

GUIDE TO THE GENERA OF LIANAS AND CLIMBING PLANTS IN THE NEOTROPICS

COMBRETACEAE

By Pedro Acevedo-Rodríguez (Apr 2020)



Combretum grandiflorum, photo by P. Acevedo

A family of trees, shrubs and lianas with pantropical distribution, some members extending to warm temperate zones. Worldwide, the family consists of 11 genera and about 400 species, of which only *Combretum*, *Getonia* and *Meiostemon* contain lianas. In the Neotropics, the family is represented by 4 genera and about 85 species, of which only *Combretum* has 33 species of climbing plants. The genus is generally found at between 200-800 m elevation and occurs in wet or gallery forests.

Diagnosics: Species of *Combretum* are twining lianas with simple, opposite, exstipulate leaves, and often prominent axillary buds; flowers often showy, 4-5-merous, with tubular, infundibuliform or bell-shaped hypanthium, and very long and showy stamens; fruits 4- or 5- winged. Many species produce a mucilaginous exudate when the stem is cut. In the absence of flowers, Combretaceae lianas may be confused with Malpighiaceae lianas as they both have twining stems and simple opposite leaves. However, Combretaceae is easily distinguished by the absence of stipules or petiolar glands, by the presence of intraxylary phloem, and the presence of sclerenchyma bands

in the cortex (vs. stipulate, often with petiolar and laminar glands, absence of intraxylary phloem, and sclerenchyma bundles in the cortex).

General Characters

1. **STEMS.** Branches are cylindrical or quadrangular; mature stems are cylindrical, in some species known to reach up to 9 cm in diam. and 20 m in length, sometimes provided with alternate straight spines. Cross sections with regular wood anatomy, with abundant paratracheal parenchyma in the secondary xylem that is arranged in broad bands that are visible to the naked eye (fig. 1e); intraxylary phloem is present in the periphery of the medulla (fig. 1a-b, d-f), rays narrow, more or less inconspicuous; some species with shallow *phloem wedges* in the periphery of the xylem (fig. 1d), and others with short iterxylary arcs of phloem (fig. 1b). Many species exhibit overlapping layers of sclerenchyma in the cortex (fig. 1a).
2. **EXUDATES.** Exudates are odorless, clear or mucilaginous (fig. 1c).
3. **CLIMBING MECHANISM.** Most species of *Combretum* are *twiners* (fig. a & c), a few species seem to be *scramblers* while others have straight or down-pointing spines that help the plant to secure their position on the host plants.
4. **PUBESCENCE.** Plant glabrous or pubescent, trichomes unicellular and simple or multicellular and peltate (sometimes called scales) or glandular.
5. **LEAVES.** Leaves are simple, opposite, sub-opposite or sometimes whorled, exstipulate, with entire margins, pinnate venation, and short glandless petioles, that often are articulate at base; in some species the petiole is persistent as a spine after the blade has fallen off.
6. **INFLORESCENCES.** Axillary racemes or terminal panicles.
7. **FLOWERS.** *Actinomorphic*, bisexual, 4-5-merous; mostly pedicelled; calyx forming a hypanthium that projects beyond the ovary; corolla of free petals or absent; stamens 8 or 10, usually exerted well beyond the perianth, in one or two whorls, the outer whorl sometimes represented by staminodia; ovary inferior, unilocular with 2-6 pendulous ovules and a single style (figs. 3 & 4).
8. **FRUITS.** Dry, 4-5-winged (fig. 5a) or ribbed (fig. 5b), dehiscent or indehiscent; with a single seed.

