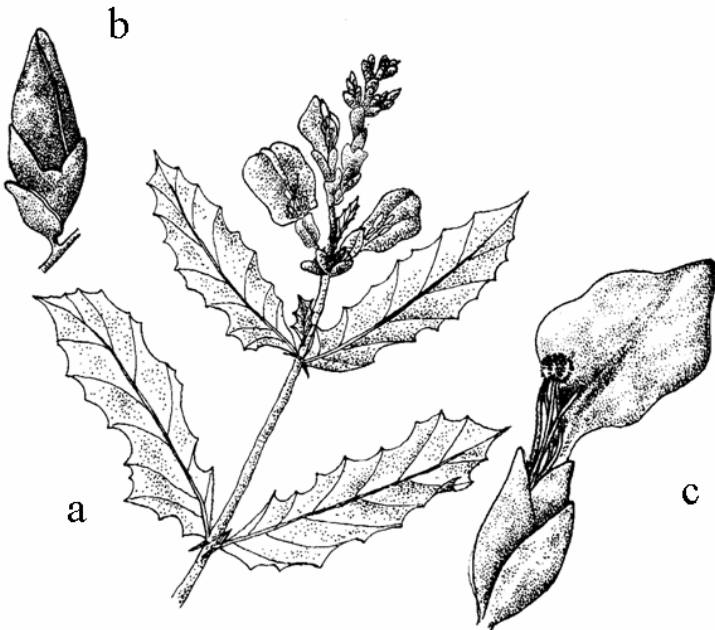


**GROUP C: OTHER GROUND-DWELLING
HERBS
(not grasses or ferns)**



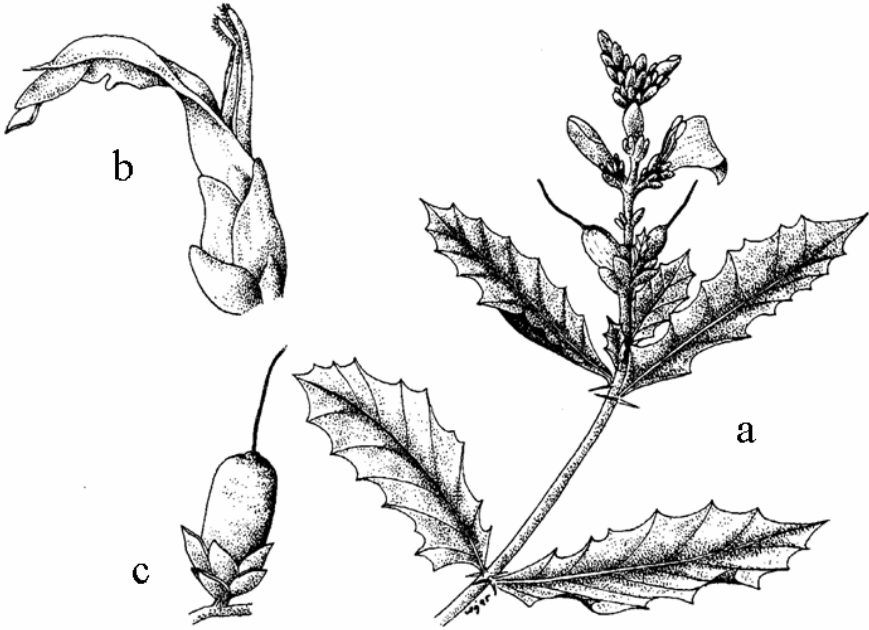
Acanthus ebracteatus Vahl.

Fig. 52. *Acanthus ebracteatus* Vahl. (a) Habit, (b) bud, and (c) flower.

ACANTHACEAE

52

Acanthus ebracteatus* Vahl.*Synonyms :** Unknown.**Vernacular name(s) :** Sea Holly (E), Jeruju (hitam) (Mal.), Jeruju (Ind.), Ô rô (Viet.), Trohjiেকcragн pkapor sar, Trohjiেকcragн slekweng (Camb.), Ngueak plaamo dok muang (Thai)**Description :** *Acanthus ebracteatus* resembles *Acanthus ilicifolius* (see next page), but all parts are smaller. Flowers measure 2-3 cm and are (usually) white; the fruit is shorter than 2.0 cm; seeds measure 5-7 mm. Flowers have only one main enveloping leaflet, as the secondary ones are usually rapidly shed. The species described by Rumphius as the male specimen of *Acanthus ilicifolius* was later identified by Merrill as *Acanthus ebracteatus* Vahl. Some authors regard *Acanthus ebracteatus*, *Acanthus ilicifolius* and *Acanthus volubilis* as one highly variable species (e.g. Heyne, 1950). Note that in *Acanthus* young leaves or leaves on the ends of branches may be unarmed (i.e. without spines), while older specimens may be armed.**Ecology :** Where this species occurs together with *Acanthus ilicifolius* the two seem distinct in the characters used in the descriptions, but they are often confused. Flowering usually occurs in June (in Indonesia). True mangrove species.**Distribution :** From India to tropical Australia, Southeast Asia and the west Pacific islands (e.g. Solomon Islands). In Southeast Asia it has been recorded in Cambodia, Myanmar, the Philippines, Vietnam, Malaysia, Singapore, Indonesia and Papua New Guinea. Perhaps overlooked elsewhere (East Timor, Brunei).**Abundance :** Common.**Use(s) :** Fruit is pounded and used as a blood purifier and dressing for burns. Leaves relieve rheumatism. A compress of the fruit or roots is sometimes applied in cases of snakebite and arrow poisoning. Seeds are said to be used to treat internal worms.**Source of illustration :** Tomlinson (1986) and Wightman (1989).**Reference(s) :** Watson (1928), Backer & Bakhuizen van den Brink (1963-8), Tomlinson (1986), Wightman (1989), Aksornkoe (1993), Ng & Sivasothi (1999), Marschke (2000), <http://www.rbgekew.org.uk/herbarium/brunei/bclhome.htm>



Acanthus ilicifolius L.

Fig. 53. *Acanthus ilicifolius* L. (a) Habit, (b) flower, and (c) fruit.

ACANTHACEAE

53

***Acanthus ilicifolius* L.**

Synonyms : *Acanthus neo-guineensis*, *Aquifolium indicum* Rumph.

Vernacular name(s) : Sea Holly (E), Jeruju puteh (Mal), Jeruju, Daruyu – *Jeruju* (Ind.), Ô rô gai (Viet.), Trohjekcragh pkaporsvay, Trohjekcragh slekbanla (Camb.), Ngueak plaamo dok khao (Thai)

Description : A low, sprawling or somewhat straggling, robust herb, slightly woody, up to 2 m tall. Shoots are initially erect but tend to lean or sprawl with age. Branching is infrequent and commonly occurs from older shoots. Aerial roots emerge from the lower surface of horizontal stems. Two spines flank the leaf stalk on the stem. The leaves are smooth, 9-30 x 4-12 cm, and gradually taper towards the base; broadly lanceolate, either with or without an entire leaf edge. The rounded leaf tip usually has a spiny edge and always has a spine on the very end. Flowers occur in terminal spikes, 10-20 cm long. Individual flowers measure 3.5-4 cm long, and are usually pale mauve or violet; rarely they are white, and this may lead to confusion with *Acanthus ebracteatus*. Flowers have one main enveloping leaflet subtended by two secondary ones. Unlike *Acanthus ebracteatus*, these leaflets remain attached throughout the life of the plant. Fruits are 2.5-3 cm long, nut-like, with seeds that measure 10 mm. The flower cluster is usually longer than 10 cm. Some authors regard *Acanthus ebracteatus*, *Acanthus ilicifolius* and *Acanthus volubilis* as one highly variable species (e.g. Heyne, 1950). Note that in *Acanthus* young leaves or leaves on the ends of branches may be unarmed (i.e. without spines), while older specimens may be armed.

Ecology : The species nearly always occurs in and near mangroves, and only very rarely is it found further inland. Typically a low, robust herb that owes its ability to spread vegetatively to its rooting of horizontal stems so that it forms large, thorny (and hence impenetrable) patches. Flowers are probably pollinated both by birds and insects. Seeds are propelled away, up to about 2 m. True mangrove species.

Distribution : Found from India to southern China, tropical Australia and the western Pacific islands, including New Caledonia and the Solomon Islands. Occurs throughout Southeast Asia.

Abundance : Common.

Use(s) : Fruit is pounded and used as a blood purifier and dressing for burns. Leaves relieve rheumatism. A compress of the fruit or roots is sometimes applied in cases of snakebite and arrow poisoning. Seeds are said to be used to treat internal worms. The plant is also used for fodder.

Source of illustration : Tomlinson (1986) and Wightman (1989).

Reference(s) : Watson (1928), Burkill (1935), Heyne (1950), Backer & Bakhuizen van de Brink (1963), Tomlinson (1986), Wightman (1989), Aksornkoe (1993), Ng & Sivasothi (1999), Marschke (2000).

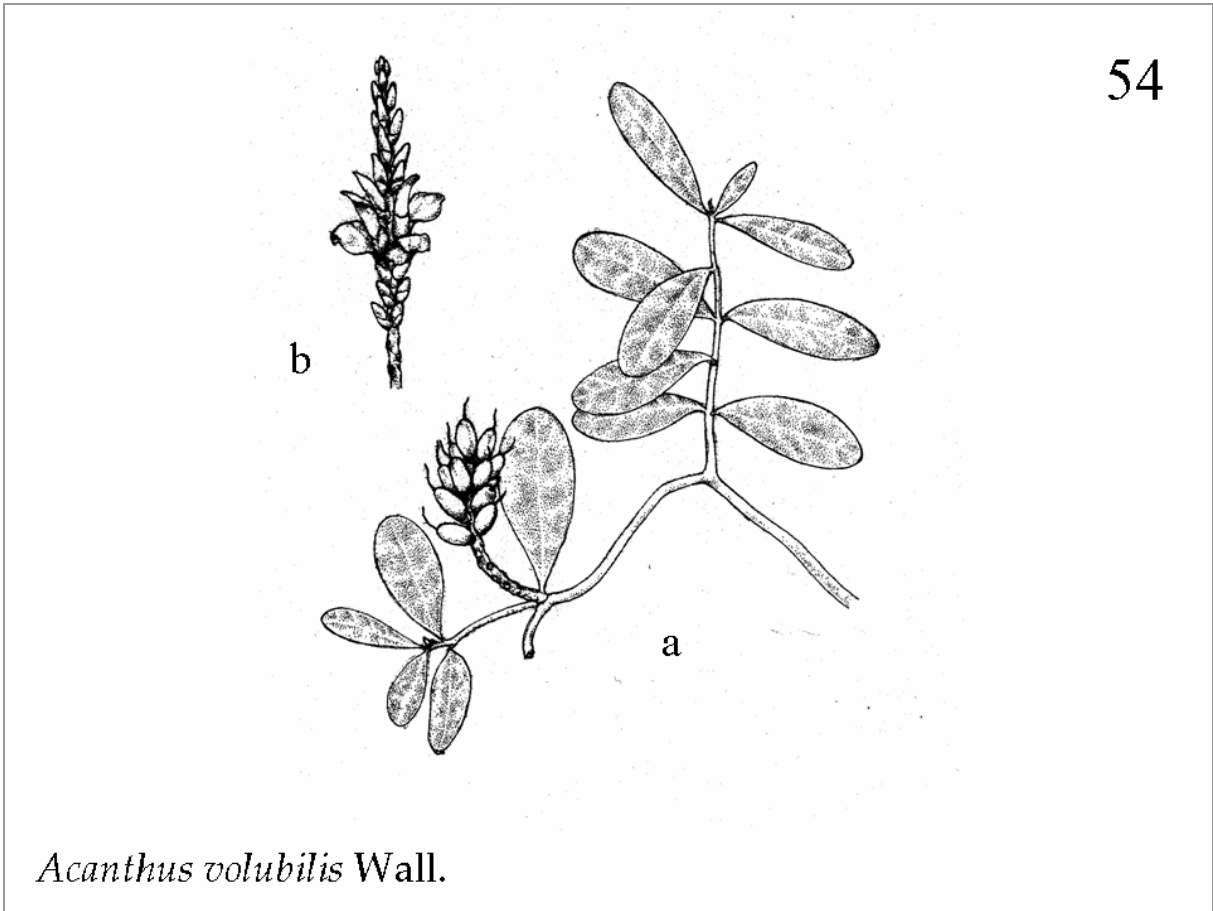


Fig. 54. *Acanthus volubilis* Wall. (a) Stem with fruit, and (b) inflorescence.

ACANTHACEAE

54

Acanthus volubilis* Wall.*Synonyms :** Unknown.**Vernacular name(s) :** Jeruju (Mal.)

Description : Semi-erect to climbing herb with thin, wiry, (usually) spineless, dark-green, smooth stems. The plant is a twining herb/shrub, attaining height up to 4(-8) m, with many branches. Often a tap root system develops, and occasionally the base of the stem is supported by slender stilt-roots arising from basal nodes. Leaf blades have smooth, entire (i.e. not toothed) edges or may be slightly lobed. They are usually without spines, succulent to leathery, oblong-lanceolate, measuring 2.5-5 by 7-9 cm and have a blunt tip. Leaves simple, opposite, with a leaf stalk about 1.0 cm long, slightly flattened and green. Flowers occur in neatly organised 10-12 cm long spikes located at the ends of the branches. Like *Acanthus ebractetus* the petals are white, turning brown when older. Flowers measure 1.9-2.5 cm length. There are 4 sepals of mixed sized, green, smooth, leathery, curved and pointed; petals number 5, fused to form single plate, and the base is fused, forming a hollow, short tube, while the point flattened to form 5 short 2-lipped lobes. Fruits are very rarely formed, consisting of a capsule about 2.5 cm long, ellipsoid and flattened. Differs from *Acanthus ilicifolius* by its smaller flowers, and from both *Acanthus ilicifolius* and *Acanthus ebractatus* by the absence of spines, and its slender, sprawling to twining stems. Note that in *Acanthus* young leaves or leaves on the ends of branches may be unarmed (i.e. without spines), while older specimens may be armed.

Ecology : Found in tidal mud among grasses and other herbs. Similar mangrove habitat as other *Acanthus* species. True mangrove species.

Distribution : Found from South to Southeast Asia. Recorded in eastern India (Orissa), Sri Lanka and the Andaman Islands, to Myanmar, Indonesia, Cambodia, Malaysia, Singapore, Thailand and Papua New Guinea.

Abundance : Uncommon. Only known from a few localities in small numbers. Listed as vulnerable in Singapore.

Use(s) : From Malay folklore, powdered seeds are taken with water as a blood cleansing medicine and against ulcers.

Source of illustration : <http://www.indian-ocean.org/bioinformatics/mangrove/MANGCD/Acanth4.htm>

Reference(s) : Tomlinson (1986), Ng & Sivasothi (1999)
<http://mangrove.nus.edu.sg/guidebooks/text/1047.htm>
<http://www.indian-ocean.org/bioinformatics/mangrove/MANGCD/Acanth4.htm>

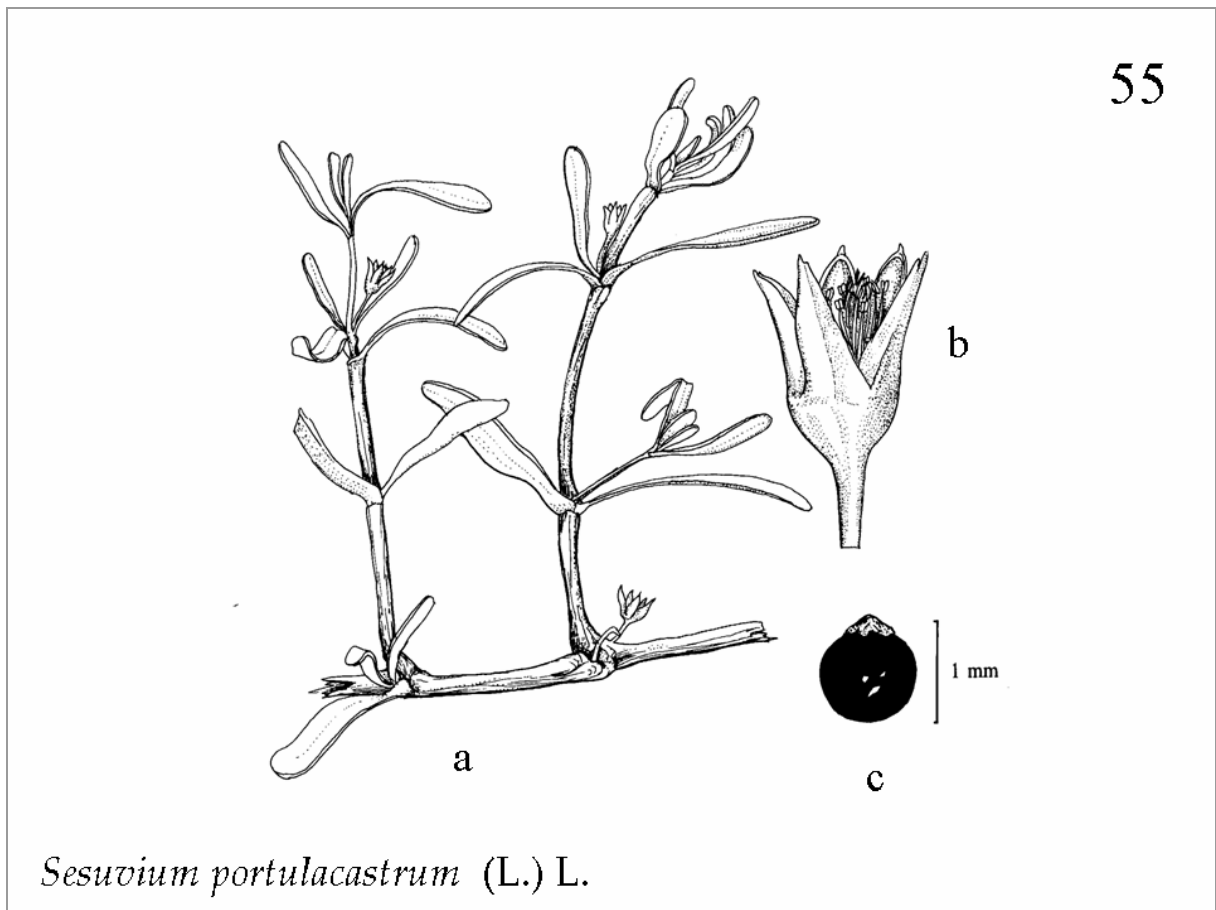


Fig. 55. *Sesuvium portulacastrum* (L.) L. (a) Detail of flowering stem, (b) flower, and (c) fruit.

