

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

GNETACEAE

By Pedro Acevedo-Rodríguez (June 2020)



G. schwackeanum Markgr., photo by P. Acevedo

A pantropical family with a single genus, i.e., *Gnetum*, with about 43 species of trees or twining lianas.

Gnetum is represented in the New World by 7 species all of which are twining lianas that are found in South America with one species extending north to Costa Rica, in lowland wet or rain forests.

Diagnosics: Broad-leaved gymnosperm twining lianas with cylindrical woody stems, reaching 5-10 cm in diameter; branches with conspicuous swollen nodes; exudate cream or light yellow resinous; leaves opposite, simple, entire and petiolate. General appearance like some Malpighiaceae but distinguished by the lack of stipules or glands, and stems with successive cambia.

General Characters

1. **STEMS.** Woody cylindrical or nearly so; branches with enlarged nodes, smooth; old stems reaching 20-30 m in length and in some species up to 15 cm in diam. All neotropical species have *successive cambia* that produce continuous concentric rings of xylem and phloem with wide rays (fig. 1a & b). Vessel elements may be very wide and visible to the naked eye especially in late xylem (fig. 1a & b).
2. **EXUDATES.** Abundant whitish, cream or light yellow latex produced within the conjunctive tissue, rays, medulla and cortex (fig 1b; Carlquist, 1999).
3. **CLIMBING MECHANISMS.** In all species, the main shoot and those of the opposite, short, lateral branches are *twiners*.
4. **LEAVES.** Broad, opposite, simple, coriaceous, with pinnate venation and entire or undulate margins; tertiary venation reticulate, without free veinlets (fig 2a). Petioles commonly short and stocky. Stipules absent but interpetiolar ochrea-like ridge present (fig. 1c).
5. **INFLORESCENCE.** Axillary paniculate with whorled spike-like units (cones) bearing whorls of naked flowers subtended by cupular or annular involucre collars; staminate “spikes” with collars closely together, each bearing 20 or more staminate flowers; pistillate “spikes” with widely spaced flower whorls, each bearing 4-12 pistillate flowers.
6. **FLOWERS.** Flowers unisexual, actinomorphic, enclosed by a false perianth; staminate flowers with 2 connate stamens; pistillate flowers with a single ovule.
7. **SEED.** Seeds ellipsoid, with red, yellow, orange or light green fleshy coat.

