

# Dicotyledons

## COMBRETACEAE R. Br., nom. cons. 1810. COMBRETUM FAMILY

Shrubs, trees, or woody vines. Leaves alternate or opposite, simple, pinnate-veined, petiolate, stipulate or estipulate. Flowers in terminal or axillary spikes, racemes, panicles, or heads, actinomorphic, bisexual or unisexual (staminate) (plants dioecious or polygamodioecious), bracteate, bracteolate or ebracteolate; hypanthium prolonged beyond the ovary, the lower part adnate to the ovary, the upper part free; sepals 4 or 5, connate; petals 5 and free or absent; nectaries present; stamens 5–10, the filaments free, the anthers 2-locular, versatile, longitudinally dehiscent; ovary 2- to 5-carpellate, 1-loculate, the style 1. Fruit a drupe.

A family of 14 genera and about 500 species; nearly cosmopolitan.

*Terminaliaceae* J. St.-Hil. (1805).

Selected references: Graham (1964b); Stace (2010).

1. Leaves opposite, decussate.
  2. Tree or erect shrub; petiole with nectar glands; flowers inconspicuous, the petals ca. 1 mm long, greenish white.....**Laguncularia**
  2. Vine or scandent shrub; petiole without nectar glands; flowers showy, the petals 1–2 cm long, white to pink or red.....**Combretum**
1. Leaves alternate, spiral.
  3. Flowers in dense spherical or oblong heads; fruits in a dry, conelike head .....**Conocarpus**
  3. Flowers in spikes (these sometimes reduced to a few flowers); fruit a dry or fleshy drupe.
    4. Leaves somewhat succulent; petals white .....**Lumnitzera**
4. Leaves chartaceous; petals absent .....**Terminalia**

### **Combretum** Loefl., nom. cons. 1758.

Woody vines. Leaves opposite, decussate, pinnate-veined, petiolate, estipulate. Flowers in terminal or axillary spikes, bisexual, bracteate, ebracteolate; sepals 5, connate; petals 5, free; stamens 10, free. Fruit a drupe.

A genus of about 250 species; North America, West Indies, Mexico, Central America, South America, Africa, Asia, and Australia. [Derived from a name applied by Pliny the Elder to a climbing plant.]

*Quisqualis* L. (1762).

**Combretum indicum** (L.) DeFilipps [Of India.] RANGOON CREEPER.

*Quisqualis indica* Linnaeus, Sp. Pl., ed. 2. 556. 1762. *Quisqualis pubescens* Burman f., Fl. Indica 104. 1768, nom. illegit. *Combretum indicum* (Linnaeus) DeFilipps, Useful Pl. Dominica 277. 1998.

Climbing woody vine, to 6 m; branchlets pubescent. Leaves with the blade elliptic to oblong-elliptic or slightly obovate, 4–18 cm long, 1.5–9 cm wide, the apex acuminate to subcaudate, the base obtuse to subcordate, the margin entire, the upper and lower surfaces glabrate to pubescent and with inconspicuous short-stipitate glands, the petiole 0.5–2 cm long. Flowers in a spike 1.5–7.5 cm long; bracts lanceolate to ovate-lanceolate, 6–10 mm long; lower hypanthium 3–5 mm long, the upper hypanthium 5–6.5(8) cm long, sericeous; sepals triangular to deltate, 1–3 mm long, sericeous; petals oblong, 10–15(20) mm long, white or pink, becoming red, the outer surface sericeous, the inner surface glabrous; nectary on the inner surface of the hypanthium near the base; stamens 4–8 mm long, included; style adnate to the upper hypanthium except for the distal 10–20 mm. Fruit ovate-elliptic, 2.5–4 cm long, red, 5-winged, glabrous or sparsely glandular-pubescent.

Disturbed sites. Rare; Highlands, Broward, and Miami-Dade Counties. Escaped from cultivation. Florida; West Indies, Mexico, Central America, and South America; Africa, Asia, and Australia. Native to Asia. Summer.