AIZOACEAE

55

***Sesuvium portulacastrum* (L.) L.**

Synonyms : *Crithmus indicus* Rumph., *Portulaca portulacastrum* L., *Pyxipoma polyandrum* Fenzl., *Sesuvium polyandrum* Fenzl. ex Britt., *Sesuvium repens* Willd., *Trianthema polyandrum* Bl.

Vernacular names : Gelang (-laut), Saruni Air (Mal.), Krokot (Ind.), Bilang-bilang, Dampalit, Tarumpalit (Phil.), Rau heo (Viet.)

Description : Usually a many branched, spreading, creeping and succulent perennial herb. It is up to 1 m long, with smooth, frequently conspicuous, bright red stems that root at the nodes. The fleshy leaves are linear, lanceolate or oblong-lanceolate, 2.5-7 by 0.5-1.5 cm. Flowers occur in the leaf axils. The pink flowers have a 3-15 mm-long stalk and a 3 mm-long flower tube with five 6-9 mm-long lobes that have membranous edges. Flowers have numerous pink or pinkish-violet stamens and 3-4 styles. The capsule-like fruit is round and smooth, and is about 8 mm across. There are several pea-shaped, smooth, black seeds, 1.5 mm across. In older literature, it is often recorded as a member of the closely related Molluginaceae family, or as a member of the Ficoidaceae (a synonym of the Aizoaceae).

Ecology : Commonly found in dense patches, along landward margins of mangroves, and on mudflats and sand dunes in areas that are irregularly inundated by tides. Substrates of sands, muds and clayey soils are colonised. It is also found on rocky beaches, between coastal fish ponds and along tidal creeks. The flowers close at night and when the sky is overcast. Flowering occurs throughout the year. Small, pollen-collecting bees and day-flying moths pollinate the flowers. The seeds are not buoyant. Mangrove associate species.

Distribution : Pan-tropical species; found throughout Southeast Asia, but not (yet) recorded in Borneo.

Abundance : Locally common.

Use(s) : Leaves are edible after repeated washing and cooking. In Thailand, this plant is also used widely as forage and feed for sheep, cattle and pigs and even as a vegetable for human consumption.

Source of illustration : Wightman (1989).

Reference(s) : Heyne (1950), Backer (1951), Backer & Bakhuizen van den Brink (1963-8), Wightman (1989), <http://ratree.psu.ac.th/~bnoparat/MANGROVE.html>

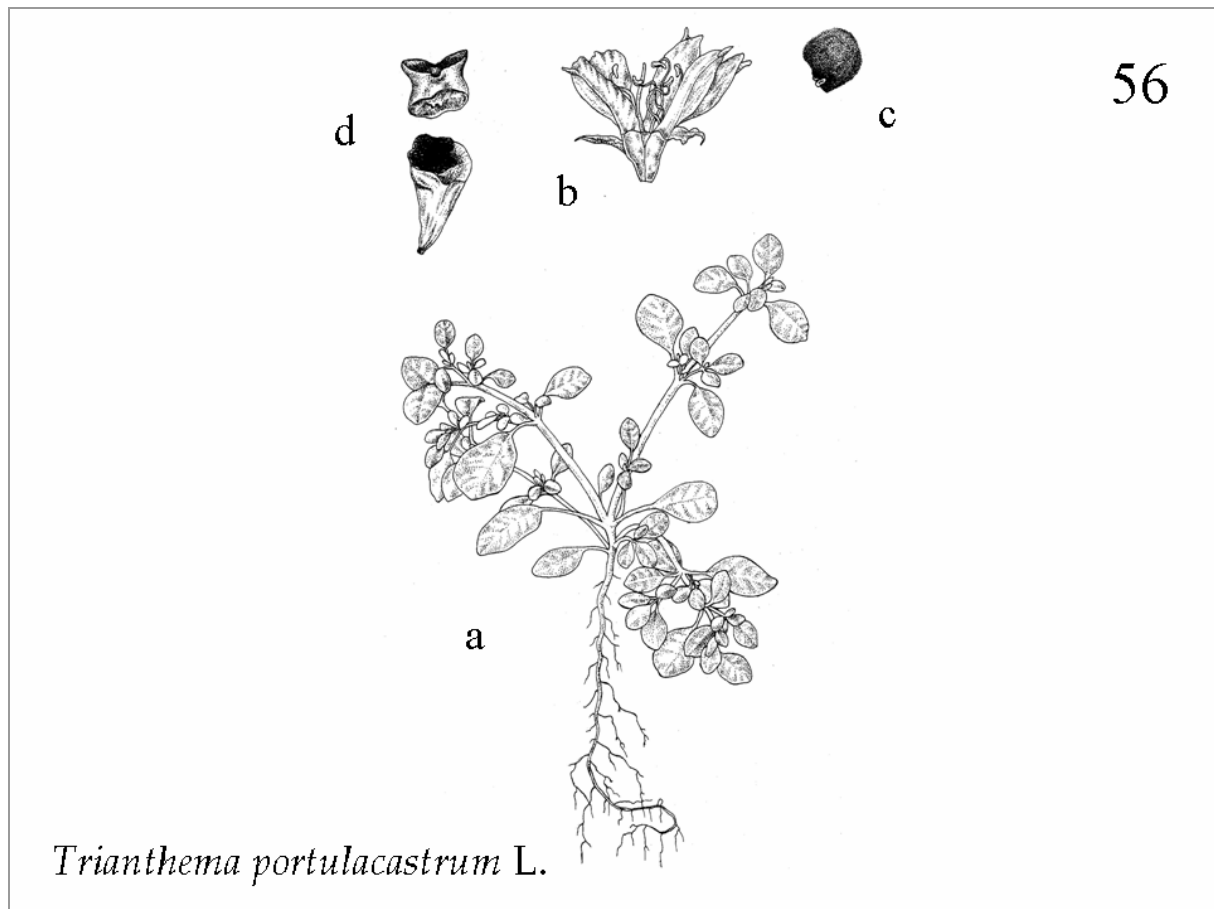


Fig. 56. *Trianthesma portulacastrum* L. (a) Habit of flowering plant, (b) flower, (c) seed, (d) fruit two crested (opened), with seeds exposed.

AIZOACEAE**56*****Trianthema portulacastrum* L.**

Synonyms : *Portulaca axilliflora* (non Pers.) Blanco, *Portulaca monogynum* (L.) Medik., *Portulaca toston* Blanco, *Trianthema flexuosum* Schumach. & Thon., *Trianthema littoralis* Cordem., *Trianthema monanthogyna* L., *Trianthema monogyna* L., *Trianthema obcordata* Roxb., *Trianthema procumbens* Mill.

Vernacular name(s) : Horse purslane (E), Krokot, Telekan, Krajep (Ind.), Ayam, Ulisuman, Toston (Phil.)

Description : Prostrate or ascending, often much branched annual succulent herb, that usually forms a robust taproot. The stems are almost round or slightly angular, thickened and flattened at the nodes, smooth or finely hairy, and 15-50 cm long. Branches in the axils of the smaller leaves of the pairs, in an alternating pattern. Leaves are bright green, (thinly-)fleshy, and are opposite, entire, with a purple edge, smooth (except for the stalk). Leaves of each pair are very unequal in size: the larger leaves are oval-obovate with a wedge shaped base, 1-4.5 by 1.5-5 cm; smaller leaves are 4-25 by 8-30 mm. Leaf stalks 4-30 mm long, slightly hairy; sheathing, and membranous bases link pair wise into a funnel-shaped pouch, bearing a small leaflet. Flowers have no visible stalks, and their lower parts hidden by the leaf stalk pouch. Flowers occur singly or in small groups together in the leaf and branch axils, and are open only in the mornings. The calyx/corolla measures 4-5 mm across, is 5-merous, usually pale pink, rarely white and rose-purple within. The tube of the flower is fused throughout its length to the base of 1-2 leaflets; each flower bears a thickened hornlike tip on the back. Stamens number 6-10(-25), with smooth, white filaments, 2-3 mm, and pale pink anthers. Fruit is a top-shaped capsule/small seedpod, with the upper part thickened and 2-crested, falling away as a lid when the 1-2(-5) seeds are mature. The thick, blackish seeds are square-shaped, somewhat heart-shaped, or kidney-shaped, about 1.75-2.5 mm broad, and covered by whitish, wavy ridges. In older literature, it is often recorded as a member of the Ficoidaceae, which is a synonym of the Aizoaceae.

Ecology : Found in dry areas, especially along the coast, up to an altitude of 200 m asl (Java); in sunny, periodically dry areas on saline soils. Also common along roadsides and in cultivated areas. Its preferred habitat appears to be clayey soils near the sea. Mangrove associate species.

Distribution : Pantropical. In Southeast Asia recorded in the Philippines, Thailand, Malaysia, Indonesia (Java, Lesser Sundas, Moluccas, Papua), East Timor and Papua New Guinea.

Abundance : Locally common.

Use(s) : Young leaves are sometimes eaten as a vegetable.

Source of illustration : <http://www.doa.go.th/botany/trianthema%20portulacastrum.html>
<http://www.uapress.arizona.edu/online.bks/weeds/graphics/fig61.gif>

Reference(s) : Backer (1951).

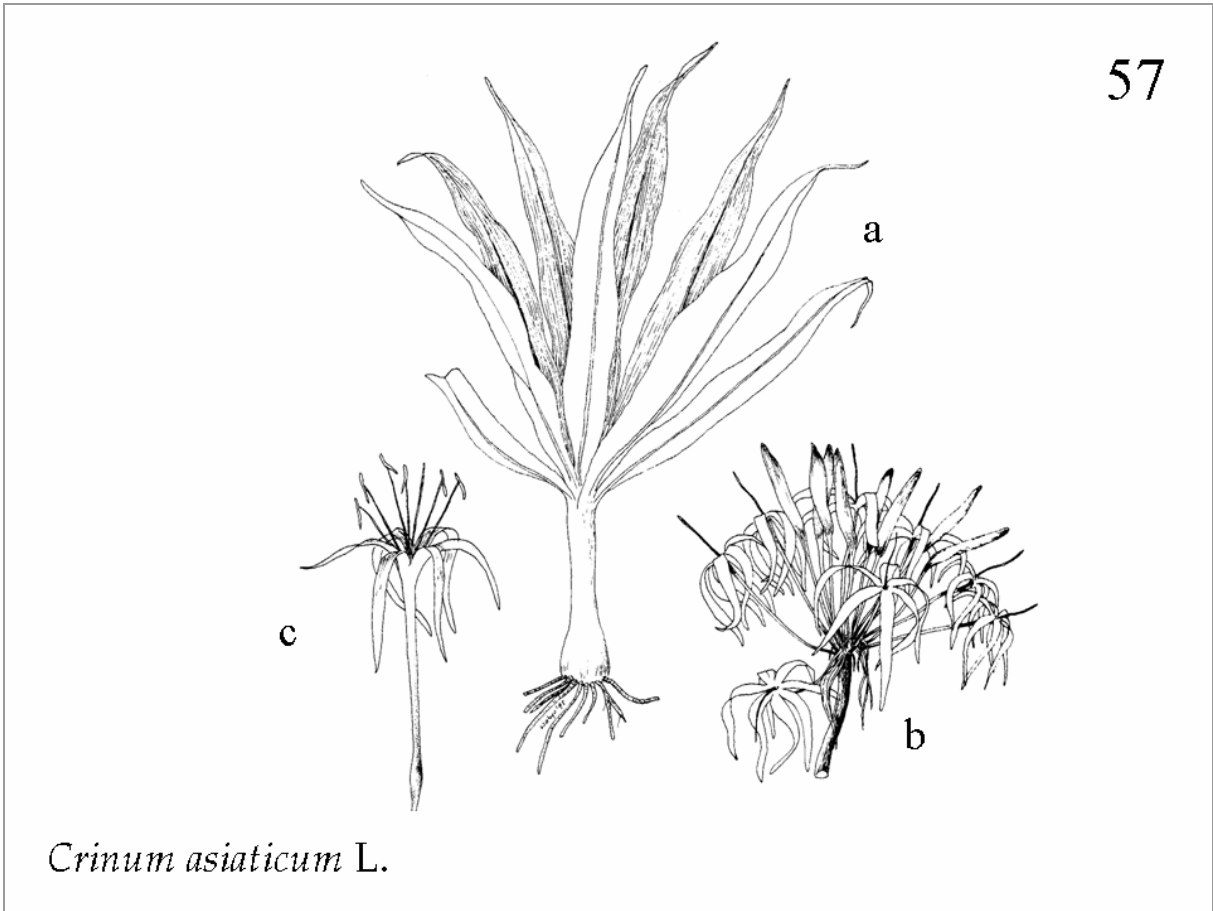


Fig. 57. *Crinum asiaticum* L. (a) Habit, (b) flower cluster, and (c) single flower.

AMARYLLIDACEAE

57

***Crinum asiaticum* L.**

Synonym(s) : *Crinum amabile* Donn., *Crinum cortifolium* Hallier, *Crinum defixum* auct. non. Ker-Gawl., *Crinum firmifolium* var. *hygrophilum* H.Perrier, *Crinum giganteum* auct. non. Andr. Blanco, *Crinum macrantherum* Engler, *Crinum macrophyllum* Hallier, *Crinum northianum* Baker, *Crinum pedunculatum* R.Br., *Crinum rumphii* Merr., *Crinum sumatranum* Roxb., *Crinum toxicarium*, *Haemanthus pubescens* auct. non. L. f : Blanco, *Radix toxicaria*

Vernacular name(s) : Poison Lily (E), Tembaga Suasa, Bakong, Bakung, Bawang Hutan, Kajang-kajang, Semur, Fete-fete, Nopu, Da-usa – *Bakung* (Ind.), Nàgg ho' ráy (Viet.)

Description : The base of the stem (actually the lower part of the leaves) is rounded and fleshy, large, and has a stout, 60 cm long neck. It has an underground, fleshy bulb. Leaves are lanceolate, with a pointed tip and measure 50 cm to 1.25 m long, and 12-15 cm wide. Flowers are usually quite numerous and conspicuous. The flower tube is green, 7-15 cm, while the flower lobes are white, sweet scented and measure up to 8-9 cm long. Stamens are crimson with a white base, and the style is dark red. Fruit is irregularly rounded and white, about 5 cm in diameter. Seeds are green and irregular in shape. This species may be confused with *Hanguana malayana* (*Flagellariaceae*), which is known throughout Malesia as *bakung* and is superficially the same, especially when both are not flowering. In Australia and PNG the species is often recorded as *Crinum pedunculatum*, which was recognised by Hooker (1894) as a subspecies of *Crinum asiaticum*.

Ecology : Usually found in shaded areas, from sea level to 700 m altitude, but may also occur fully exposed to the sun. Occurs on sandy beaches, beach swales, freshwater swamps and occasionally in (sandy) mangroves. Large specimens occur in freshwater and brackish swamps, while those occurring on dry, sandy seashores are usually smaller. Mangrove associate species.

