

COMBRETACEAE

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Trees, shrubs or lianas. Leaves alternate, verticillate, or rarely opposite. Stipules wanting. Inflorescence consisting of terminal, axillary or extra-axillary panicles, racemes or spikes. Flowers actinomorphic or occasionally zygomorphic, hermaphrodite or unisexual. Receptacle tubular, surpassing the ovary in length. Sepals 4—5(—8), persistent, valvate. Petals 4—5(—8) or wanting, small, imbricate or valvate. Disk often present. Stamens 2—5 or twice as many as the calyx lobes and then biseriate; anthers versatile or adnate to the filaments with well-developed connective, 2-celled, with longitudinal dehiscence. Ovary inferior, uni-locular, ribbed or angled; style 1, slender; stigma small, rarely capitate. Ovules 2—6, pendulous, epitropous. Fruit leathery and drupaceous, very variable in shape and size, usually indehiscent, often variously winged or ridged. Seed one, by abortion of the ovules. Endosperm wanting.

About 500 species in 18 genera in the tropics of both worlds.

Key to the genera:

1. Petals present; leaves opposite or subopposite; petiole with 2 glands at or near the apex *Laguncularia*
Petals absent; leaves alternate or subverticillate; flowers small 2
2. Flowers in heads; fruiting head cone-like; leaves elliptic to lanceolate, up to 10 cm long *Conocarpus*
Flowers in spikes; fruit drupaceous; leaves obovate, up to c. 40 cm long
. *Terminalia*

Terminalia Linnaeus, Syst. Nat. ed. 12, 2: 674. 1767; Mantissa 21, 128. 1767

Trees. Leaves alternate or subopposite and often crowded at the top of the twigs; in the latter case the top of the twigs swollen; the petiole usually provided with glands or glands at the base of the blade. Inflorescence consisting of

elongate spikes. Bracteoles deciduous. Flowers hermaphrodite or polygamous, 4- or 5-merous, usually actinomorphic. Sepals deciduous. Petals wanting. Disk densely pubescent. Stamens 10 or 8, biseriate, the 5 lower ones episepalous, the 5 upper alternating with the sepals; filaments filiform; anthers versatile, cordate. Ovary lanceolate-cylindrical or subovoid, somewhat constricted under the calyx; style filiform; stigma pointed. Ovules usually 2. Fruit flattened-ellipsoidal, 4—5-angled, sometimes samaralike. Exocarp fleshy or coriaceous, variously winged. Stone leathery or bony. Embryo cylindrical or globose; cotyledons convolute.

About 200 species in tropical and subtropical regions.

Terminalia catappa L.

LINNAEUS, *Mantissa* 1: 128. 1767; GRISEBACH, *Fl. Br. W. Ind. Isl.* 276. 1860; Duss, *Fl. phan. Ant. franç.* 294. 1897; BOLDINGH, *Fl. D.W. Ind. Isl.* 1: 143. 1909; URBAN, *Symb. Ant.* 4: 438. 1910; BOLDINGH, *Fl. Ned. W. Ind. Eil.* 304. 1913; *Fl. D.W. Ind. Isl.* 2: 82. 1914; BRITTON & MILLSAUGH, *Bahama Fl.* 302. 1920; URBAN, *Symb. Ant.* 8: 475. 1920; BRITTON & WILSON, *Sci. Surv. Porto Rico & Virgin Isl.* 6: 22. 1925; FAWCETT & RENDLE, *Fl. Jamaica* 5: 305. 1926; WILLIAMS, *Fl. Trinidad & Tobago* 1: 327. 1931; QUESTEL, *Fl. Isl. St. Bartholomew* 161. 1941; LEON & ALAIN, *Fl. Cuba* 3: 400, fig. 184. 1953; ARNOLDO, *Gekw. en nutt. pl. Ned. Ant.* 132, fig. 204. 1954; *Gekw. en nutt. pl. Ned. Ant.* 129, fig. 211. 1971; GOODING *et al.*, *Fl. Barbados* 309. 1965; ADAMS, *Flowering plants of Jamaica* 511. 1972.