**Conocarpus** L., 1753. BUTTONWOOD

Shrubs or trees. Leaves alternate, spiral, pinnate-veined, petiolate, estipulate. Flowers in pedunculate racemes or panicles of conelike heads, unisexual (plants dioecious), bracteate, ebracteolate; sepals 5, connate; petals absent; stamens (5)10, free. Fruit a drupe, scalelike, aggregated into conelike heads; seed 1.

A genus of 2 species; North America, West Indies, Mexico, Central America, Africa, and Asia. [From the Greek *konos*, cone, and *karpos*, fruit, in reference to the conelike fruiting clusters.]

**Conocarpus erectus** L. [Upright, in reference to the habit.] BUTTONWOOD.

*Conocarpus erectus* Linnaeus, Sp. Pl. 176. 1753. *Conocarpus erectus* Linnaeus var. *arboreus* de Candolle, Prodr. 3: 16. 1828, nom. inadmiss. *Terminalia erecta* (Linnaeus) Baillon, Hist. Pl. 6: 266, 275. 1876.

*Conocarpus erectus* Linnaeus var. *sericeus* de Candolle, Prodr. 3: 16. 1828. *Conocarpus sericeus* (de Candolle) G. Don, Gen. Hist. 2: 662. 1832. *Conocarpus erectus* Linnaeus forma *sericeus* (de Candolle) Stace, in Harling & Sparre, Fl. Ecuador 81: 58. 2007.

*Conocarpus erectus* Linnaeus var. *sericeus* Grisebach, Fl. Brit. W.I. 277. 1860; non de Candolle, 1828. *Conocarpus sericeus* J. Jiménez Almonte, Anales Univ. Santo Domingo 18: 126. 1953; non (de Candolle) G. Don, 1832.

Shrub or tree, to 12(20) m; branchlets angled or winged. Leaves with the blade elliptic to obovate, 2–10 cm long, 0.5–4(5) cm wide, the apex acute to acuminate, the base cuneate, the margin entire, the upper and lower surfaces glabrous or densely pubescent, the lower surface with pit domatia, the petiole 2–15 cm long, with 2 nectar glands near the blade base. Flowers in heads in a raceme 3–10 cm long (sometimes paniculiform and to 25 cm long), the heads 4–9 mm long; hypanthium funnellform, greenish, ca. 1 mm long; sepals triangular-ovate, subequaling the floral tube; nectary disk on top of the ovary; stamens 5(10), 2–4 mm long. Fruiting heads 6–12 mm long, greenish brown, the fruit scalelike, 3–5 mm long, pubescent distally; seed flat.

Tidal swamps. Frequent; central and southern peninsula. Florida; West Indies, Mexico, Central America, and South America; Africa. All year.

### **Laguncularia** C. F. Gaertn. 1807. WHITE MANGROVE

Shrubs or trees. Leaves opposite, decussate, pinnate-veined, petiolate, estipulate. Flowers in terminal and axillary spikes or panicles, bisexual or unisexual (perfect and staminate on the same plant), bracteate, bracteolate; sepals 5, connate; petals 5, free; stamens 10, free. Fruit a drupe; seeds 2.

A monotypic genus; North America, West Indies, Mexico, Central America, South America, and Africa. [*Laguncularis*, flask- or bottle-shaped, in reference to the shape of the fruit.]

### **Laguncularia racemosa** (L.) C. F. Gaertn. [Flowers/fruits in a raceme.] WHITE MANGROVE.

*Conocarpus racemosus* Linnaeus, Syst. Nat., ed. 10. 930. 1759. *Laguncularia racemosa* (Linnaeus) C. F. Gaertner, Suppl. Carp. 209. 1807. *Schousboea commutata* Sprengel, Syst. Veg. 2: 332. 1825, nom. illegit. *Rhizaeris alba* Rafinesque, Sylva Tellur. 90. 1838, nom. illegit.

*Laguncularia glabriflora* C. Presl, Reliq. Haenk. 2: 22. 1831. *Laguncularia racemosa* (Linnaeus) C. F. Gaertner var. *glabriflora* (C. Presl) Stace, in Harling & Sparre, Fl. Ecuador 81: 11. 2007.