Distribution : Occurs from continental Asia (India to Southeast Asia) to Australia and the Pacific. In Southeast Asia it has been recorded from Myanmar, Cambodia, Thailand, Vietnam, the Philippines, Indonesia (Sumatra, Java, Kalimantan, north Sulawesi, Papua and the Moluccas), Brunei, Singapore, East Timor and Papua New Guinea.

Abundance : Common.

Use(s) : Planted as an ornamental. Poisonous, and used in traditional medicine as a purgative and for treating foot sores (Heyne, 1950; Polunin, 1988).

Source of illustration : Keng (1987) and Polunin (1988).

Reference(s) : Ridley (1924), Heyne (1950), Backer & Bakhuizen van de Brink (1963-68), Polunin (1988), Geerinck (1993), Nguyen *et al.* (2000), Hannibal (undated).

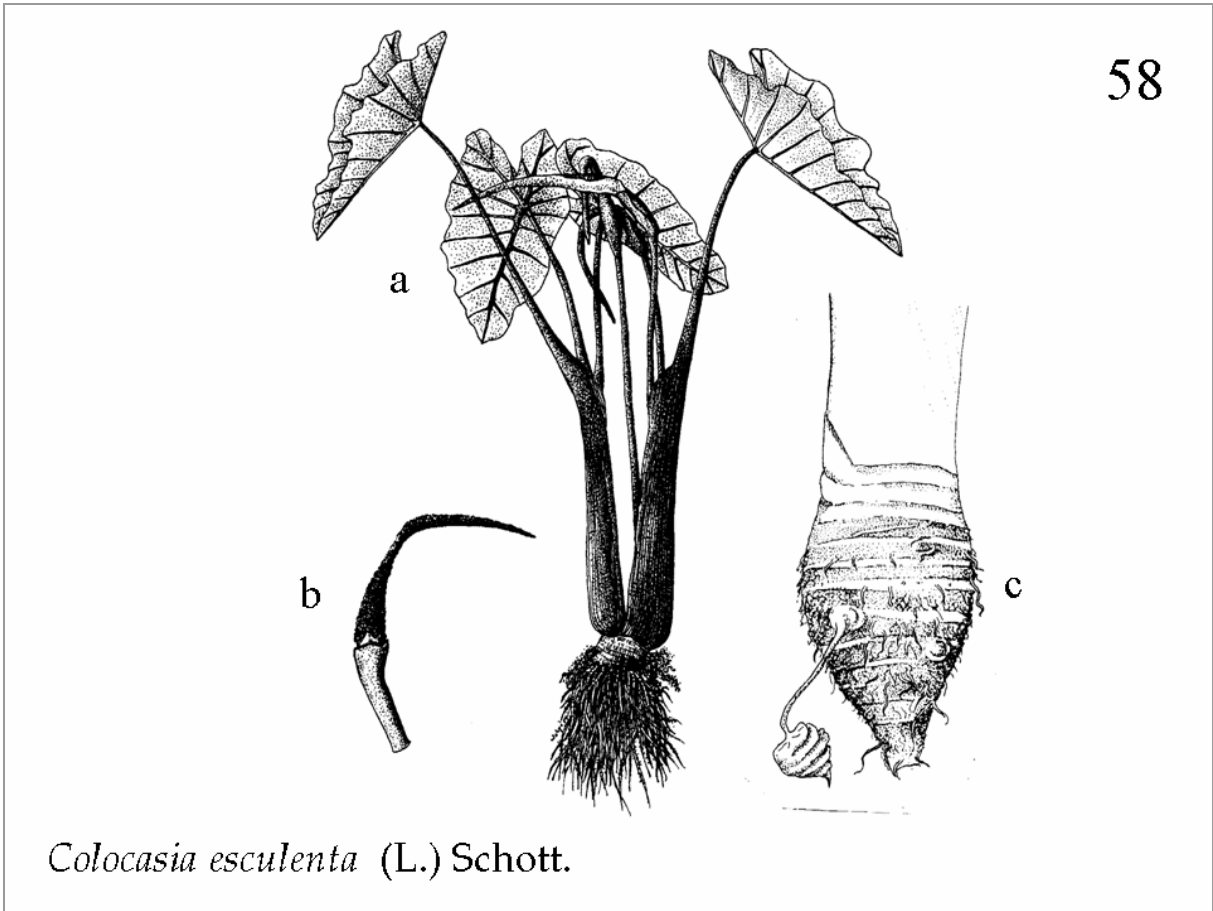


Fig. 58. *Colocasia esculenta* (L.) Schott. (a) Habit of flowering plant, (b) flower, and (c) tuberous root.

ARACEAE

58

***Colocasia esculenta* (L.) Schott**

Synonyms : *Alocasia dussii* Hort., *Alocasia illustris* W. Br., *Arum aegyptium* Rumph., *Arum chinense* L., *Arum colocasia* L., *Arum colocasioides* Desf., *Arum esculentum* L., *Arum nymphaeifolia* (Vent.) Roxb., *Arum peltata* Lam., *Caladium colocasia* W. Wight *ex saff.*, *Caladum esculentum* (L.) Vent., *Caladium nymphaeifolia* Vent., *Caladium violaceum* hort. *ex Engl.*, *Calla gaby* Blanco, *Colocasia acris* (R.Br.) Schott., *Colocasia antiquorum* Schott. & Endl., *Colocasia euchlora* K. Koch & Linden, *Colocasia fontanesii* Schott., *Colocasia himalensis* Royle, *Colocasia nymphaeifolia* (Vent.) Kunth, *Colocasia peregrina* Raf., *Colocasia vulgaris* Raf.

Vernacular name(s) : Taro (E), Keladi (Mal.), Keladi, Talas, Tales – *Talas* (Ind.), Phueak (Thai.), Gabi (Phil.), Môn nu'óc (Viet.)

Description : Erect, fleshy herb with an underground rhizome, often with stolons, and may be up to 2 m tall. The large, pointed leaves, 20-55 by 11-36 cm, are thin, ovate-triangular, slightly undulating along the leaf edge, green above and green or purplish-green beneath. They have basal lobes that are fused along more than half of their length, and are directed downward. The leaf stalk is green, purple, reddish- or yellowish-green, and 30-150 cm long. Several flowers occur together at or near the top of the plant. The 4-5 cm, tubular part of the fleshy flower spike is surrounded by a lanceolate leaflet that is 3-5 times its length, greenish-yellow to orange and encloses the naked, unisexual flowers. The berry is green, 4 mm across, and contains a few seeds.

Ecology : Found along the margins of ponds, streams and pools, in floating masses of reeds, swamps and waste places, from sea level up to 2,000 m. Common in coastal *Barringtonia asiatica* vegetation. Flowering occurs all year round. Mangrove associate species.

Distribution : Its place of origin is probably Southeast Asia – where it is found throughout, and from where it has been spread by human activity to (sub-)tropical regions in Africa, the Caribbean, Asia and the Pacific Islands.

Abundance : Very common.

Use(s) : Important food plant in much of its (expanded) range. The tuberous roots are rich in starch, and leaves are eaten as a vegetable. All parts contain oxalic acid, and must be boiled for a long time before consumption is possible. Also used as green fodder for fish and pigs. Many different cultivated forms occur as a result of efforts by subsistence farmers.

Source of illustration : Sastrapradja *et al.* (1981).

Reference(s) : Heyne (1950), Backer & Bakhuizen van den Brink (1963-8), Sastrapradja *et al.* (1981), Hay (1990).

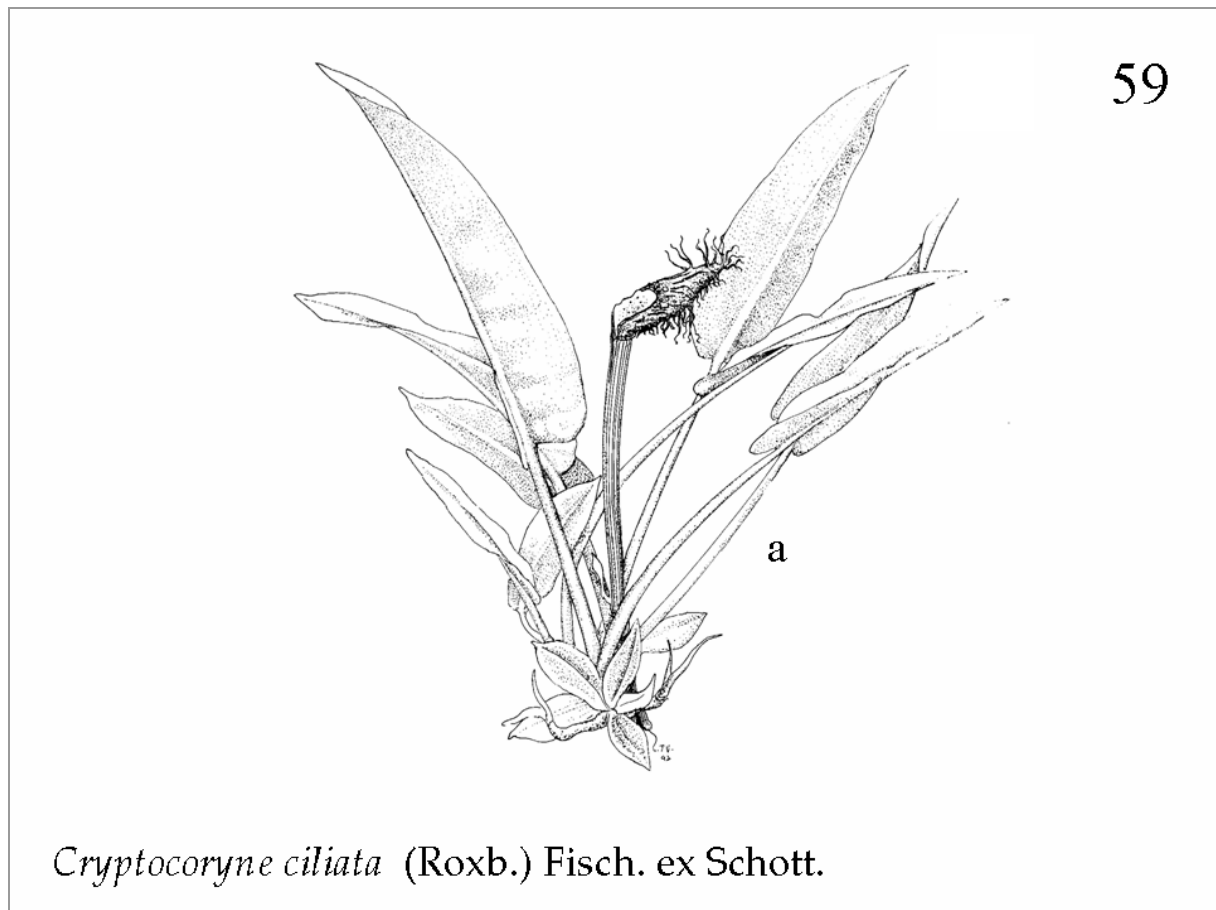


Fig. 59. *Cryptocoryne ciliata* (Roxb.) Fisch. ex Schott. (a) Flowering plant with single flower.

ARACEAE

59

***Cryptocoryne ciliata* (Roxb.) Fisch. ex Schott**

Synonyms : *Ambrosinia ciliata* Roxb., *Cryptocoryne ciliata* var. *latifolia* (Roxb.) Rataj

Vernacular name(s) : Keladi Payau (Mal., Ind.), Mái dâ'm (Viet.)

Description : Erect, 35-50 cm tall, swamp- or aquatic herb with short underground stolons. Leaves occur in two forms. Most leaves are lanceolate with a stout, strongly prominent midrib, are thin-fleshy, and measure 15-41 by 5-11 cm. The leaf immediately below the flower, however, is bladeless, 12-16 cm long, and has a single longitudinal groove. Flowers are solitary and have a short stalk. The lower part of the leaflet surrounding the flower spike is curled up and tubular; the upper part is spread out and has a frilled margin. The tubular part is pale green, with purple veins and lines; the inside of the tube is densely, minutely warty, and the tube wall has numerous tiny air ducts. The spread out part of the flower is purple, and greenish-yellow at the base. The leaflet envelops the flower spike entirely. The base of the flower spike bears a whorl of a few female flowers, above which numerous male flowers are arranged. Between the male and female flowers a small, bare section occurs. Above the male flowers is a naked, short appendage that is firmly attached to the tongue of the enveloping leaflet. Flowers are naked. The fleshy fruit is round, black, 2.5-3 cm long and breaks open into 6-8 parts. Seedlings are remarkably like small 'octopuses', having 10-20 green 'tentacles', which are of course the roots.

Ecology : Occurs in coastal vegetation with brackish water (often in the *Nypa* formation), sometimes also in freshwater swamps. Common in tidal streams, and is then exposed at low tide. Flowering occurs all year round. Mangrove associate species.

Distribution : Occurs from eastern India through Southeast Asia to Papua New Guinea (mainly south coast). In Southeast Asia it has been recorded in Thailand, Malaysia, Vietnam, Indonesia (Sumatra, Java, Borneo, Papua) and Papua New Guinea. Probably also occurs in Brunei. In Papua it is possibly represented by an endemic sub-species, with a spathe that differs in form, and with a warty limb.

Abundance : Locally common.

Use(s) : Rather large aquarium plant – collected and exported. It is also planted in villages as an ornamental.

Source of illustration : Adapted from photograph by Polunin (1988).

Reference(s) : Backer & Bakhuizen van den Brink (1963-8), Leach & Osborne (1985), Westphal & Jansen (1986), Polunin (1988), Hay (1990).

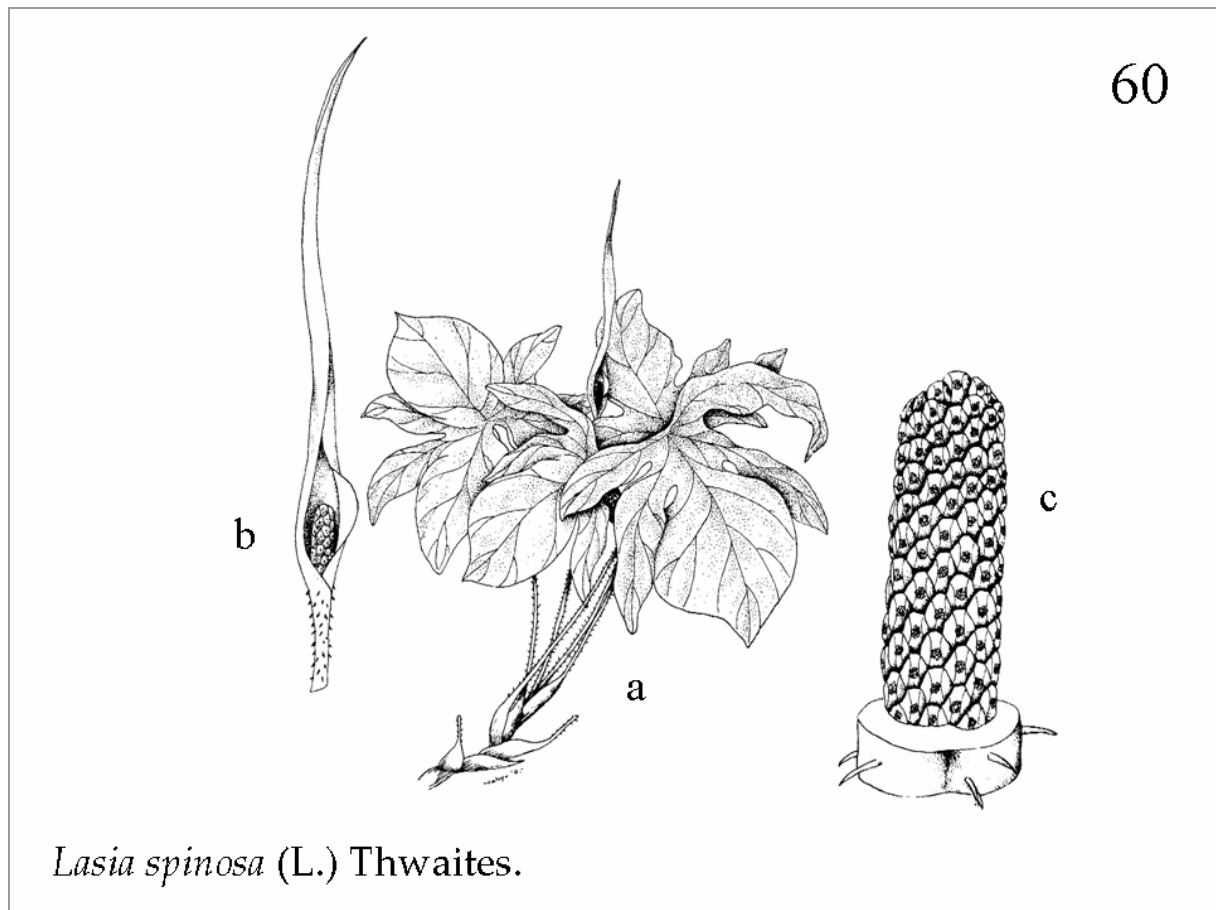


Fig. 60. *Lasia spinosa* (L.) Thwaites. (a) Habit, (b) flower, and (c) detail of flower with enveloping leaflet cut away, exposing the spadix.