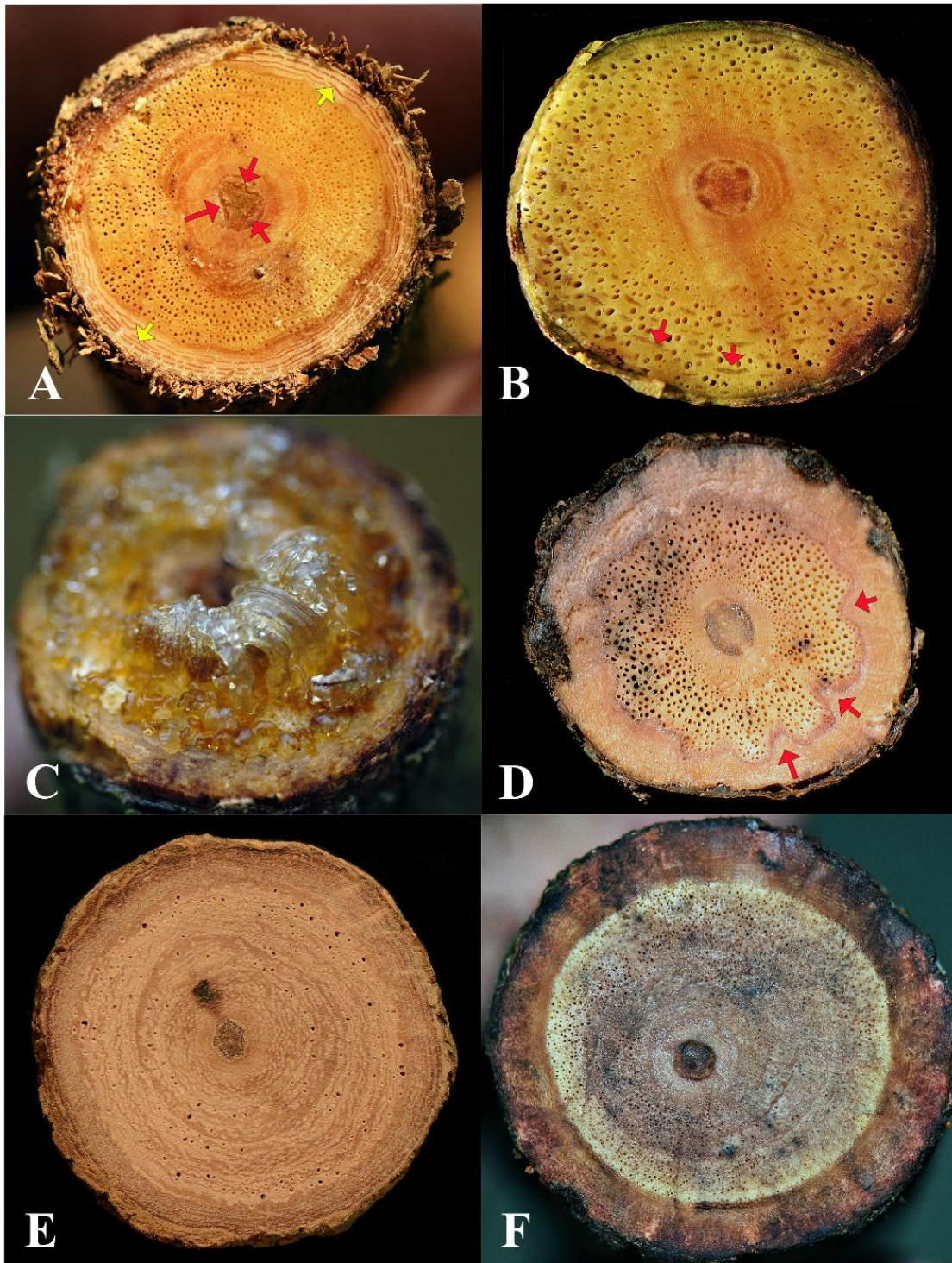


Figure 1. Stem cross sections in *Combretum*. **A.** *C. lanceolatum*, red arrows pointing at intraxylary phloem, yellow arrows pointing at the bands of sclerenchyma in the cortex. **B.** *Combretum sp.* red arrows pointing at minute arcs of interxylary phloem. **C.** *C. assimile* with mucilaginous exudate (14388). **D.** *C. decandrum*, red arrows pointing at shallow phloem wedges. **E.** *C. laxum* with abundant paratracheal broad bands of parenchyma. **F.** *Combretum sp.* with inconspicuous rays, and intraxylary phloem in the periphery of the medulla. Photos by P. Acevedo.



Figure 2. Climbing mechanisms in *Combretum*. **A.** Twining shoots of *C. decandrum*. **B.** Down-pointing indurate spine-like petioles of *C. decandrum*. **C.** Twining main shoot of *Combretum sp.*, indurate spinescent petioles present. **D.** Indurate spine-like persistent petioles of *Combretum sp.* Photos by P. Acevedo.



Figure 3. Inflorescences and flowers in *Combretum*. **A.** *C. rotundifolium*, secund raceme, calyx and petals red-orange, stamens filaments yellow. **B.** *C. laxum*, panicle branch, with white flowers. Photos by: A. Charles Zartman; B. P. Acevedo.