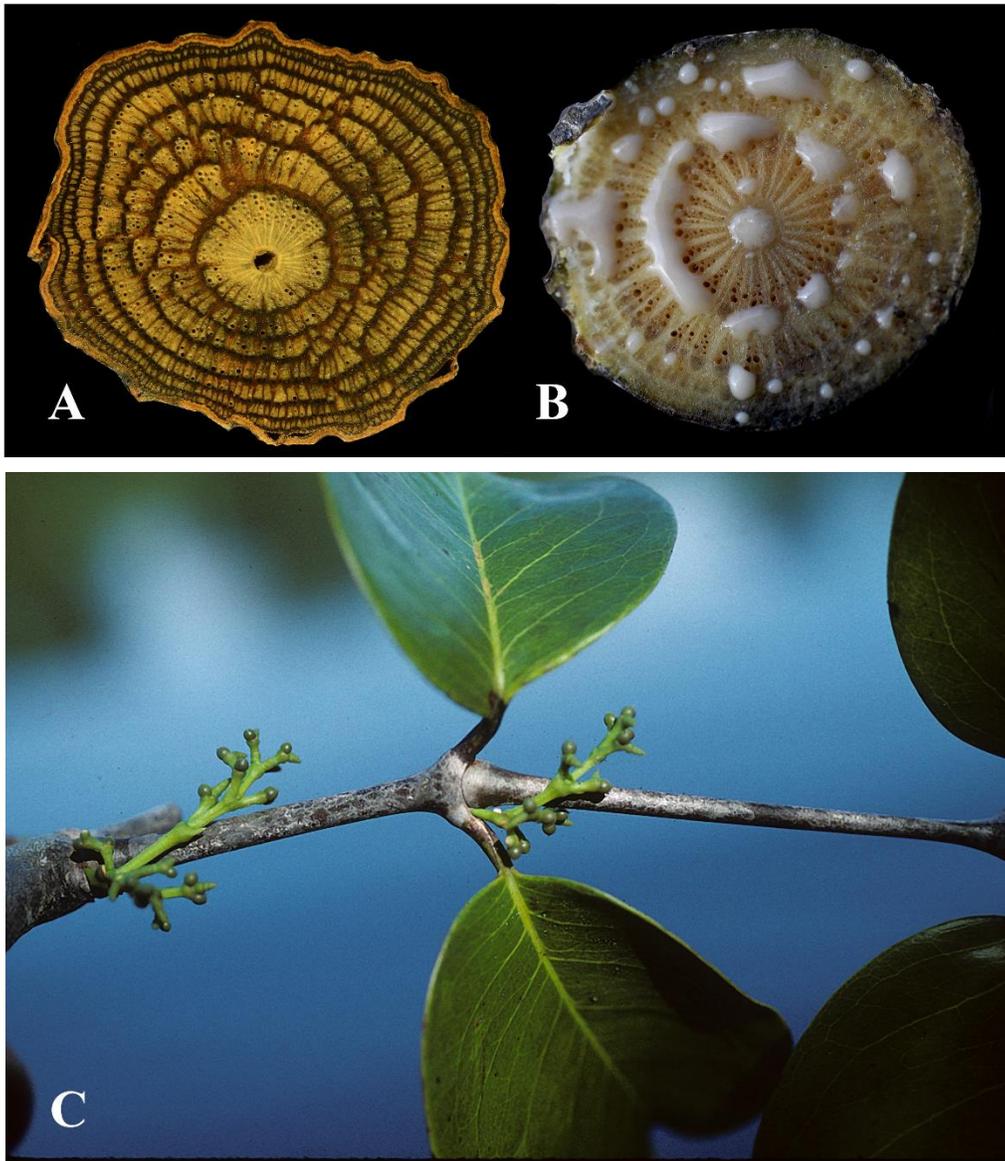


Figure 1. A. Stem cross sections of *G. nodiflorum* showing successive bands of xylem and phloem, wide rays and vessel with large lumens. B. Cross sections of a fresh stem of *G. leyboldii* showing abundant latex produced in the conjunctive tissue between the successive layers of vascular tissue. C. Branch of *G. schwackeanum* showing enlarged nodes with ochrea-like interpetiolar ridge. Photos by P. Acevedo.