ARACEAE

60

***Lasia spinosa* (L.) Thwaites.**

Synonym(s) : *Dracontium spinosum* L., *Lasia aculeata* Lour., *Lasia crassifolia* Engl., *Lasia descisens* Schott., *Lasia heterophylla* Schott., *Lasia roxburgii* Griff., *Lasia zollingeri* Schott., *Pothos heterophyllus* Roxb.

Vernacular name(s) : Gali-gali, Nyambing, Sampi, Gli-gli, Bekil – *Sambang* (Ind.), Chóc gai ho' cói (Viet.)

Description : Rhizome creeping or ascending, up to 75 cm long, plant up to 0.80-1.40 m. Leaves have spiny stems and are variable in shape: early leaves are shaped like an arrow-head, while later ones are more deeply, pinnately lobed. Leaves usually measuring 35-65 cm long and 5-30 cm wide, with short spines on the main nerves underneath and on the stalk. Flowers occur near the end of the plant, solitary in the axis of a leaf. The spadix (a stem-like part of aroid flowers) is cylindrical, yellow to pale orange-yellow, and 3-5 cm long. The flower is 4-partite and pale green, as are the stamens. Fruit is green, fleshy and spiny, measuring 1.5 cm.

Ecology : Occurs from sea level to 500 m altitude, in open, wet places, on muddy soils, along streams, rivers, in marshes, (peat-) swamps and ditches, including tidal areas and brackish swamps. Mangrove associate species.

Distribution : Widespread in Asia, from China, India and Sri Lanka through Southeast Asia, where it has been recorded in Vietnam, Malaysia (Peninsular, Sarawak), Brunei, Indonesia (Sumatra, Java, Borneo, Papua) to Papua New Guinea.

Abundance : Common.

Use(s) : Used to treat stomach ailments and sore joints. In Sri Lanka it is eaten as a vegetable (Heyne, 1950).

Source of illustration : Leach & Osborne (1985).

Reference(s) : Ridley (1925), Heyne (1950), Leach & Osborne (1985), Hay (1990), Hong & San (1993).

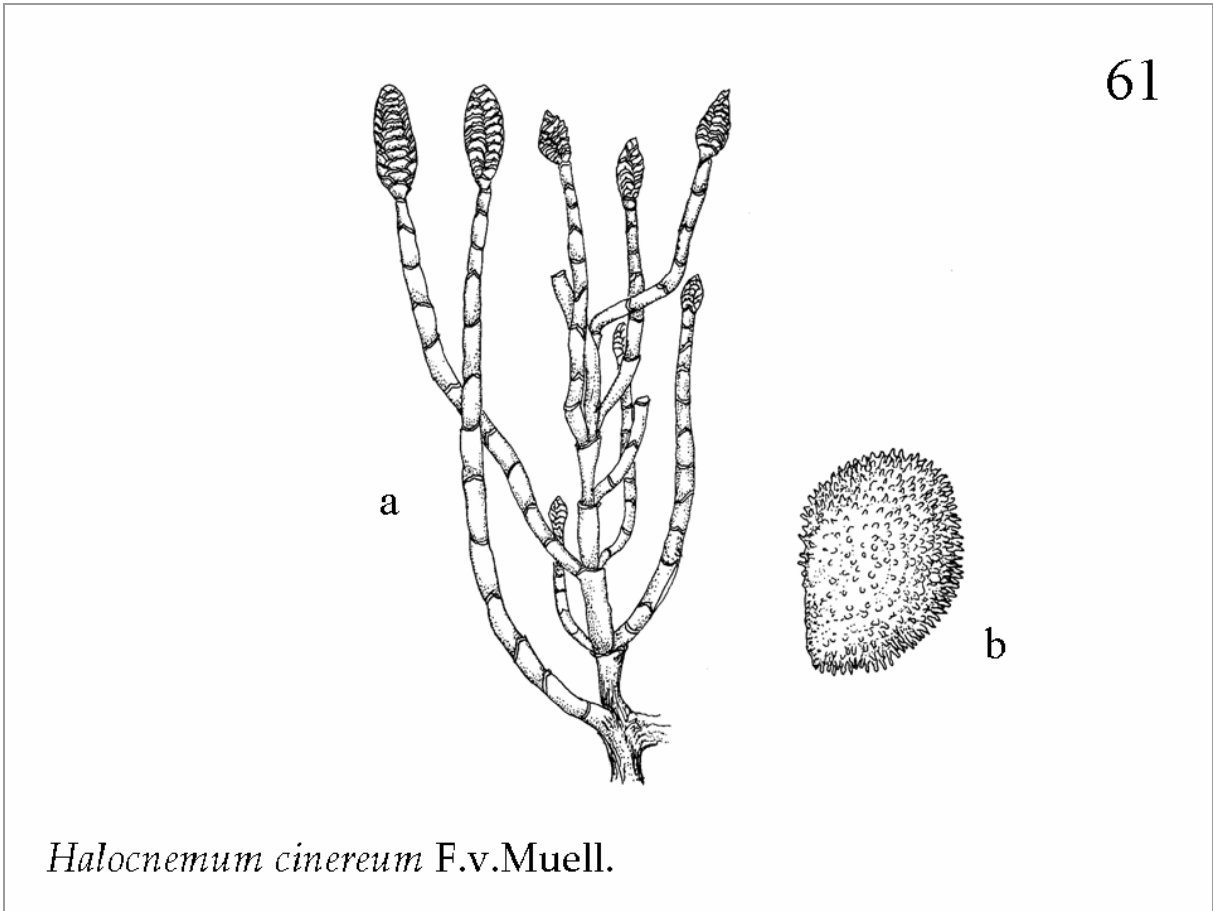


Fig. 61. *Halocnemum cinereum* F.v.Muell. (a) Terminal branchlet of fruiting plant, and (b) seed.

CHENOPODIACEAE**61*****Halocnemum cinereum* F.v.Muell.**

Synonyms : *Salicornia cinerea* F.v.Muell., *Tecticornia australasica* (Moq.) P.G. Wilson
Tecticornia cinerea F.v.Muell.

Vernacular name(s) : Unknown.

Description : Succulent herb, seemingly leafless, with erect branches, 15-30 cm tall. After removal of leaf-sheaths, the young stems are thin and stiff as a wire. Old stems are rather robust, cylindrical and woody. The internodes of the mature plant are spaced 1-2 cm apart. When dry, the whole plant appears greyish in colour. Flower spikes usually consist of one terminal spike, along with 2-6 spikes located in the higher axils. The latter spikes are opposite, and 0.5-2.25 cm long. Fruits are brown, 1-2 mm long, with yellowish-brown seeds.

Ecology : Perennial, salt-tolerant plant, growing on mudflats and low lying soils. It is especially common in areas that are seasonally swampy, but that dry out completely in the dry season. Mangrove associate species.

Distribution : Recorded from Northern Australia and Southeast Asia: Indonesia (Papua, near Merauke, and the east coast of Java) and possibly Papua New Guinea.

Abundance : Locally common.

Use(s) : Unknown.

Source of illustration : Backer (1949).

References : Backer (1949), Van Steenis (1954), Backer & Bakhuizen van den Brink (1963-8).

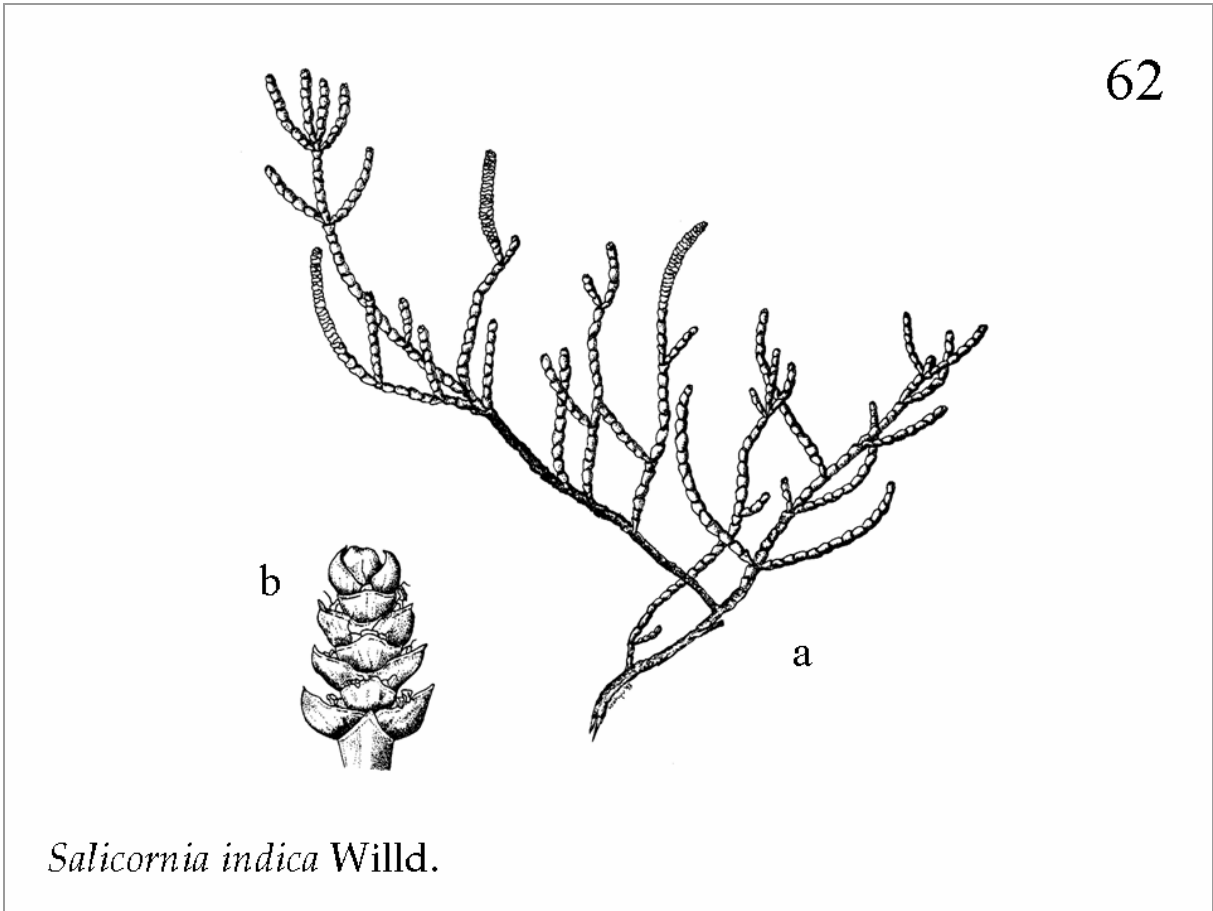


Fig. 62. *Salicornia indica* Willd. (a) Terminal branchlet of fruiting plant, and (b) flower head.

CHENOPODIACEAE**62*****Salicornia indica* Willd.**

Synonym(s) : *Arthrocnenum indicum* (Willd.) Moq., *Halosarcia indica* (Willd.) Moq., *Salicornia australasica*, *Salicornia brachiata*, *Salicornia fruticosa*

Vernacular name(s) : Kemalahala (Ind.)

Description : Rather robust, perennial herb, 30-60 cm long, lower parts woody, widely forked from the base. Young shoots are very thin and wire-like after removal of the leaf sheaths. When mature they are thick and woody, and do not break up in segments like the young parts of the plant. Leaf sheaths, typically bluish-green, are 7-10 mm long on young branches, and have a tip that has a thin, very minutely-toothed margin. Flower heads are a cylindrical spike with a rounded tip, 1.5-4.5 cm long, thicker than the ordinary branches. Spikes are unisexual, but both sexes are present on one single plant. Flowers number 12-30. Individual flowers are not attached to each other, and may be either thin or fleshy. Male flowers are rounded-triangular and tiny, with one stamen extending beyond the petals. Female flowers are flask-shaped, split at the tip, and 1.5-2 mm long. Fruits are flattened, while seeds are round or shield-shaped, and pale brown. This species is very variable and four sub-species are known from its area of distribution.

Ecology : Occurs in coastal areas on marine clays, or on marine clays covered with a thin layer of sand. In mangrove environments it is found on the drier and saltier inland margins. Flowers all year round (in Australia May to November). Mangrove associate species.

Distribution : Found in tropical coastal areas around the Indian Ocean, including East Africa, South Asia, Southeast Asia and northern Australia. In Southeast Asia recorded in Malaysia, Indonesia (Java, Madura, Kangean Archipelago, Sumbawa, Sumba) and East Timor.

Abundance : Locally abundant.

Use(s) : The succulent, salty stems are grazed by cattle, and are said to be fit for human consumption.

Source of illustration : Wightman (1989).

References : van Steenis (1954), Wightman (1989).

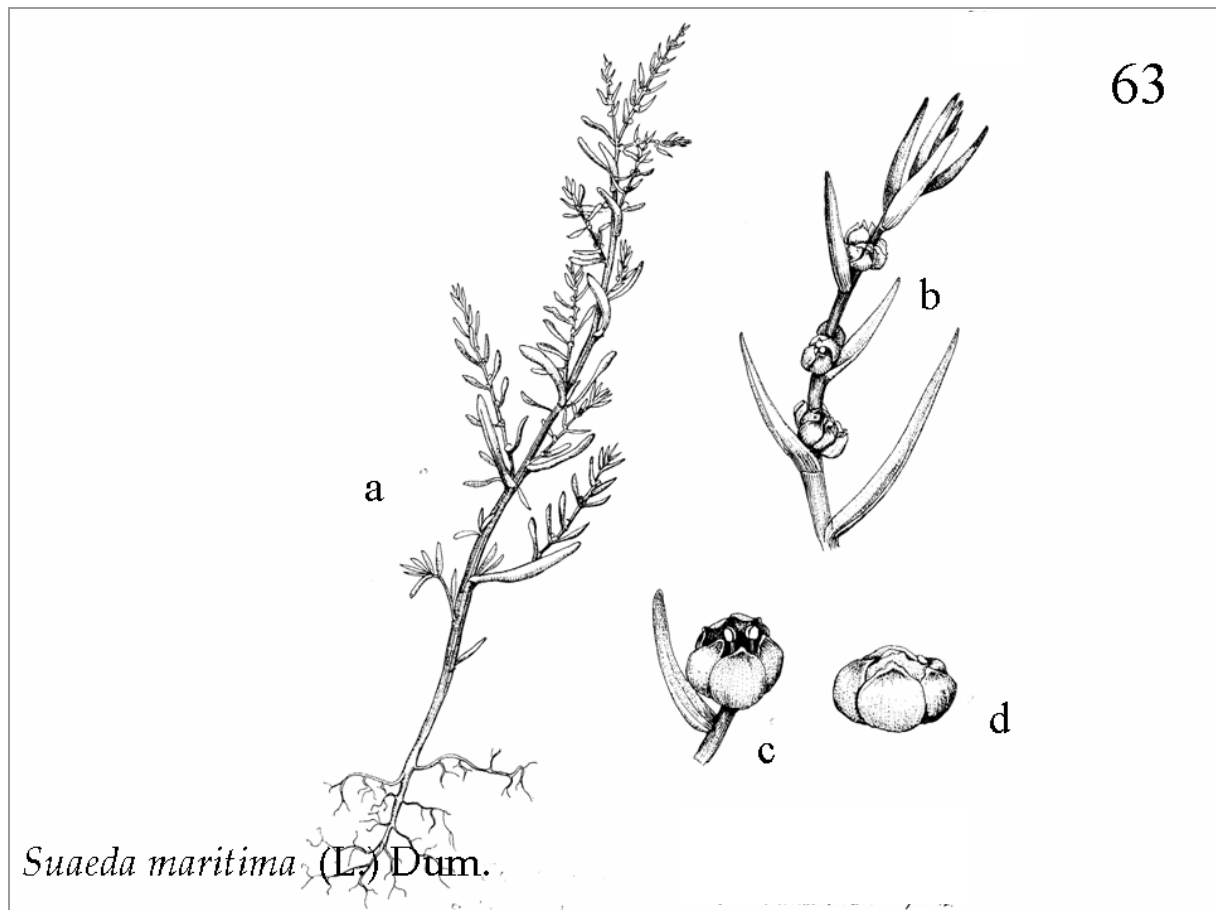


Fig. 63. *Suaeda maritima* (L.) Dum. (a) Terminal branchlet of fruiting plant, (b) detail of flowering branchlet, (c) flower, and (d) fruit.