Shrub or tree, to 10(20) m. Leaves with the blade ovate to obovate, oblong, or suborbicular, 2–9 cm long, 1.5–5 cm wide, the apex rounded, the base obtuse, rounded, or retuse, the margin entire, the upper and lower surfaces with minute, scattered, sunken, salt-excreting, glandular trichomes, the lower surface with pit domatia, the petiole 6–15 mm long, with 2 distal nectar glands. Flowers in a spike or panicle 2–13 cm long; hypanthium shallowly cupulate, 1–2 mm long; sepals triangular, 1 mm long, green, the outer surface pubescent; petals suborbicular, 1 mm long, greenish white, pubescent; nectary disk on top of the ovary, pubescent; stamens 1–2 mm long. Fruit oblong to obovoid, 13–20 mm long, greenish or gray-green, pubescent, slightly flattened, with 2 major ridges forming spongy wings, these subtended by bracteoles, the hypanthium and calyx persistent.

Tidal swamps. Frequent; peninsula. Florida; West Indies, Mexico, Central America, and South America; Africa. Spring.

**Lumnitzera** Willd. 1803.

Shrubs or trees. Leaves alternate, spiral, pinnate-veined, petiolate, estipulate. Flowers in axillary spikes, bisexual, bracteate, bracteolate; sepals 5, connate; petals 5, free; stamens 10, free. Fruit a drupe; seeds 2–5.

A genus of 2 species; North America, Africa, Asia, Australia, and Pacific Islands. [Commemorates Istrán Lumnitzer (1750–1806), Hungarian botanist.]

**Lumnitzera racemosa** Willd. [With racemes.] BLACK MANGROVE.

*Lumnitzera racemosa* Willdenow, Ges. Naturf. Freunde Berlin Neue Schriften 4: 187. 1803.

Shrub or tree, to 6 m; branchlets glabrous or sparsely short-pubescent. Leaves with the blade obovate to elliptic, 1.7–9 cm long, 0.6–3 cm wide, fleshy-leathery, the apex rounded to retuse, the base narrowly cuneate, the margin entire, the upper and lower surfaces glabrous, the lower surface with minute pit domatia, the petiole 3–5 mm long. Flowers in an axillary spike 1–3(7) cm long, bracteate, bracteolate; hypanthium cylindric, the free portion 1–3 mm long, glabrous; sepals triangular, ca. 1 mm long, green, the margin ciliate, otherwise glabrous; petals ovate to elliptic, 4–5 mm long, the margin sparsely ciliate, otherwise glabrous; nectary disk on the inner surface of the hypanthium at the base of the free portion; stamens 4–6 mm long. Fruit ovoid, 10–20 mm long, slightly flattened, with 2 major ridges, these subtended by bracteoles, the other ridges only developed distally, green or brown, glabrous.

Tidal swamps. Rare; Miami-Dade County. Escaped from cultivation. Florida; Africa, Asia, Australia, and Pacific Islands. Native to Africa, Asia, Australia, and Pacific Islands. Spring–summer.

*Lumnitzera racemosa* is listed as a Category I invasive species in Florida by the Florida Exotic Pest Plant Council (FLEPPC, 2015).

**Terminalia** L., nom. cons. 1767. TROPICAL ALMOND

Trees or shrubs. Leaves alternate, spiral, pinnate-veined, clustered at the ends of erect, short shoots and appearing pseudowhorled, petiolate, stipulate. Flowers in axillary spikes, bracteate, ebracteolate, bisexual or staminate (perfect and staminate on the same plant); sepals 4–5, connate; petals absent; stamens 10, free. Fruit a drupe; seeds 1 or 2.

A genus of about 200 species; North America, West Indies, Mexico, Central America, South America, Africa, Asia, Australia, and Pacific Islands. [*Terminalis*, terminal, in reference to the leaves clustered at the end of the branches.]