Tree, up to 25 m tall; spreading branches whorled; twigs stout, glabrous. Leaves alternate, crowded at the end of the twigs. Leaf-blades obovate, rounded or sometimes apiculate at the apex, cuneate, somewhat bi-auriculate and biglandular at the base, 8—40 × 4—20 cm, 1½—2¼ as long as wide, glabrous, shining, dark green above, pubescent with brown hairs or glabrescent, pale green beneath; petioles thick, 1 cm long. Inflorescences consisting of axillary, elongate, slender and dense-flowered spikes, up to 20 cm long with male flowers at the top. Flowers 5-merous. Receptacle saucer-shaped. Calyx deeply lobed, densely hairy within, tomentose outside; its lobes triangular, apiculate, about 12 mm long. Disk villous. Stamens 10; filaments 5—4 mm long; anthers about 0.5 mm. Ovary laterally compressed, ovoid, tomentose, becoming glabrous lateron; style 4 cm long; stigma pointed. Fruit drupaceous, compressed-ellipsoidal, 4—6 cm long and 3 cm wide, fleshy, 2-ridged, glabrous. Seed compressed-ovoid, 3—4 cm long.

Native of Malaya; introduced and often naturalized in the West Indies and tropical continental America.

Cultivated and subsontaneous in the islands of the Windward Group; cultivated in Aruba, Bonaire, and Curaçao.

Vernacular names: wilde amandel, almendron (Leeward Group).
alman tree (Windward Group).

ARUBA: Fontein, cult. (Arnoldo 324, fl. Dec.).

BONAIRE: Fontein, cult. (Arnoldo 460, fl. Dec.); Guatemala Plantation (Stoffers 1092, fl. Dec.).

CURAÇAO: Experimental garden Cas Corá (Arnoldo 2200, fl. Nov.); Hato (Suringar s.n., st. Jan. [L]).

SABA: The Bottom (Boldingh 1982, st. July); hill north-west of The Bottom, 300—350 m (Stoffers 3308, fl. May).

ST. EUSTATIUS: Cultuurvlakte (Suringar s.n., fl. May [L]); without loc. (v. Groll-Meyer 45, fl.).

ISLAND? (Boldingh 3593, fl.).

Conocarpus Linnaeus, Spec. Plant. 176. 1753

Shrubs or small trees. Leaves alternate, entire. Inflorescence consisting of dense-flowered heads, arranged in terminal panicles. Flowers hermaphrodite or polygamous, 5-merous. Bracteoles present. Receptacle compressed and constricted above the ovary. Calyx deciduous. Sepals wanting. Disk present, formed of 5 fleshy, villous glands. Stamens 10 or less by abortion; filaments slender; anthers cordate. Ovary compressed, uni-locular; style short or slender; stigma small. Ovules 2 (or 3). Fruits laterally compressed, 2-winged, curved outwards and downwards, aggregated into a cone-like mass. Cotyledons convolute.

A monotypic genus in the West Indies, Florida and Keys, continental tropical America, and tropical Africa.

Conocarpus erectus L.

LINNAEUS, Spec. Plant. 176. 1753; GRISEBACH, Fl. Br. W. Ind. Isl. 277. 1860; DUSS, Fl. phan. Ant. franç. 295. 1897; BOLDINGH, Fl. D.W. Ind. Isl. 1: 143. 1909; JOHNSTON, Proc. Bost. Soc. Nat. Hist. 34(7): 243. 1909; URBAN, Symb. Ant. 4: 439. 1910; BOLDINGH, Fl. Ned. W. Ind. Eil. 304. 1913; Fl. D.W. Ind. Isl. 2: 82. 1914; BRITTON & MILLSAUGH, Bahama Fl. 302. 1920; URBAN, Symb. Ant. 8: 475. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 6: 23. 1925; FAWCETT & RENDLE, Fl. Jamaica 5: 309, fig. 121. 1926; WILLIAMS, Fl. Trinidad & Tobago 1: 329. 1931; QUESTEL, Fl. Isl. St. Bartholomew 160. 1941; LEON & ALAIN, Fl. Cuba 3: 403, fig. 402. 1953; ARNOLDO, Zakflora 36, fig. 40. 1954; Zakflora 109, fig. 40. 1964; GOODING *et al.*, Fl. Barbados 308. 1965; ARNOLDO, Gekw. en nutt. pl. Ned. Ant. 128. 1971; ADAMS, Flowering plants of Jamaica 510. 1972. The species name is often spelled "Conocarpus erecta".