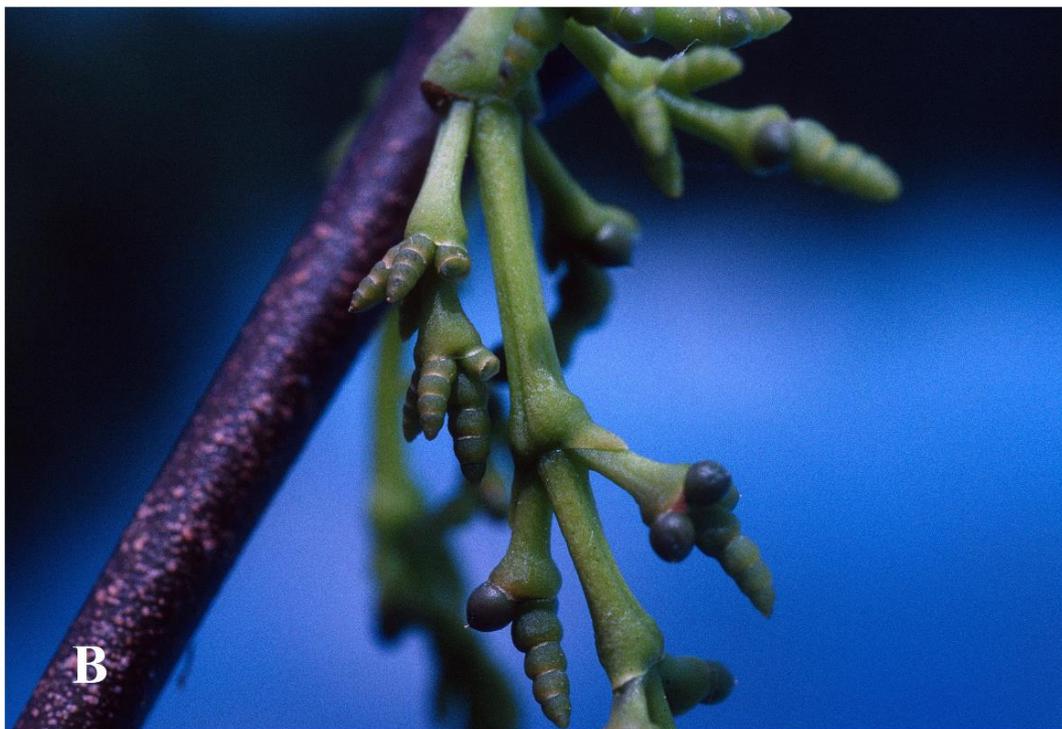


Figure 2. **A.** Leaf venation pattern of *G. leyboldii* showing reticulum of tertiary veins lacking free veinlets. **B.** Pistillate inflorescences of *G. schwackeanum*. Photos by P. Acevedo.



Figure 3. Inflorescences in *Gnetum*. **A.** Staminate inflorescence of *G. schwackeanum*. **B.** Pistillate inflorescence of *G. nodiflorum*. Photos by P. Acevedo.



Figure 4. Seeds in *Gnetum*. **A.** *G. leyboldii*. **B.** *G. schwackeanum*. Photos by P. Acevedo.

GENERIC DESCRIPTION

GNETUM Linnaeus, Mant. 18. 1767.



G. camporum, photo by P. Acevedo.

Dioecious, twining lianas or less often trees or shrubs (outside the Neotropics). Branches cylindrical, smooth, with enlarged nodes; stems 5-30 m long and up to 15 cm in diam. in some species (e.g., *G. nodiflorum* Brongn.), with a moderately rough bark; cross section with *successive cambia* producing concentric rings of xylem and phloem with wide rays and abundant conjunctive tissue between rings (fig. 1a & b), vessel elements conspicuously wide (fig. 1a & b). Leaves opposite, simple, coriaceous, ovate, elliptic or oval up to 20 cm long, with pinnate venation and entire or undulate margins; tertiary venation reticulate, without free veinlets (fig 2a); petioles short, adaxially canaliculate; stipules absent but interpetiolar ochrea-like ridge present. Inflorescences axillary, paniculate with whorled spike-like units (cones) bearing whorls of naked flowers subtended by cupular or annular involucre collars; staminate “spikes” with collars closely together, each bearing 20 or more staminate flowers; pistillate “spikes” with widely spaced flower whorls, each bearing 4-12 pistillate flowers. Flowers unisexual, actinomorphic, enclosed by a false perianth; staminate flowers with 2 connate stamens; pistillate flowers with a single ovule, enclosed by a false perianth that persists as a fleshy seed coat. Seeds ellipsoid, fleshy coat red, yellow, orange or light green.

Distinctive features: Twining lianas with smooth grayish branches swollen at the nodes and interpetiolar ochrea-like rim; often producing a whitish or cream latex; leaves simple, commonly coriaceous, tertiary venation lacking free veinlets.

Distribution: A pantropical genus with about 43 species of lianas or less often trees, represented in the Neotropics by 7 species of lianas found throughout the Amazon Basin, with one species (*G. leyboldii* Tul.) extending north to Costa Rica; in flooded and non-flooded moist and wet forests.

USES

The seeds of several species are roasted and eaten by people in the Amazon basin.

RELEVANT LITERATURE

Carlquist, S. 1996. Wood, bark and stem anatomy of New World species of *Gnetum*. Bot. J. Linnaean Soc. 120: 1-19.

Carlquist, S. 1996. Wood and bark anatomy of lianoid Indomalaysian and Asiatic species of *Gnetum*. Bot. J. Linnaean Soc. 121: 1-24.

PICTURE VOUCHERS

Figure 1.

A- *Gnetum nodiflorum* Brongn. (Acevedo 7506)

D. *Gnetum leyboldii* Tul. (Acevedo 14640).

Figure 2.

A. *Gnetum leyboldii* Tul. (Acevedo 14640).

B. *Gnetum schwackeanum* Taub. ex Markgr. (Acevedo 7999).

Figure 3.

A. *Gnetum schwackeanum* Taub. ex Markgr. (Acevedo 7965).

B. *Gnetum nodiflorum* Brongn. (Acevedo 7506)

Figure 4.

A. *Gnetum leyboldii* Tul. (Acevedo 14640).

B. *Gnetum schwackeanum* Taub. ex Markgr. (Acevedo 14658).