*Terminalia buceras* and *T. molinetii* have usually been placed in *Bucida*. A recent molecular study shows *Bucida* embedded within *Terminalia* (Maurin et al., 2010).

*Bucida* L., nom. rej. 1759.

1. Fruit 2-winged or -ridged or lacking wings or ridges.

2. Fruit 4–6 cm long, 2-winged or -ridged ..... **T. catappa**

2. Fruit ca. 2 cm long, lacking wings or ridges ..... **T. muelleri**

1. Fruit 5-angled or -winged.
  3. Fruit 2.5–5 cm long..... **T. arjuna**
  3. Fruit to 1 cm long.
    4. Spinescent shrub or small tree; leaves 0.5–2.5(3.5) cm long; flowers few in a short subcapitate spike; fruit 3–4 mm long..... **T. molinetii**
4. Unarmed tree; leaves 3–9 cm long; flowers numerous in an elongate spike; fruit ca. 8 mm long.....  
..... **T. buceras**

**Terminalia arjuna** (Roxb. ex DC.) Wight & Arn. [Bright or shining, in Thervada Buddhism, it is said to have been used as the tree for achieved enlightenment by the Tenth Lord Buddha.] ARJUN.

*Pentaptera arjuna* Roxburgh ex de Candolle, Prodr. 3: 14. 1828. *Terminalia arjuna* (Roxburgh ex de Candolle) Wight & Arnott, Prodr. Fl. Ind. Orient. 314. 1834.

Tree, to 15(25) m; branchlets pale greenish to light gray, smooth. Leaves with the blade oblong-elliptic, 5–18(25) cm long, 4–9 cm wide, the apex obtuse or subacute, the base rounded or cordate, the margin entire or somewhat crenate or serrate in the upper half or throughout, the upper surface glabrous or subglabrous, the lower surface sparsely pubescent, domatia and basal nectar glands absent, the petiole 5–10 mm long, with 2(1) rounded apical glands; stipules minute. Flowers in an axillary or terminal paniculiform spike 3–6 cm long, sessile; hypanthium 4–5 mm long, sericeous at the base; sepal lobes triangular, 15 mm long, glabrous; stamens much exerted; nectar disk barbate. Fruit oblong-ovate, 2.5–5 cm long, 5-winged, the wings striated with 5 ascending veins.

Disturbed sites. Rare; Miami-Dade County. Escaped from cultivation. Florida; Asia and Africa. Native to Asia. Spring.

**Terminalia buceras** (L.) C. Wright [Ox-horn, in reference to the galls sometimes formed on the fruits, these resembling the horn of an ox.] BLACK OLIVE; OXHORN BUCIDA.

*Bucida buceras* Linnaeus, Syst. Nat., ed. 10. 1025. 1759. *Terminalia buceras* (Linnaeus) C. Wright, in Sauvalle, Anales Acad. Ci. Méd. Habana 5: 99. 1869. *Myrobalanus buceras* (Linnaeus) Kuntze, Revis. Gen. Pl. 1: 237. 1891. *Buceras buceras* (Linnaeus) Millspaugh, Publ. Field Columb. Mus., Bot. Ser. 1: 515. 1902, nom. inadmiss.

Tree, to 25 m; branches with nodal thorns in juvenile plants, these absent in mature plants, the branchlets rufous-pubescent, becoming glabrous. Leaves with the blade elliptic to obovate, 2–10 cm long, 0.8–4.5 cm wide, the apex obtuse to rounded, sometimes slightly retuse, the base cuneate, the margin entire, the upper and lower surfaces glabrous or sparsely pubescent, domatia and basal nectary glands absent, the petiole 2–15 mm long; stipules minute, appearing as fingerlike multicellular trichomes. Flowers in an axillary pedunculate spike 3–19 cm long, bisexual, greenish to pale yellow; hypanthium ca. 4 mm long, the free portion 1–2 mm long, sericeous-tomentose; sepal lobes triangular, ca 1 mm long; stamens 3–5 mm long; nectary a 5-lobed crateriform disk on top of the ovary, the upper margin sericeous-pilose. Fruit ovoid, (4)5–8 mm long, with 5 poorly developed, rounded lobes, glabrate or pubescent.