Key to the varieties:

1. Leaves glabrous or glabrescent var. *erectus*
 Leaves covered with a soft silky indumentum var. *sericeus*

var. *erectus*

Tree or usually a shrub, often trailing over rocks; stems glabrous, brown; twigs often striate, brown. Leaves short-petiolate; the blade elliptic to lanceolate,

acuminate or rounded at the apex, tapering into the petiole, provided with 2 glands near the base, 2.5—9 × 1—3.5 cm, about (2—)3 times as long as wide, glabrous or glabrescent, usually with glands in the pits along either side of the midvein beneath; petiole 3—5 mm long. Panicles up to 7 cm long; heads less than 1 cm in diam. Bracteoles spatulate, cuspidate at the apex, 1.5 mm long, villous. Receptacle laterally compressed, strongly contracted above the ovary, 1 × 1 mm, villous. Calyx campanulate, 5-lobed, 1.5 mm long, villous, its lobes triangular, 0.5 mm long. Stamens 10 or by abortion 9—5; filaments filiform, 2.5 mm long; anthers less than 0.5 mm, with longitudinal dehiscence, the connective protruded. Disk formed of 5 fleshy, villous glands surrounding the base of the style. Ovary compressed; style glabrous, cylindric-filiform, 2.5—3 mm long; stigma small. Fruit scale-like, winged, curved, keeled above, indehiscent, 3—7 mm, arranged in a 1.5 × 1.3 cm cone-like head.

West Indies, tropical and subtropical continental America, and tropical West Africa.

Often at the inner margin of mangrove woodland, along salt flats and in salt-sprayed limestone areas.

ARUBA: Rooi Prins (Stoffers 2151, fl. Feb.); Rooi Francés (Arnoldo 276, fl. Dec.); calcareous seashore near Manchebo (Boldingh 6285, fl. Dec.); Kudarebe (Stoffers 1330, fl. & fr. Jan.); Salinja, west of Tibushi (Stoffers 1347, fl. Jan.).

BONAIRE: Seashore near Playa Grandi (Boldingh 7178, fl. Feb.); Oranje Pan (Burgers 521, fr. March); Sabana (Arnoldo 29, fl. Nov.); Lac (Stoffers 926, fl. Dec.); Punt Vierkant near lighthouse (Stoffers 700, fr. Nov.); along road to salt pans near Pekelmeer (Stoffers 721, fl. Nov.); near Willemstoren (Stoffers 470, st. Oct.); Flambaaiput (Stoffers 460, fl. Oct.); Boca Onima (Stoffers 565, fl. Nov.); Kralendijk (Suringar s.n., fr. Feb. [L]).

CURAÇAO: St. Marie (Went 1325, fl. & fr. Dec.); coralstrand near Willemstad (Heldring-Talma s.n., fl.); Hofje of Valentijn (Boldingh 5366, fl. Nov.); calcareous hills near Malpais (Boldingh 4892, fr. Oct.); calcareous hills near St. Patrick (Boldingh 5484, st. Dec.); calcareous hills near Caracas Baai (Boldingh 5411, fl. & fr. Jan.); saltpans of St. Willebrordus (Stoffers 351, fl. Oct.); Piscadera Baai (de Wilde 123A, fl. Jan.); Brakke Put (Suringar s.n., fl. & fr. Jan. [L]); Savonet (Suringar s.n., fl. & fr. Jan. [L]); without loc. (Suringar s.n., fl.).

St. MARTIN: Cole Bay (George s.n. sub Boldingh 2515, fl. Aug.); near Simson Bay (Boldingh 3029, fl. & fr. Aug.); Simson Bay Lagoon near Simson Bay (Stoffers 2506, st. March; Suringar s.n., st. May [L]); *ibid.* near Cul Piquard (Boldingh 2747, fl. Aug.); from Philipsburg to Guana Bay (Boldingh 2378, fl. Aug.); Low Lands (Boldingh 3266, st. Sept.); Great Bay near Pointe Blanche (Stoffers 2223, fr. March).

St. EUSTATIUS: seashore near Venus Berg (Boldingh 970, fl. June).

Vernacular names: grijeze manguel, manguel, manguel blancu (Leeward Group).
button wood (Windward Group).

var. sericeus Gris.

GRISEBACH, Fl. Br. W. Ind. Isl. 277. 1860.

Leaves covered with a soft silky indumentum.

Jamaica, Yucatan, Bahamas, and Hispaniola; cultivated in the islands of the Leeward and Windward Group.