CHENOPODIACEAE

63

***Suaeda maritima* (L.) Dum.**

Synonyms : *Atriplex maritima* (L.) Crantz., *Chenopodium australe* R.Br., *Chenopodium maritimum* L., *Chenopodina australis* (R.Br.) Moq., *Chenopodina maritima* (L.) Moq., *Chenopodina maritima* var. *vulgaris*, *Dondia maritima* (L.) Druce), *Lerchena maritima* (L.) Kuntze., *Salsola indica* Willd., *Salsola maritima* (L.) Poir., *Schoberia linifolia* Nutt. ex Moq., *Schoberia maritima* (L.) C.A. Mey., *Sueda australis* (R.Br.) Moq., *Suaeda indica* Moq., *Suaeda maritima* (L.) Dum., *Suaeda nudiflora* Moq.

Vernacular names : Alur, Ahaha – *Malur* (Ind.), Muoi bien (Viet.), Cha khraam (Thai)

Description : Perennial, smooth herb, up to 45 cm tall. When mature it is often woody at the base, and usually dividing from the base into erect or ascending branches that may root from the lower joints. Old stems are warty because of scars of fallen leaves. The many linear, semi-cylindrical leaves have a juicy, fleshy tissue. These are pale bluish-green or are tinged with purple or are entirely purple, 1-4.5 cm long, and have a salty taste. The flower spike usually consists of a panicle, one to many flowered, and is 2.5-15 cm long. The lower leaflets located at the base of the flower stalks are rather large and appear similar to normal leaves. Towards the top of the plant the leaflets are generally smaller. 2-3 transparent, small leaflets, about 1 mm long, are located at the base of the flower; these are retained after flowering and spread horizontally after the fruit has been shed. Flowers are bisexual. Individual flowers have transparent margins and tips, and are green or slightly purple. In the female stage the flower is about 1.25 mm in diameter, in the male stage about 2.5 mm. The fruiting flower is flattened, succulent, 2-2.5 mm across and contains one shiny brown seed with an embryo coiled into a flat spiral. The plant is highly variable in appearance.

Ecology : Moist or swampy, clayey, brackish to marine coastal soils. Often occurring gregariously, frequently very conspicuous because of its purple colour. Red and green specimens often grow intermixed. Flowering occurs throughout the year. Found in temperate, Mediterranean, subtropical and tropical climates. Mangrove associate species.

Distribution : Wide ranging cosmopolitan species, found in Europe, North Africa, Asia, Australia, North America. In Southeast Asia it has been recorded from Thailand, Vietnam, Indonesia (West and East Java, Madura, Sumatra and probably Papua) and Papua New Guinea.

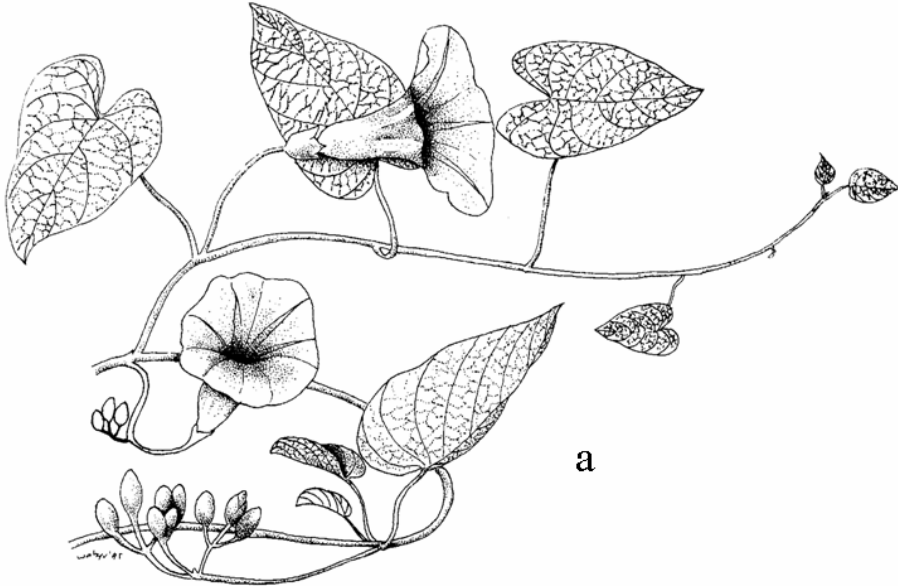
Abundance : Locally common.

Use(s) : Leaves sometimes eaten as a vegetable.

Source of illustration : Icones Rijksherbarium Leiden.

Reference(s) : Backer (1949), Heyne (1950), Backer & Bakhuizen van den Brink (1963-8), Giesen & van Balen (1991), Aksornkoe (1993), Nguyen *et al.* (2000).

64



Ipomoea gracilis R. Br.

Fig. 64. *Ipomoea gracilis* R. Br. (a) Detail of flowering, creeping stem.

CONVOLVULACEAE

64

***Ipomoea gracilis* R. Br.**

Synonym(s) : *Calystegia affinis* (non Endl.) Schum., *Convolvulus denticulatus* Desr., *Ipomoea denticulata* Choisy, *Ipomoea littoralis* Bl.

Vernacular name(s) : Kankong, Tapak Kuda Kecil (Mal.), Kankong Laut, Akar Hitang, Seyawu saloyon, (Ind.), Bulakan, Ditadit (Phil.).

Description : Smooth or sparsely hairy prostrate, creeping plant with a thin, herbaceous twining stem that may become somewhat woody as the plant matures. Leaves are membrane-like or thicker, broadly ovate to oblong, occasionally kidney-shaped or round; variable in size, from 1-10 by 1-7.5 cm. The leaf margin may be slightly wavy, but otherwise does not have a serrated edge or lobes. Flowers occur in the axis of the leaves, and one to several may occur in one leaf axis. The flower stalks are 1-3 (occasionally 9) cm long. The corolla is funnel-shaped, 3-4.5 cm long, pink or purple, but often darker near the base. The fruit is a flattened capsule, about 9 mm in diameter, with two cells and four smooth, black seeds that are 3.5-4 mm long.

Ecology : Occurs from sea level to about 15 m altitude, on sandy beaches, thickets near the sea, edges of (sandy) mangroves. Rarely occurring inland. May run over sandy dunes or climb into trees. Mangrove associate species.

Distribution : Found throughout the Indian and Pacific Ocean coasts. In Southeast Asia it has been reported from Cambodia, the Philippines, Malaysia, Singapore and Indonesia (Moluccas, Sulawesi, Sumatra and Papua), but probably occurs throughout the region.

Abundance : Common.

Use(s) : Sand binding. Used as shampoo (Sulawesi) and for treating Chickenpox. Young leaves may be eaten (Heyne, 1950).

Source of illustration : van Ooststroom (1953).

Reference(s) : Heyne (1950), van Ooststroom (1953).

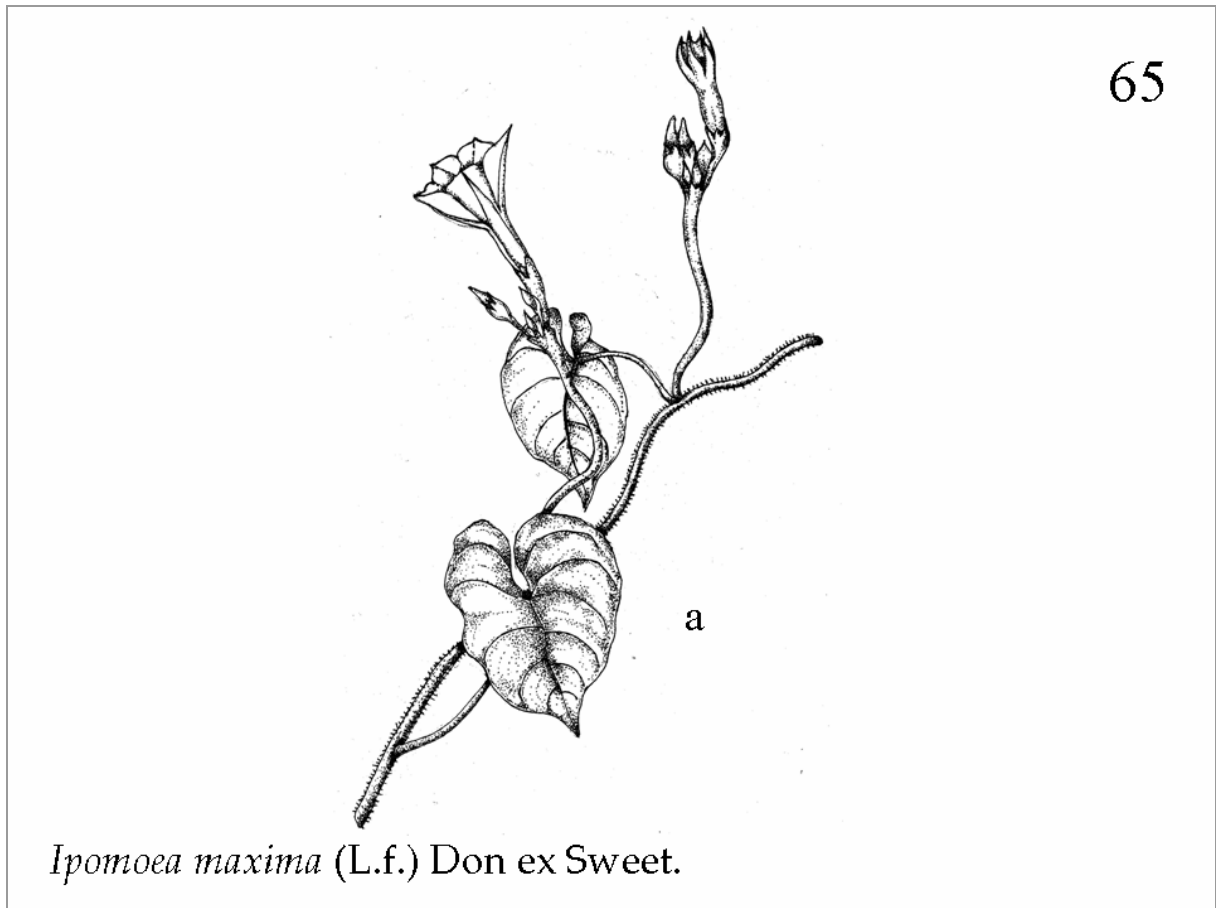


Fig. 65. *Ipomoea maxima* (L.f.) Don ex Sweet. (a) Detail of flowering, creeping stem.

CONVOLVULACEAE

65

***Ipomoea maxima* (L.f.) Don ex Sweet**

Synonyms : *Convolvulus maximus* L., *Ipomoea sepiaria* Koen. ex Roxb., *Ipomoea subtrilobans* Miq., *Ipomoea verrucosa* Bl.

Vernacular name(s) : Akang kangkong bulu (Ind.)

Description : A herbaceous perennial, with a few (to several) twining to prostrate stems that may be 1-2.5 m long, and be either sparsely covered with hairs or quite smooth. Forms a stout perpendicular root. Leaves are alternate, broadly ovate, rounded or kidney-shaped, (1-)2.5-6 by (1-)2-5 cm, usually deeply heart-shaped at the base, sometimes slightly heart-shaped. Leaves are generally smooth, but with fine hairs along the edges; they often have a purple edge and are covered with purplish spots. The leaf stalk is usually shorter than the leaf blade, measuring 1-3 cm. Flowers are located in the leaf axils and have a thick stalk, 1.5-12 cm long. Sepals equal in length or the inside ones slightly longer, 4-6 mm long and smooth. The corolla is trumpet-shaped, pale lilac, pink or nearly white, with a purple centre, 2-3 cm long, and the stem of the trumpet 1.25-2.5 cm diameter. Fruit is a dry capsule, round but somewhat flattened, 6-7 mm high, smooth, with 4 partitions that each contain 1 seed. Seeds are covered with a dense, very short, pale greyish or white felt-like hair.

Ecology : In moist, usually saline habitats including beaches, moist grasslands, fields, thickets, hedges, waste grounds and along waysides. In Malaysia it reportedly occurs mainly on clayey soils. Occasionally found on landward edges of mangroves. Mangrove associate species.

Distribution : From India and Sri Lanka, to northeastern Australia and southern China. In Southeast Asia it is found in Myanmar, Thailand, Vietnam, Peninsular Malaysia, East Timor and Indonesia (Sumatra, Java, Lesser Sundas, Moluccas, Papua).

Abundance : Locally common.

Use(s) : Unknown.

Source of illustration : van Ooststroom (1953)

Reference(s) : van Ooststroom (1953).

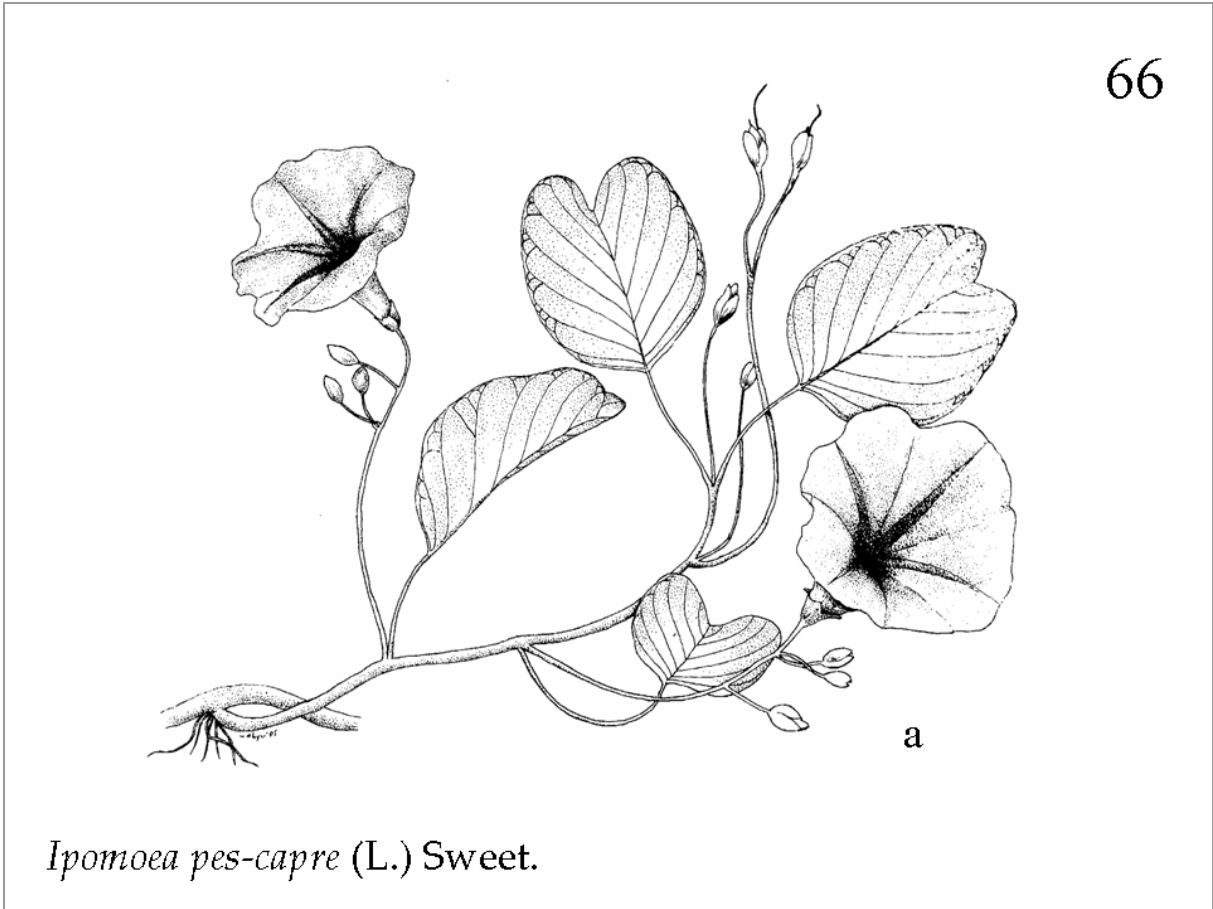


Fig. 66. *Ipomoea pes-capre* (L.) Sweet. (a) Detail of flowering, creeping stem.

CONVOLVULACEAE

66

***Ipomoea pes-capre* (L.) Sweet.**

Synonym(s) : *Convolvulus bilobatus* Roxb., *Convolvulus brasiliensis* Linné, *Convolvulus marinus* Rumph., *Convolvulus maritima*, *Convolvulus maritimus* Desr., *Convolvulus pes-caprae* Linné, *Ipomoea biloba* Forsk., *Ipomoea maritima* R.Br., *Ipomoea pes-caprae* Roth., *Soldanella marina indica* Rumph.

Vernacular name(s) : Batata Pantai, Daun Katang, Tapak Kuda (Mal.), Katang-katang, Dalere, Watata Ruruan, Alere, Loloro, Balim-balim, Kabai-kabai (Ind.), Arodaidai, Katang-katang, Lagairai, Kamigang (Phil.), Rau mu'ng biê'n (Viet.)