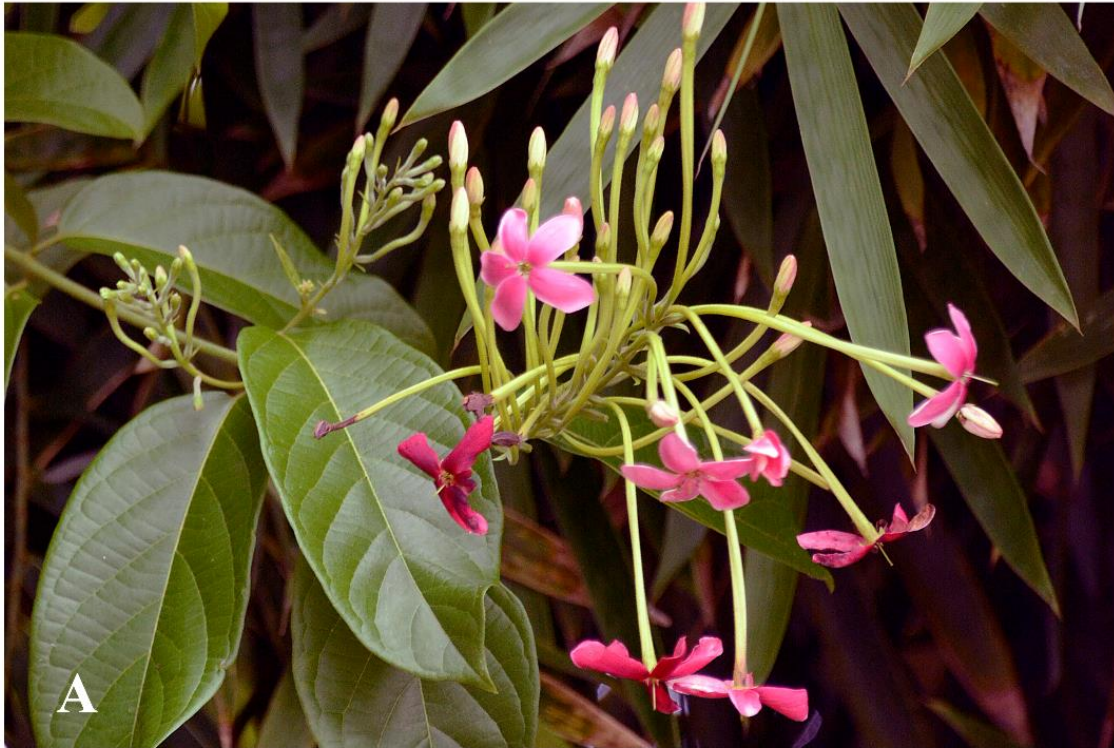


Figure 4. Inflorescences and flowers in *Combretum*. **A.** *C. indicum* distal raceme; hypanthium green, sepals rosy, style exserted. **B.** *C. farinosum*, secund raceme, flowers apetalous, calyx and stamens orange. Photos by P. Acevedo.



Figure 5. Fruits in *Combretum*. **A.** *C.* 4-winged samaras. **B.** *Combretum* sp., 4-ribbed fruits. Photos by: A. by Renata Udulutch; B. by P. Acevedo.

GENERIC DESCRIPTION

COMBRETUM Loefling, Iter Hispan. 308. 1758, (nom. cons.).

Thiloa Eichler

Quisqualis L.



C. farinosum, photo by P. Acevedo

species in Africa.

Trees, erect or scandent shrubs, or lianas. Leaves opposite or sometimes alternate or whorled; blades simple; petioles articulated at the base. Flowers 4-5-merous, bisexual, sessile or short-pedicellate, arranged in heads, racemes, spikes, or compound paniculiform inflorescences; bracts foliaceous or reduced. Calyx forming an infundibuliform, tubular, or cupular hypanthium that projects beyond the ovary, with the sepals on the distal portion of the hypanthium; corolla of free petals or absent; stamens 8-10, in one or two whorls, exserted or inserted; ovary inferior, with 2-6 ovules, the style simple, free or adnate to the hypanthium. Fruit dry, indehiscent or dehiscent, with 4 or 5 wings or ribs; seed one. About 270 species of tropical distribution, with numerous

Distinctive features: Twining or scrambling lianas with opposite, simple leaves, commonly with prominent axillary buds; fruits often samaroid, 4-5-winged; stems with intraxylary phloem and mucilaginous exudate.

Distribution: A pantropical genus of 271 species with most species in tropical Africa; in the Neotropics there are 35 species, 31 of which are native lianas and distributed from Mexico south to Argentina, in addition *C. coccineum* Lam. and *C. indicum* (L.) DeFilipps) have been introduced and are becoming naturalized in parts of the Neotropics.

USES

Some species of *Combretum* are cultivated in tropical gardens due to their beautiful flowers.

RELEVANT LITERATURE

Acevedo-Rodríguez, P. 2005. Vines and climbing plants of Puerto Rico and the Virgin Islands.

Contrib. United States National Herbarium 51: 1-483.

Stace, C. 2010. Combretaceae. Flora Neotropica monograph 107. New York Botanical Garden, New York.

FIGURE VOUCHERS

Figure 1.

A. *Combretum lanceolatum* Eichler (Acevedo 16641).

B. *Combretum* sp. (Acevedo 17121).

C. *Combretum assimile* Eichler (Acevedo 14388).

D. *Combretum decandrum* Jacq. (Acevedo 16165).

E. *Combretum laxum* Jacq. (Acevedo 15119).

F. *Combretum* sp. (Acevedo 17043).

Figure 2.

A & B. *Combretum decandrum* Jacq. (Acevedo 16165).

C. *Combretum* sp. (no voucher).

D. *Combretum* sp. (no voucher).

Figure 3.

A. *Combretum rotundifolium* Rich. (no voucher)

B. *Combretum laxum* Jacq. (Acevedo 14271).

Figure 4.

A. *Combretum indicum* (L.) DeFilipps (no voucher)

B. *Combretum farinosum* Kunth (Acevedo 16119).

Figure 5.

A. *Combretum* sp. (Udulutch 2693)

B. *Combretum* sp. (Acevedo 17120).