

## COMBRETACEAE

P. Acevedo-Rodríguez

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 ~400 species, of which only *Combretum*, *Getonia* and *Meiostemon* contain lianas. In the Neotropics, the family is represented by 4 genera and ~85 species, of which only *Combretum* has 31 species of climbing plants. The genus is generally found in wet or gallery forests between 200–800 m elevation.

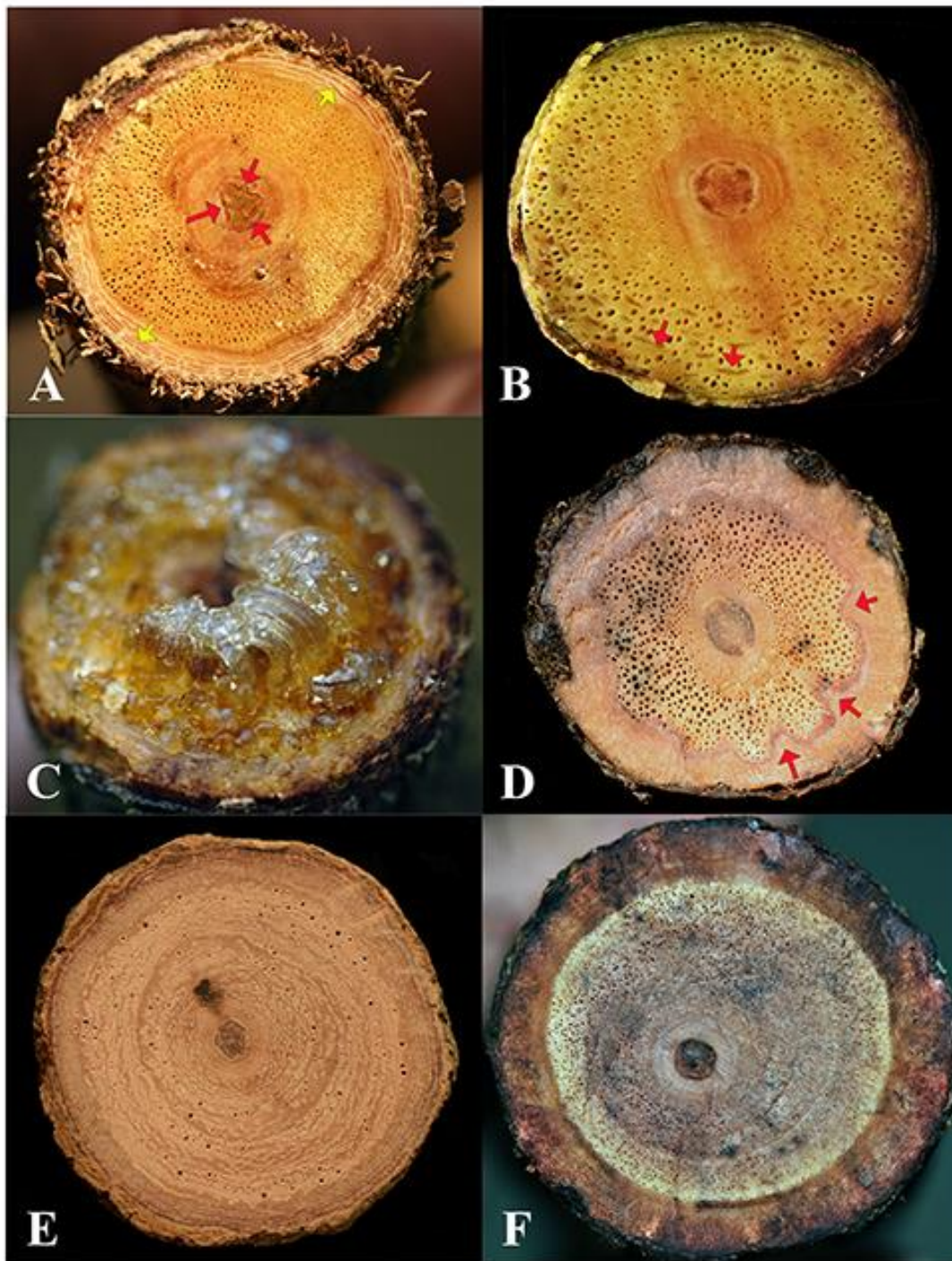
**Diagnosics:** Species of *Combretum* are twining lianas with simple, opposite, exstipulate leaves, and often prominent axillary buds; flowers often showy, 4–5-merous, with tubular, infundibuliform or bell-shaped hypanthium, and very long and showy stamens; fruits 4- or 5-winged. Many species produce 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 fiber bands in the secondary phloem (vs. stipulate, often with petiolar and laminar glands, absence of both, intraxylary phloem and fiber bands in the phloem).