Description : Perennial herb, with a thick taproot. Stems are 5-30 m long and creeping, taking root at the nodes; they contain a milky juice. Leaves alternate, and may be deeply lobed or only notched at the end, 3-10 by 3-10.5 cm. Flowers occur in the axils of leaves, and have 3-16 cm long stalks. The corolla is funnel-shaped, 3-5 cm long, smooth, pink, reddish purple or violet, and usually darker at the base. Fruit is a round to slightly flattened dry capsule, 12-17 mm, 2-celled, with four black, densely hairy seeds, 6-10 mm long. Two subspecies are recognized by some authors: *Ipomoea pes-caprae* ssp. *pes-caprae* with deeply lobed leaves, and *Ipomoea pes-caprae* ssp. *brasiliensis* with notched leaf ends. Both occur in Southeast Asia, although the latter is known only from Indonesia (West Sumatra and Krakatau Island).

Ecology : Occurs from sea level up to 600 m, usually on sandy beaches, but also immediately behind sea shores, and occasionally along waysides, ditches and canals. Flowers open early in the morning and shrivel by the afternoon. Mangrove associate species.

Distribution : Pan-tropical. Found throughout Southeast Asia.

Abundance : Very common.

Use(s) : The seeds are reportedly a good remedy for stomach ache and cramp. Leaves are made into a poultice and applied to swellings, boils and ulcers. Juice of stems is used to treat bites and stings.

Source of illustration : Backer (1918), van Ooststroom (1953).

Reference(s) : Backer (1918), Heyne (1950), van Ooststroom (1953).

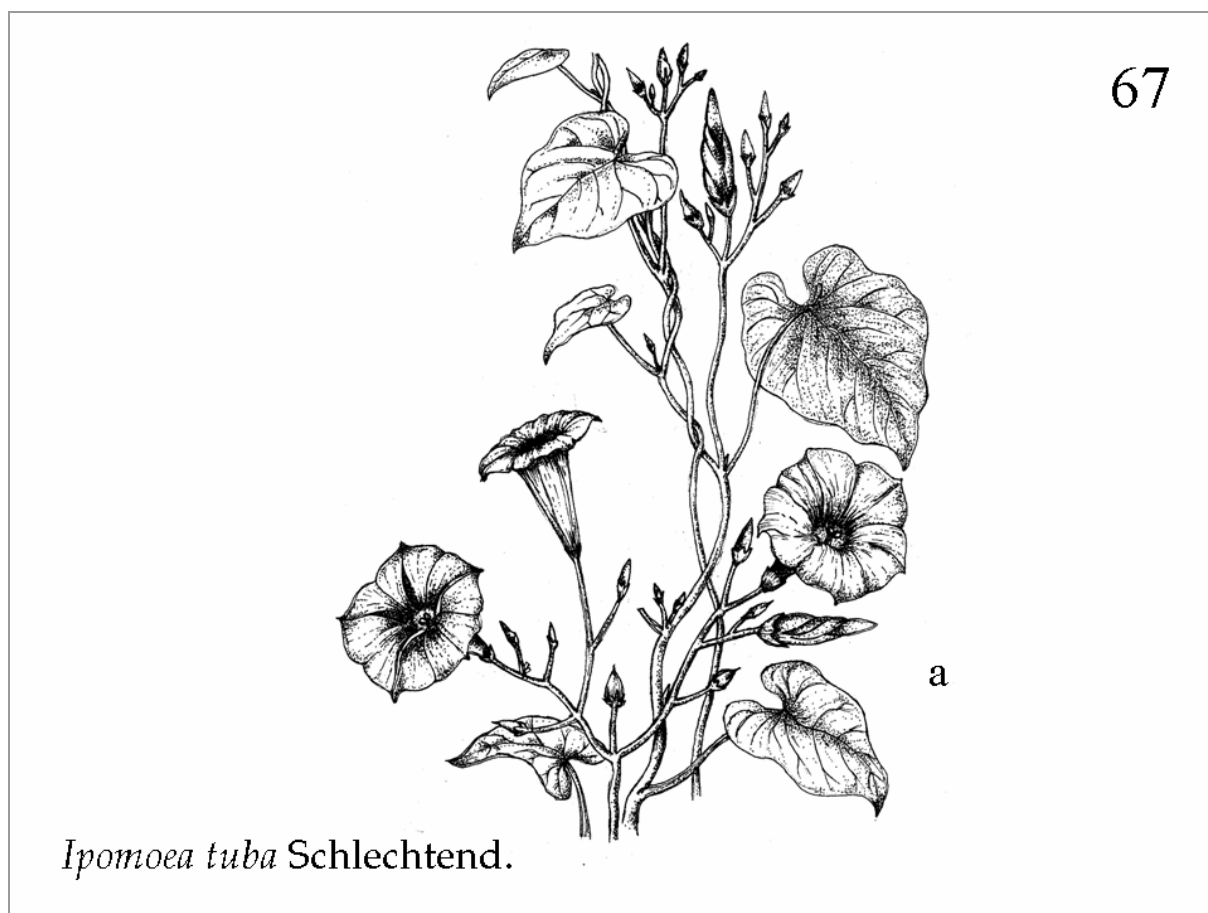


Fig. 67. *Ipomoea tuba* Schlechtend. (a) Detail of flowering, creeping stem.

CONVOLVULACEAE

67

***Ipomoea tuba* Schlechtend.**

Synonyms : *Calonyction album* House, *Calonyction grandiflorum* Choisy, *Calonyction muticum* Decaisne, *Calonyction tuba*, *Convolvulus catharticus* Blanco, *Convolvulus grandiflorus* Jacq., *Convolvulus tuba* L., *Ipomoea alba* L., *Ipomoea grandiflora* Hallier f., *Ipomoea macrantha* Roem. & Schult., *Ipomoea violacea* L.

Vernacular name(s) : Moon flower, Hawaii moon flower (E), Tatampayan besar (Mal./Ind.)

Description : A perennial twining species, with a round to angular, herbaceous smooth stem that may be 5m or more in length and has a woody base. In dried specimens the stem is straw coloured. Leaves are alternate, round or ovate to kidney-shaped, thick and sometimes fleshy, (5-)8-16 by 5-14 cm, with 7-8 lateral veins, deeply heart-shaped at the base with rounded or (rarely) angular lobes, and with a pointed tip; leaf stalk 3.5-16 cm. Flowers occur in leaf axils, usually 1 but occasionally 2-3(-4) flowered, flower stalk 0.75-7(-12) cm. Sepals are rounded, inner ones slightly longer than outer ones, 15-20(-25) mm, thick. Sepals are enlarged when the plant bears fruit, at first enclosing the dry capsule as a cup, afterwards curling backwards. The trumpet-shaped corolla is usually white with greenish bands, but may occasionally be purple or violet, opening at night, 9-12 cm long; the corolla tube is cylindrical and 7-8 cm long. Fruit a dry capsule, rounded, 2-2.5 cm long, smooth, pale brown, with 4 partitions and (1-)4 seeds. Seeds are dark brown to black, rounded, 1 cm long, with dense short hairs, and longer hairs (up to 3 mm) along edges.

Ecology : Occurs on beaches and in thickets near the sea. Occasionally on landward margins of mangroves. Occasionally regarded as a noxious weed species, as it can be invasive (e.g. Caroline Atoll in French Polynesia). Mangrove associate species.

Distribution : Widely distributed in the tropics world-wide, and found in America, East Africa, continental Asia and Polynesia. It has been recorded throughout Southeast Asia.

Abundance : Common.

Use(s) : Prized for its beauty, and planted as an ornamental. Its seeds contain alkaloids such as lysergic acid amide. This chemical is an alkaloid derivative of LSD with about one tenth of its potency, and is used in traditional medicine and shamanism.

Source of illustration : http://www.hear.org/pier/species/ipomoea_violacea.htm
<http://www.siena.edu/boswell/Drug%20Projects/Erik/Morningglory2.htm>
<http://www.gnosticgarden.com/seeds3.htm>

Reference(s) : Ooststroom (1953),
www.unep-wcmc.org/info/wetlands/caroline.htm
http://plants.usda.gov/cgi_bin/plant_profile.cgi?symbol=IPVI;
<http://www.fau.edu/divdept/biology/synonyms.htm>.

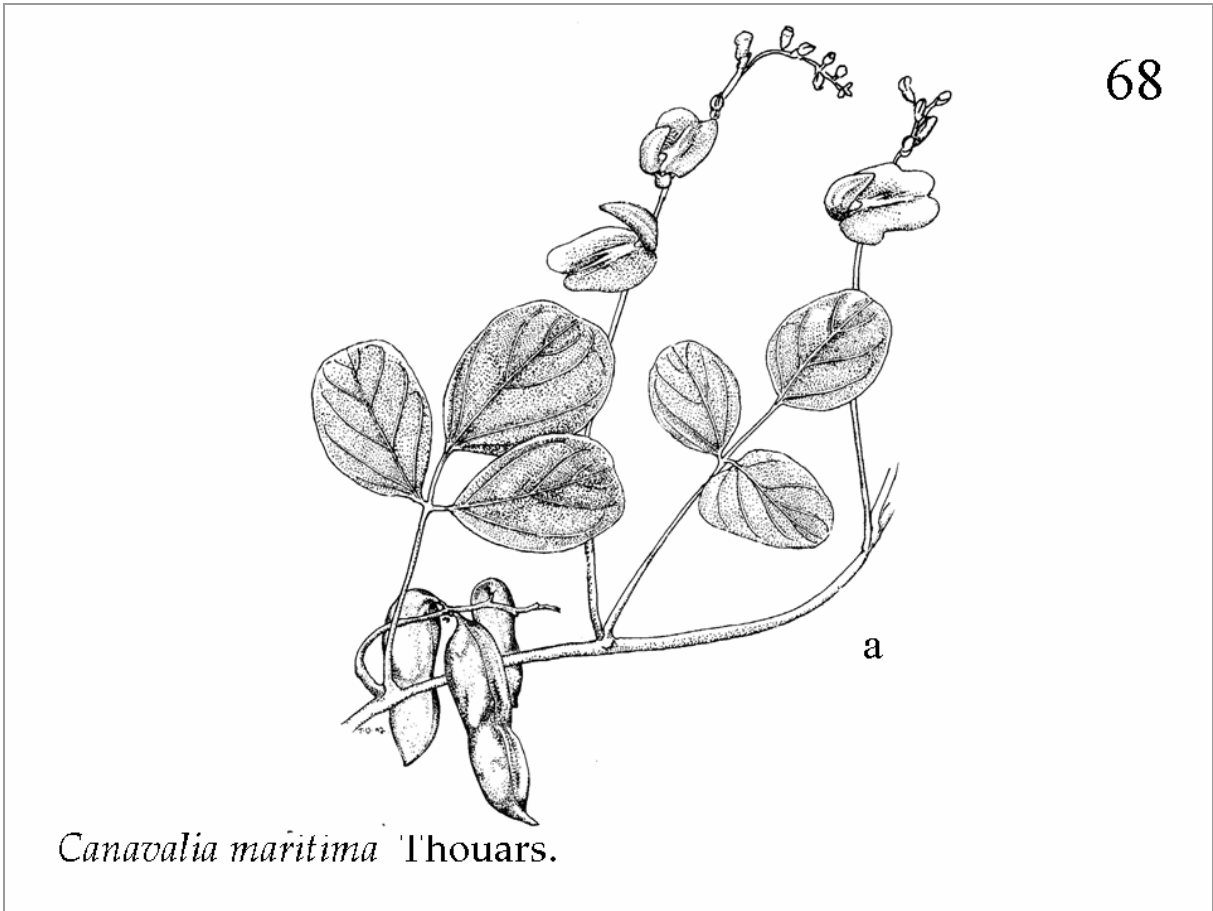


Fig. 68. *Canavalia maritima* Thouars. (a) Detail of flowering and fruiting, creeping stem.

LEGUMINOSAE

68

***Canavalia maritima* Thouars**

Synonyms : *Canavalia apiculata* Piper, *Canavalia arenicola* Piper, *Canavalia baueriana* Endl., *Canavalia emarginata* (Jacq.) G.Don., *Canavalia lineata* Prain non DC., *Canavalia lineata* (Thunb.) DC., *Canavalia maritima* (Aubl.) Urb., *Canavalia miniata* (Kunth.) DC., *Canavalia moneta* Welw., *Canavalia obcordata* (Roxb.) Voigt., *Canavalia obtusifolia* DC., *Canavalia podocarpa* Dunn., *Canavalia rosea* (Sw.) DC., *Canavali maritima*, *Cacara litorea* Rumph., *Clitoria rotundifolia* (Vahl.) Sessé & Moc., *Dolichos emarginata* Jacq., *Dolichos littoralis* Vahl., *Dolichos maritimus* Aubl., *Dolichos miniatus* Kunth., *Dolichos obcordatus* Roxb., *Dolichos obovatus* Schumach. & Thonn., *Dolichis obtusifolius* Lam., *Dolichos rosea* Sw., *Dolichos rotundifolia* Vahl., *Phaseolus maritimus purgans* Aubl.

Vernacular name(s) : Kacang Laut, Kekara Laut – *Kekara pedang* (Mal., Ind.) Joa-joa dowongi (Ind.)

Description : Scandent or creeping herb, 2-6(-10) m long. The end of the plant sometimes twines and often it roots from the nodes. Leaves have three fleshy leaflets, each measuring 3-15 by 2-2.5 cm. These leaflets are obovate or broadly oval, and their top is rounded, with a distinct notch or ending abruptly, and often with a triangular tip. The flower clusters occur in the leaf axils and have long stalks. Flowers are reddish-violet with a white streak down the middle, and are upside down when fully opened. Fruits are bean-like pods, which are either straight or faintly curved, 6-15 cm long, with 2-10 seeds. Hybridises with *Canavalia cathartica*, from which it can easily be distinguished by the longer pods (max. 11.5-15 cm for *Canavalia maritima* versus 8-12 cm for *Canavalia cathartica*).

Ecology : Occurs on sandy beaches, dunes and adjacent localities, seldom occurring inland to more than an altitude of 30 m, although rarely it has been recorded up to an altitude of 500 m asl. Occasionally it may be found on landward margins of mangroves. Flowering occurs all year round. Mangrove associate species.

Distribution : Pantropical, and one of the most common strand plants. Throughout Southeast Asia.

Abundance : One of the most common (sub-)tropical beach plants worldwide.

Use(s) : Young pods and seeds are edible after (prolonged) boiling. Flower used as spice. Plant suitable as ground cover crop against soil erosion on eroding coastal lands.

Source of illustration : Adapted from photograph by Polunin (1988).

Reference(s) : Burkill (1935), Heyne (1950), Backer & Bakhuizen van den Brink (1963-8), Gillett *et al.* (1971), Polunin (1988).

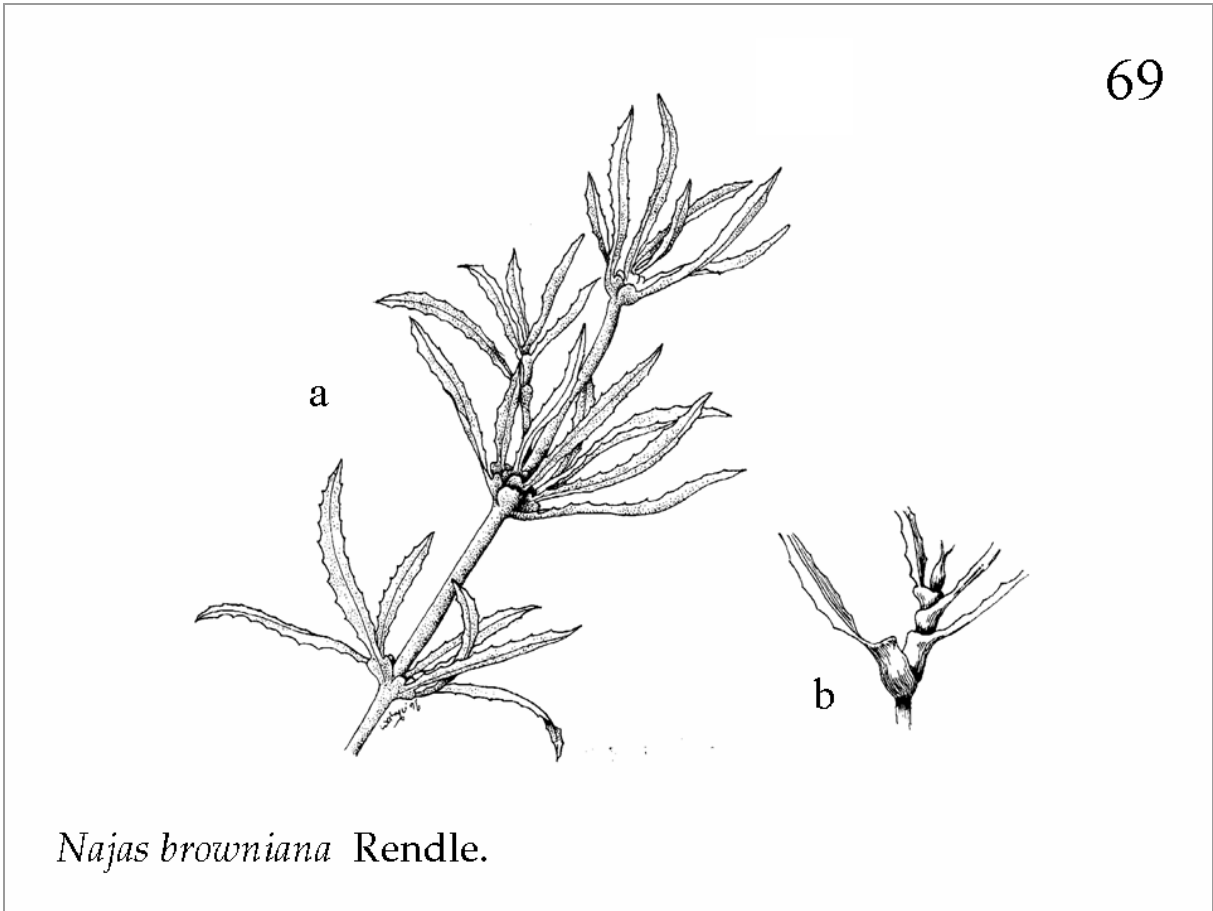


Fig. 69. *Najas browniana* Rendle. (a) Stem section of plant, and (b) detail of leaf insertion.