Hammocks. Rare; Charlotte and Lee Counties, southern peninsula. Escaped from cultivation. Florida; West Indies, Mexico, and Central America. Native to tropical America. All year.

***Terminalia catappa* L.** [Malayan vernacular name.] WEST INDIAN ALMOND.

*Terminalia catappa* Linnaeus, Syst. Nat., ed. 12. 674. 1767; Mant. Pl. 128. 1767. *Myrobalanus catappa* (Linnaeus) Kuntze, Revis. Gen. Pl. 1: 237. 1891. *Buceras catappa* (Linnaeus) Hitchcock, Rep. (Annual) Missouri Bot. Gard. 4: 85. 1893.

Tree, to 20(35) m; branchlets glabrous. Leaves with the blade obovate, 6–35 cm long, 2.5–15.5 cm wide, the apex acuminate to obtuse or rounded, the base narrowly cuneate to rounded or narrowly cordate, the margin entire, the upper surface glabrous or glabrate, the midvein densely to sparsely pubescent, at least basally, the lower surface glabrate to moderately pubescent, the midvein and secondary veins sparsely to densely pubescent, with pit domatia at the major vein junctions and nectar glands near the base, the petiole 5–28 mm long; stipules minute, appearing as fingerlike multicellular trichomes. Flowers in an axillary spike 5–25 cm long, with a few bisexual ones proximally and numerous staminate distally; free portion of the hypanthium 1–2 mm long; sepal lobes 5, triangular, 1–3 mm long; nectary a lobed disk on top of the ovary; stamens 3–5 mm long. Fruit ovoid to ellipsoid, 3.5–7 cm long, green or red, slightly flattened, with 2 well-developed ridges or short wings, sparsely pubescent or glabrous.

Disturbed sites. Rare; Broward County, southern peninsula. Escaped from cultivation. Florida; West Indies and Mexico; Africa, Asia, Australia, and Pacific Islands. Native to Africa, Asia, Australia, and Pacific Islands.

*Terminalia catappa* is listed as a Category II invasive species in Florida by the Florida Exotic Pest Plant Council (FLEPPC, 2015).

***Terminalia molinetii* M. Gómez** [Commemorates Eugenio Molinet Amorós (1861–1959), Brigadier General of the Cuban Army of Liberation.] SPINY BLACK OLIVE.

*Terminalia molinetii* M. Gómez de la Maza y Jiménez, Anales Soc. Esp. Hist. Nat. 19: 244. 1890. *Bucida molinetii* (M. Gómez de la Maza y Jiménez) Alwan & Stace, Ann. Missouri Bot. Gard. 76: 1127. 1989.

*Terminalia spinosa* Northrop, Mem. Torrey Bot. Club 12: 54, pl. 13. 1902; non Engler, 1895. *Bucida spinosa* Jennings, Ann. Carnegie Mus. 11: 201. 1917. *Bucida correlliana* Wilbur, Taxon 37: 467. 1988, nom. illegit.

Shrub or tree, to 8 m; branches with divaricate, slender, nodal thorns 3–7 mm long, usually in 3s at the end of the branchlets, the branchlets glabrous. Leaves with the blade oblanceolate to spatulate, 1–2.5(3.5) cm long, 2–8(15) mm wide, the apex obtuse or retuse, the base cuneate, the margin entire, the upper and lower surfaces glabrous or sparsely pubescent, domatia and nectar glands absent, the petiole 1–3 mm long; stipules minute, appearing as fingerlike multicellular trichomes. Flowers in an axillary, short-pedunculate, subcapitate spike 1–4 cm long, bisexual; perianth greenish; hypanthium ca. 3 mm long, the free portion 1–2 mm long, villous within; sepal lobes 5, triangular, ca. 1 mm long, nectary a lobed disk on top of the ovary; stamens 3–4 mm long. Fruit ovoid, 3–6 mm long, green to brown, glabrous or sparsely pubescent.