### General Characters

1. **STEMS.** Branches are cylindrical or quadrangular; mature stems are cylindrical, in some species known to reach up to 10 cm in diam. and 25 m in length, sometimes provided with alternate straight spines. Cross sections with regular wood anatomy, with abundant paratracheal aliform confluent parenchyma arranged in broad bands that are visible to the naked eye (Figure 81E); intraxylary phloem is present in the periphery of the medulla

(Figure 81A, B, D, F), rays uniseriate, more or less inconspicuous; some species with shallow phloem wedges in the periphery of the xylem (Figure 81D), and others with short iterxylary phloem islands (Figure 81B). Many species exhibit concentric layers of fiber bands in the secondary phloem (Figure 81A).

2. EXUDATES. Odorless, clear or mucilaginous (Figure 81C).
3. CLIMBING MECHANISM. Most species of *Combretum* are twiners (Figure 82A, 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 (Figure 82B, D).
4. PUBESCENCE. Plant glabrous or pubescent, trichomes unicellular and simple or multicellular and peltate (sometimes called scales) or glandular.
5. LEAVES. Simple, opposite, subopposite 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 pedicellate; 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.
8. FRUITS. Dry, 4–5-winged (Figure 83B) or ribbed, dehiscent or indehiscent; with a single seed.



**Figure 81.** Stem cross sections in *Combretum*. **A.** *C. lanceolatum*, red arrows pointing at intraxylary phloem strands, yellow arrows pointing at the fiber bands in the secondary phloem. **B.** *Combretum sp.* red arrows pointing at minute islands of interxylary phloem. **C.** *C. assimile* with mucilaginous exudate. **D.** *C. decandrum*, red arrows pointing at shallow phloem wedges. **E.** *C. laxum* with abundant aliform confluent bands of axial parenchyma in the wood. **F.** *Combretum sp.* with inconspicuous rays, and intraxylary phloem in the periphery of the medulla. Photos by P. Acevedo.





**Figure 82.** Climbing mechanisms in *Combretum*. **A.** Twining shoots of *C. decandrum*. **B.** Down-pointing indurate spine-like, persistent 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.

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

*Quisqualis* L. (1762), *Thiloa* Eichler (1866).

Trees, erect or scrambling shrubs, or twining lianas; stems cylindrical reaching up to 10 cm diam. and 3–25 m in length; cross section with regular anatomy, with intraxylary, perimedular phloem (Figure 81), some species with dispersed simple spines (persistent, indurate petioles). 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.

**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, 29 of which are lianas; 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.