NAJADACEAE**69*****Najas browniana* Rendle****Synonyms :** Unknown.**Vernacular name(s) :** Unknown.

Description : Small aquatic plant, up to 15 cm long, with the lower internodes measuring 1-6 by 0.5-0.9 mm. The flat, sometimes slightly fleshy leaves are 1.5-2.25 cm by 0.4-0.8 mm. Near the leaf tip the leaves narrow to a width of 0.23-0.6 mm. Each leaf edge is armed with 12-21, dark brown, spiny teeth, which are mainly located in the upper part of the blade. There are no spines on the lower surface. The teeth can be up to as long as 0.2 times the width of the blade. Using a magnifying glass, one can see that cavities occupy about one quarter of the width of the blade, and there are no distinct partitions. The sheath has 1-10 spines on either side, and measures about 2 by 1.5-3 mm. Spines are absent on the inner edge of the broad, ear-like appendage at the base of the leaf. Flowers usually occur in groups of three, often in different stages. Male flowers may occur alone. The leaflet enveloping the male flower is 1.3-2 mm long and is constricted into a long, cylindrical neck. It is absent in the female flower. The mature anther is 1-celled and 0.6-0.9 by 0.2-0.3 mm. The female flower is 1.5-2 mm long. Seeds measure 1.5-2 by 0.5-0.75 mm. The vegetative characters in this genus are very uniform, but show a rather large variability within each species. Sometimes more than one species is represented at a single locality.

Ecology : Occurs in saline localities at (or near) sea level, such as mud wells, brackish water fish ponds, pools near the sea (e.g. in mangroves) and in lagoons. Mangrove associate species.

Distribution : Very scattered distribution, known from India (rare), Indonesia (Java, Madura), Papua New Guinea (between the Oromo and Fly rivers), and the Northern Territory of Australia.

Abundance : Locally common.

Use(s) : A source of food for fish, also utilised as pig food.

Source of illustration : de Wilde (1962).

Reference(s) : de Wilde (1962), Backer & Bakhuizen van den Brink (1963-8).

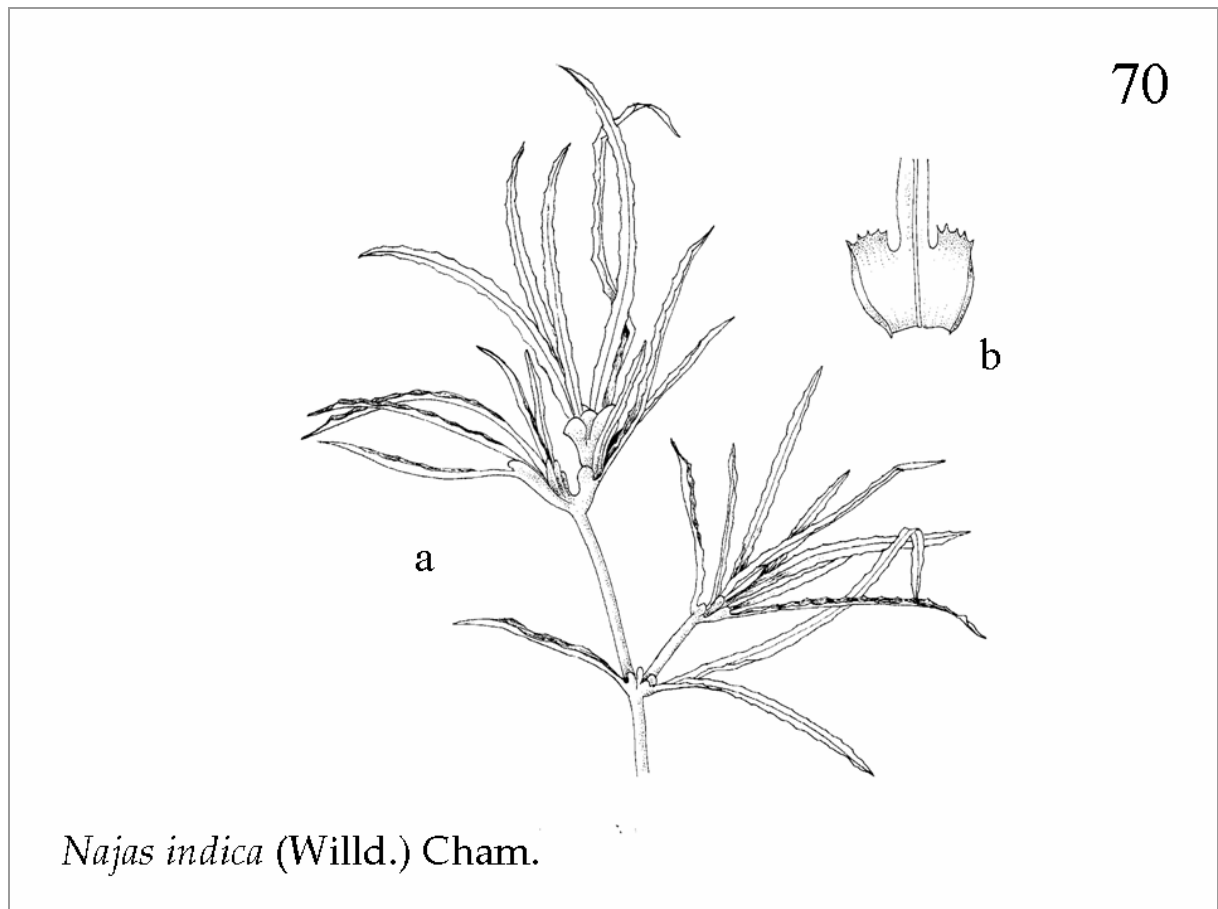


Fig. 70. *Najas indica* (Willd.) Cham. (a) Stem section of plant, and (b) detail of base of leaf.

NAJADACEAE

70

***Najas indica* (Willd.) Cham.**

Synonyms : *Caulinia indica* Willd., *Najas falciculata* A. Braun., *Najas foveolata* A.Br., *Najas kingii* Kingi, *Najas lacerata* Rendle, *Najas lobata* Blanco, *Najas minor* var. *indica* A. Br., *Najas palustris* Blanco, *Najas tenuifolia* (non R.Br.) Miq.

Vernacular name(s) : Lumut Siarang, Ganggeng (Ind.), Aragan, Bangbangi, Labui (Phil.)

Description : Aquatic plant, up to 1-2 m long, with lower internodes measuring 2-10 cm by 0.6-1.7 mm. Leaves are flat to nearly cylindrical or triangular in cross-section, 1.25-6 cm by 0.3-1.6 mm; 0.2-0.5 mm wide 3 mm below the tip. The leaf edge has 1-40 conspicuous, spiny, dark brown teeth along both sides. Sometimes, however, the lower 15 mm of the blade has no teeth. The lower surface of the leaf sometimes has 1-30 spines. The length of the teeth may equal the width of the leaf, especially in the upper half of the leaf. Using a magnifying glass, one can see that cavities occupy about half or almost the entire width of the blade, and often have distinct partitions. The leaf sheath, 2-5 by 1.5-6 mm, has 2-20 spines on either side. However, the sheath has no teeth on the inner edge of the big, ear-like appendages at its base. These appendages may be absent. Flowers are usually solitary. The male flowers have an enveloping leaflet, 2.2-3.6 mm, with a usually cylindrical neck, and nearly stemless, 4-celled anthers. The female flowers are 1.7-3.4 mm long, and seeds are 1.5-2.3 by 0.75-0.9 mm. The vegetative characters in this genus are very uniform, but show a rather large variability within each species. Sometimes more than one species is represented at a single locality. Female flowers in Indonesia probably never have a sheath.

Ecology : Found in a great variety of habitats, from various freshwater to marine biotopes; usually occurs in shallow waters but may be found down to depths of 5 m. It occurs from sea level up to an altitude of 1,000 m; found in brackish water fish ponds near Jakarta, and in pools in mangroves and lagoons; both in very wet regions and in those subject to a distinct dry season. Mangrove associate species.

Distribution : Tropical, continental Asia (from Kashmir to Tonkin), Japan and throughout Southeast Asia, where it has been recorded in all areas except Borneo and the Moluccas. Perhaps also found in Africa.

Abundance : One of the commonest *Najas* species, locally often very abundant.

Use(s) : A source of food for fish, also utilised as pig fodder.

Source of illustration : de Wilde (1962) and Icones Rijksherbarium Leiden.

Reference(s) : de Wilde (1962), Backer & Bakhuizen van den Brink (1963-8).

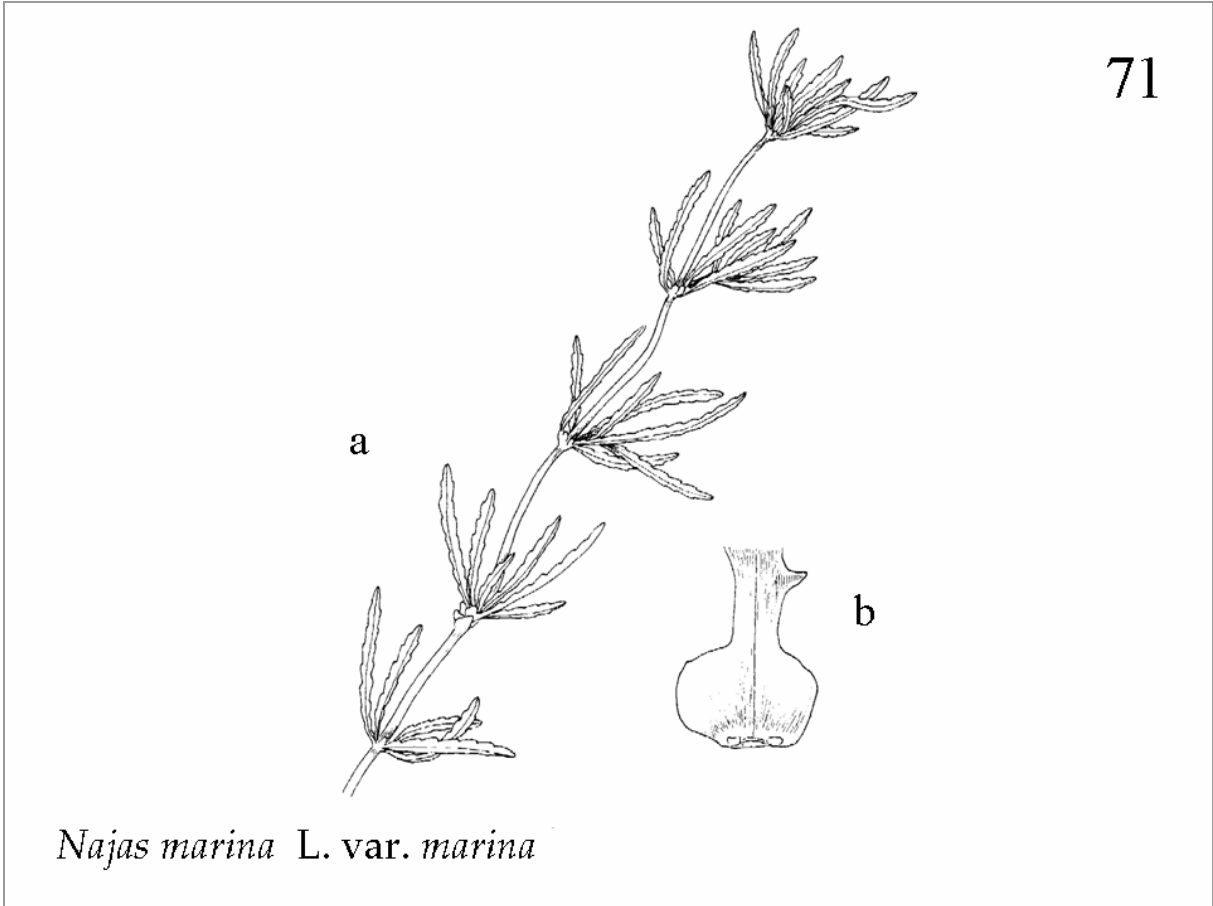


Fig. 71. *Najas marina* L. var. *marina*. (a) Stem section of plant, and (b) detail of base of leaf.

NAJADACEAE

71

Najas marina* L. var. *marina

Synonyms : *Najas intermedia* Gorski, *Najas major* All., *Najas marina* var. *angustifolia* et *intermedia* Rendle

Vernacular name(s) : Unknown.

Description : Aquatic plant, up to 30 cm long, with lower internodes measuring up to 6 cm. The linear or slightly spoon-shaped, somewhat fleshy leaves are flat to triangular in cross-section and measure 0.5-3 cm by 1.5-3 mm; they are about 2-3 mm wide about 3 mm below the tip. The leaf edge has 2-7 coarse, spiny teeth along each side. The upper surface usually has 1-6 spiny teeth. Rarely, however, it is unarmed. The long teeth are brown, triangular to conical, and almost as long as the width of the leaf blade. Using a magnifying glass, one can see that cavities in the leaf are often indistinct and occupy half the leaf width. The sheath, which measures 2-4 by 3-6 mm, bears 1-2 inconspicuous spines on either side. Ear-like appendages at the base of the leaf are either absent or very small. The leaflet enveloping the solitary male flower is 1.8 mm long and tipped with three small, transparent spines of 0.1 mm. The solitary female flower has no enveloping leaflet and is 2-3 mm long. Seeds have not been recorded in Southeast Asia.

Ecology : In brackish waters, including lagoons, fish ponds, and pools in mangroves. Mangrove associate species.

Distribution : Very widely distributed, from northwestern Europe to western Australia, Japan and the Sandwich Islands. In Southeast Asia it has been recorded only in Indonesia, where it is found in the southern part of the Moluccas.

Abundance : Locally common.

Use(s) : Most important as a source of food for fish. It is cultivated for this purpose in brackish water fish ponds.

Source of illustration : de Wilde (1962) and Icones Rijksherbarium Leiden.

Reference(s) : de Wilde (1962).