Laguncularia Gaertner f., Fruct. & Sem. 3: 209. 1805

Shrubs or trees. Leaves opposite, coriaceous; petioles biglandular at the apex. Inflorescence consisting of axillary, elongated, pubescent spikes; the latter sometimes arranged in panicles. Bracts deciduous; bracteoles adnate to the receptacle. Flowers 5-merous, polygamous, white. Receptacle funnel-shaped, shortly produced beyond the ovary. Sepals 5, persistent, imbricate. Petals 5, small, caducous. Stamens 10, bi-seriate; filaments short, subulate; anthers cordate, versatile. Disk epigynous. Ovary angular; style short; stigma slightly 2-lobed. Ovules 2, pendulous. Fruit crowned by the calyx, unequally ribbed; exocarp leathery outside, corky inwards; endocarp thin and brittle. Seeds one, oblong. Cotyledons convolute.

Two species in tropical America and tropical Africa.

Laguncularia racemosa (L.) Gaertn.

GAERTNER, Fruct. & Sem. 3: 209. tab. 217, fig. 3. 1805; GRISEBACH, Fl. Br. W. Ind. Isl. 276. 1860; DUSS, Fl. phan. Ant. franç. 295. 1897; BOLDINGH, Fl. D.W. Ind. Isl. 1: 144. 1909; JOHNSTON, Proc. Bost. Soc. Nat. Hist. 34(7): 243. 1909; URBAN, Symb. Ant. 4: 440. 1910; BOLDINGH, Fl. Ned. W. Ind. Eil. 304. 1913; Fl. D.W. Ind. Isl. 2: 83. 1914; BRITTON & MILLSPAUGH, Bahama Fl. 301. 1920; URBAN, Symb. Ant. 8: 477. 1920; BRITTON & WILSON, Sci. Surv. Porto Rico & Virgin Isl. 6: 24. 1925; FAWCETT & RENDLE, Fl. Jamaica 5: 310, fig. 122. 1926; WILLIAMS, Fl. Trinidad & Tobago 1: 330. 1931; QUESTEL, Fl. Isl. St. Bartholomew 161. 1941; LEON & ALAIN, Fl. Cuba 3: 407. 1953; ARNOLDO, Zakflora 32, 46, 67, fig. 27. 1954; Zakflora 109, fig. 27. 1964; GOODING *et al.*, Fl. Barbados 308. 1965; ADAMS, Flowering plants of Jamaica 510. 1972; — *Conocarpus racemosus* LINNAEUS, Syst. Nat. ed. 10, 2: 930. 1759.

Shrub or tree, up to 20 m tall, but in the Netherlands Antilles usually not exceeding 6 m; twigs reddish-brown, glabrous, thickened at the nodes. Leaves opposite, or rarely alternate. Leaves oblong, ovate or obovate, rounded or slightly emarginate at the apex, rounded, cuneate or subcordate at the base, dotted with small glands, especially near the margins, 2—7 × 1—4 cm, about 1.5—2 times as long as wide, glabrous; petiole stout, 0.5—2 cm long, bi-glandular. Spikes pedunculate, 3—6 cm long, few- to many-flowered. Bracts broadly ovate, 2 × 2 mm, ciliate. Bracteoles adnate to the receptacle, triangular, 1 mm long. Flowers white. Receptacle 4 mm long, tomentulose. Calyx 2 mm long, its lobes roundish, tomentulose. Petals roundish, 1.5—2 mm long. Stamens 10; filaments widened near the base, 1 mm long; anthers small, less than 0.5 mm long, cordate, the connective prolonged. Disk fleshy. Style cylindrical, stout, slightly over 1 mm long; stigma 2-lobed. Fruit elongate, obovoid, laterally compressed, constricted below the persistent calyx, the 2 lateral ribs produced into narrow wings, 1.5—2 cm long, silky pubescent.

West Indies, tropical eastern America, and tropical West Africa.

Marshy places along the coast; a frequent species in the mangroves, especially in disturbed parts.

ARUBA: calcareous seashore near Manchebo (Boldingh 6287, st. Dec.).

BONAIRE: neighbourhood of Rincón (Boldingh 7185, st. Jan.).

CURAÇAO: near Willemstad (Britton & Shafer 2937, fl. March); Rif (Stoffers 1228, fl. Dec.; salt pans of St. Willebrordus (Stoffers 347, fr. Oct.); loc. uncertain (Boldingh 5363, fl.).

ST. MARTIN: from Philipsburg along saltpond to Cul de Sac (Boldingh 2612, fl. & fr. Aug.); Simson Bay Lagoon near Cul Piquard (Boldingh 2748, fl. Aug.); *ibid.* near Simson Bay village, Boldingh 3028, fr. Aug.); near Simson Bay (Boldingh 3258, fr. Sept.); Oyster Pond (Suringar s.n., st. May [L]); without loc. (Boldingh 2497, fr.).