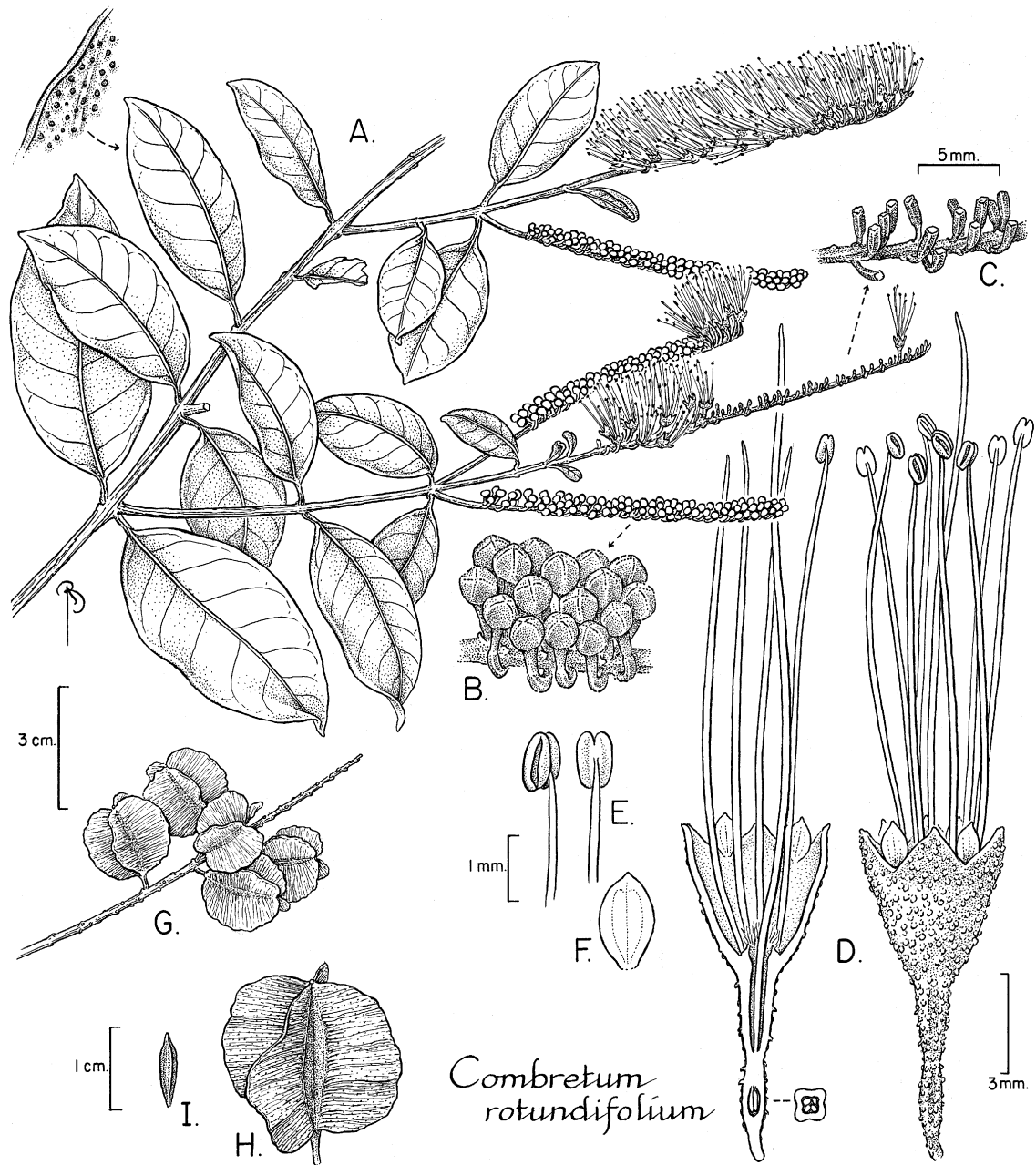
## **USES**

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



**Figure 83.** **A.** Inflorescences in *Combretum rotundifolium*, secund raceme, calyx and petals red-orange, stamens filaments yellow. **B.** *Combretum* sp. 4-winged samaras. Photos: A by C. Zartman; B by R. Udulutsch.





**Figure 84.** *Combretum rotundifolium*. **A.** Flowering branch. **B.** Detail of inflorescence. **C.** Detail of persistent pedicels. **D.** Flower, longitudinal section & lateral view. **E.** Stamens. **F.** Petal. **G.** Cluster of fruits. **H.** 4-winged fruit. **I.** Seed. Drawing courtesy of Bobbi Angell.