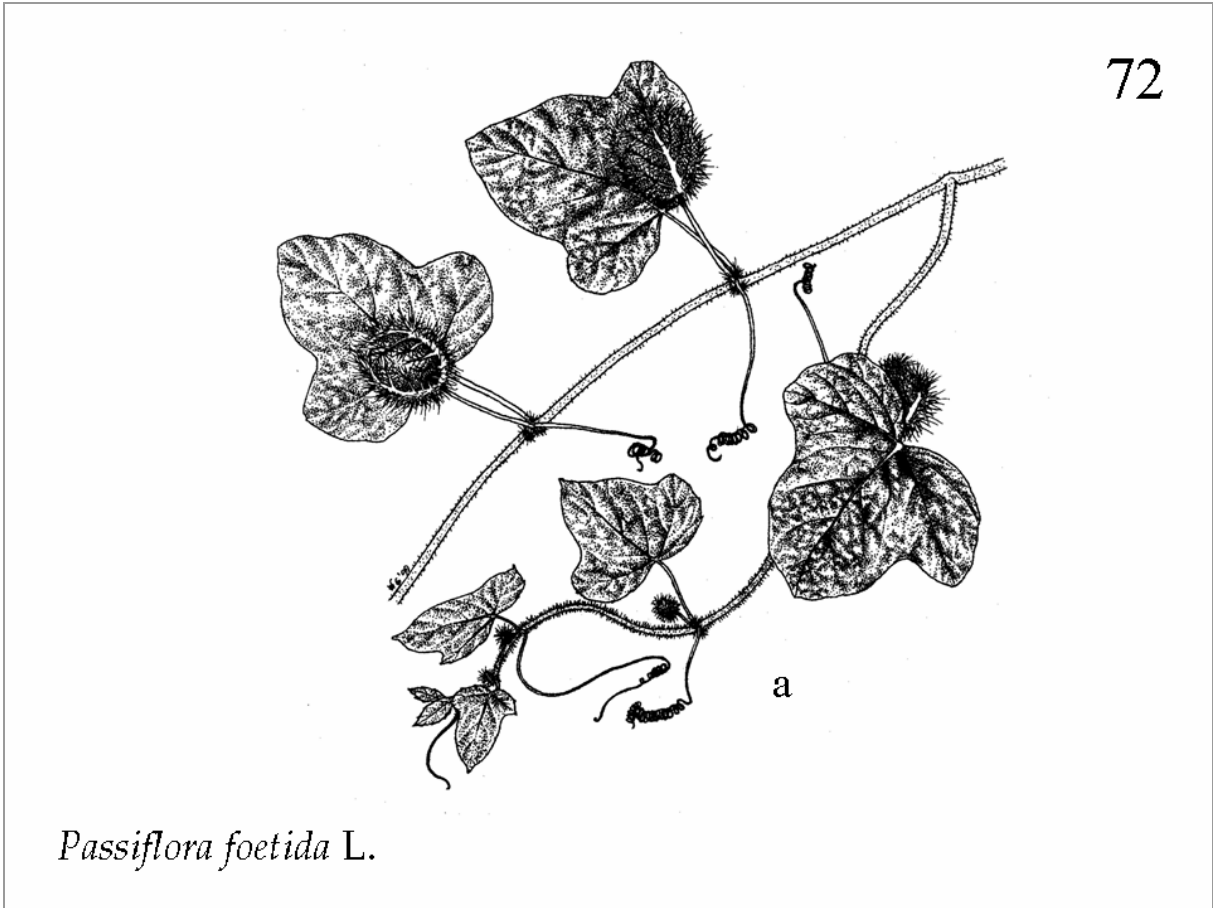


Fig. 72. *Passiflora foetida* L. (a) Creeping stem with fruit.

PASSIFLORACEAE**72*****Passiflora foetida* L.**

Synonyms : *Dysosmia foetida* (L.) M. Roem, *Granadilla foetida* (L.) Gaertn., *Tripsilina foetida* (L.) Raf.

Vernacular name(s) : Stinking passion fruit, Wild water lemon, Love in a mist (E), Timun dendang, Timun padang, Timun hutan (Mal.), Buah tikus, Kaceprok, Pacean, Gegambo, Lemanas, Remugak, Kaap, Bungan pulir, Moteti, Buah Pitri – *Permot* (Ind.), Kurunggut (Phil.), Ka thok rok (Thai), Nhãn lô'ng, Lac tiên (Viet).

Description : Variable, lax ground herb, occasionally a vine, stems 1.5-5m long. Stems are cylindrical, and rather densely covered with long hairs. Spiralling tendrils occur next to the leaves on the shaded sides, and are yellowish green and sparsely hairy. Leaves are spirally arranged, ovate, simple but 3-lobed, 5.5-12 by 3.75 by 12 cm, both sides covered with hairs and with long stalked glands on both sides and along the leaf edges. Leaves are foul smelling when crushed. The leaf stalk is 2-10 cm long. Flowers are bisexual, and are either solitary or occur in pairs in the leaf axils; flower stalk 1-7 cm long, sparsely covered with hairs. A whorl of leaflets occurs at the base of the flower consisting of three overlapping leaflets, 3-30 mm long, and are finely and deeply divided. A second row of leaflets are threadlike, crossed, pale green or purple, with glandularly swollen yellow tips. The calyx tube is widely bell-shaped, 2.5-5 cm long, with 5 lobes, inside white, outside pale, greenish. There are 5 petals that are oblong, thin and white, and have a prominent midrib, 14-25 by 6-10 mm. Corona filaments are purplish. Fruit is a round berry, 15-20 by 12-17 mm, glossy yellow to orange when ripe, and enclosed by leaflets. Seeds are numerous and compressed, 4-5 by 1.75 mm, black or dark brown, shallowly pitted and ridged.

Ecology : Occurs both in wet areas and in areas with a pronounced dry season; in hedges, scrub, wasteland, roadsides, plantation margins. Also on landward margins of mangroves, above high tide mark. In Java, found from 0-1000(-1500) m asl. Flowering occurs all year round. Fruit is readily taken and spread by birds and small mammals. Flowers open in the morning and close before noon, after which they begin to wilt. Mangrove associate species.

Distribution : Originally from tropical South America, but now widespread throughout the tropics world-wide. Found throughout Southeast Asia.

Abundance : Common.

Use(s) : Sometimes planted as a soil cover (the Philippines) to control *Imperata* grass and erosion. Young leaves are a good vegetable, marketed in West Java. Seed aril tasty and edible, and tastes like cultivated passion fruit, but is slightly bitter. Young fruit cyanogenic and poisonous; suspected of poisoning livestock. In Papua New Guinea it is intercropped with sweet potato to suppress *Imperata*. Parts of the entire plant are used to treat coughs and a sore throat.

Source of illustration : Drawn from live specimen.

Reference(s) : Heyne (1950), de Wilde (1972), Soerjani *et al.* (1987), Verheij & Coronel (1992).

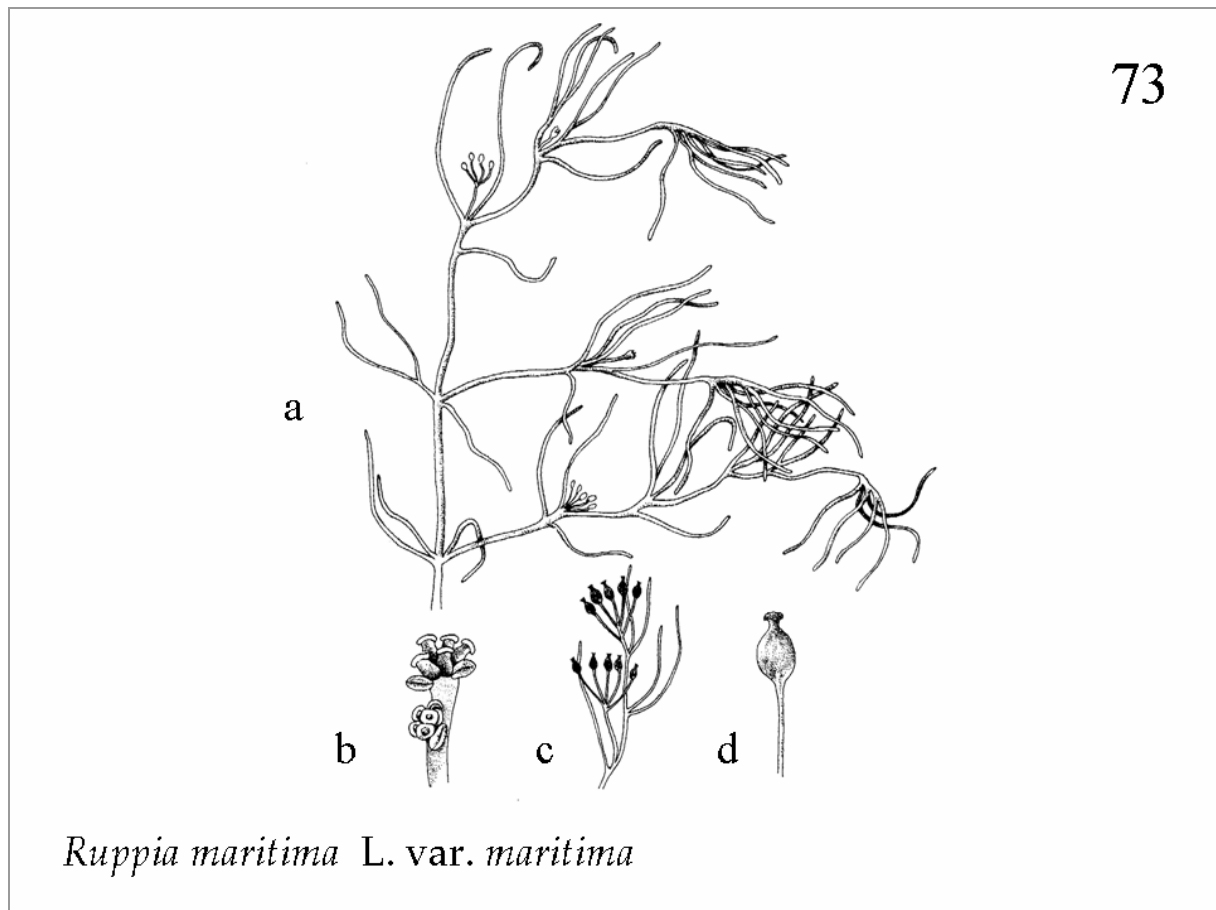


Fig. 73. *Ruppia maritima* L. var. *maritima*. (a) Detail of fruiting stem, (b) detail of group of flowers, (c) cluster of fruits, and (d) single fruit.

RUPPIACEAE**73*****Ruppia maritima* L. var. *maritima***

Synonyms : *Potamogeton filiformis* Phil., *Ruppia didyma* Swartz ex Wickstr., *Ruppia filifolia* (Phil.) Skottstr., *Ruppia marina* Fries, *Ruppia pectinata* Rydberg, *Ruppia rostellata* W.D.J. Koch ex Rchb.

Vernacular name(s) : Widgeon grass (E).

Description : Aquatic plant, with floating leaves located just below the water's surface; it's stems may be up to 1 m-long, and it has opposite leaves. Leaves have no stalk and are 3-7.5 cm long. They are narrow and thread-like with a sheathing base and a tongue-like appendage. The naked, bisexual flowers are only just exposed above the water. The 2-flowered spikes occur at an unequal level on opposite sides of the main flower stem. There are two opposite stamens located on very short, broad stalks. The stigma has no stalk. Each spike has at most four ripe fruits, each borne on a 8-14 mm-long stalk. They are distinctly beaked, hard, about 2.5 mm long and do not open when ripe. *Ruppia marina* is a highly variable species, with many subspecies and varieties; Ascherson and Graebner, for example, recognise the following: *brevirostris*, *curvicarpa*, *drepanensis*, *intermedia*, *obliqua*, *occidentalis*, *rostellata* and *spiralis*.

Ecology : Entirely submerged aquatic plant, occurring both in freshwater (e.g. ricefields in northern Peninsular Malaysia), brackish or marine water (coastal fish ponds, pools or lagoons, also in mangrove areas), or even hyper saline conditions (e.g. salt pans in South Sulawesi). Mangrove associate species.

Distribution : Cosmopolitan species. In Southeast Asia recorded from the Philippines, Vietnam, Malaysia (northern Peninsular Malaysia) and Indonesia (Java, Madura and Sulawesi).

Abundance : Very local, but locally abundant.

Use(s) : Unknown.

Source of illustration : Westhoff (1976), Cook (1990).

Reference(s) : Ascherson & Graebner (1907), Backer & Bakhuizen van den Brink (1963-8), Keng (1987), Giesen, Baltzer & Baruadi (1991), Missouri Botanical Garden TROPICOS database (www.mobot.mobot.org). <http://www.worldseagrass.org/species.pdf>

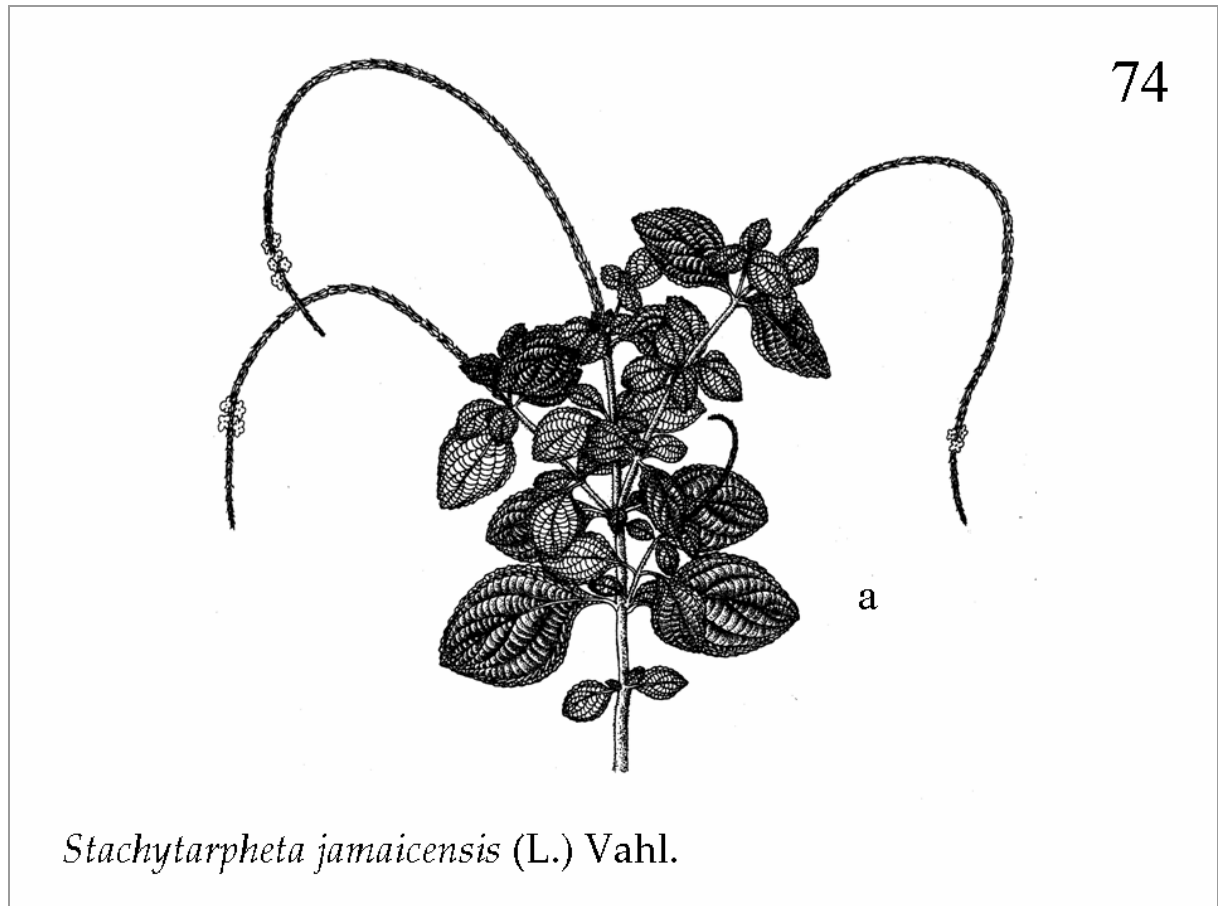


Fig. 74. *Stachytarpheta jamaicensis* (L.) Vahl. (a) Flowering terminal branchlet.

VERBENACEAE

74

***Stachytarpheta jamaicensis* (L.) Vahl**

Synonyms : *Stachytarpheta friedrichsthali* Hayek, *Verbena jamaicensis* L.

Vernacular name(s) : Blue Porterweed, Light-blue snakeweed (E), Pecut kuda, jarongan, jarongan lalaki, ngadi renga, remek getih, jarong, biron, sekar laru – *Percut kuda* (Ind.)

Description : Erect, large woody herb or shrublet with erect or curved branches, up to 1-2 m tall but usually < 1m. Young stems are bluntly quadrangular, compressed at the top of the internodes, either smooth or with scattered flat-lying curved hairs; older stems are smooth, often marked with white blotches. Leaves are opposite, with a fairly long stalk, ovate to ovate-elliptic, 4-9 by 3-6 cm, dark green, and with a wrinkled appearance between the lateral nerves; leaf edges are serrated. Flowers are arranged in terminal racemes, 20-40 cm long, and are either erect or curved upwards. The calyx is compressed, 5-6 mm long, smooth, with 4 short, sharp teeth. The corolla tube is 10-12 mm long, bent from the axis, thin, widening at the top, dark violet, with a paler to almost white base; smooth outside, but with long hairs on the inside. When in fruit, the calyx is elongate; fruits measure 5-6 by 2-2.5 mm.

Ecology : Occurs in sunny or slightly shaded areas, moist areas, waysides, secondary forest, ricefields, along streams, landward edges of mangroves, and on dikes in brackish water fishponds (tambak) in former mangrove areas. Often gregarious. Mangrove associate species.

Distribution : Exotic, originating from Tropical America from where it has been spread world-wide; pantropical. It now occurs throughout Southeast Asia.

Abundance : Locally very common.

Use(s) : Planted as hedge for fencing of fields. Used as medicine to treat rheumatism, throat infections, as an anti-diuretic, and for purifying the blood.

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

Reference(s) : Soerjany *et al.* (1987), Noor *et al.* (1999), Maung (2003)

