

# 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

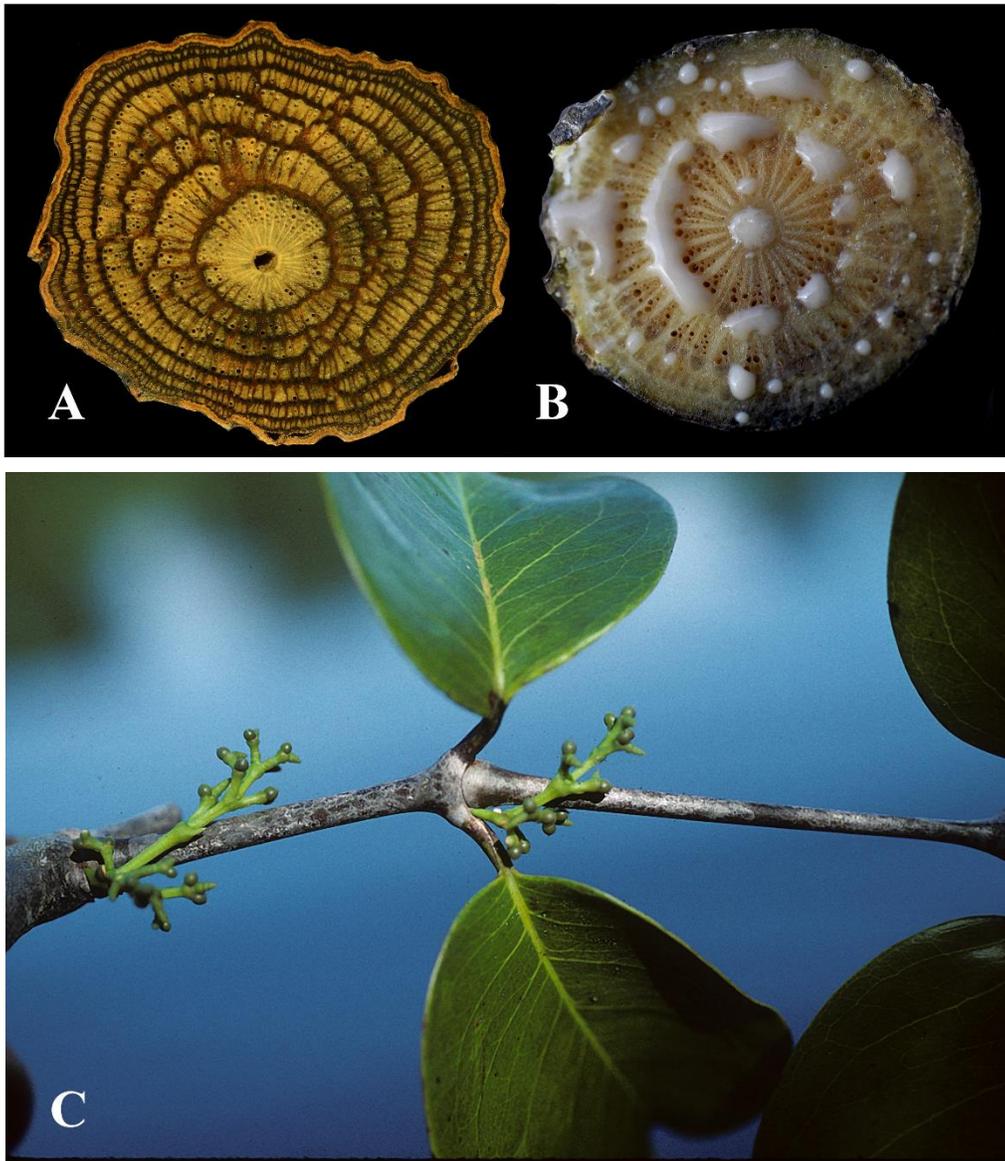
A pantropical family with a single genus, i.e., *Gnetum*, with about 43 species of trees or twining lianas.

*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.

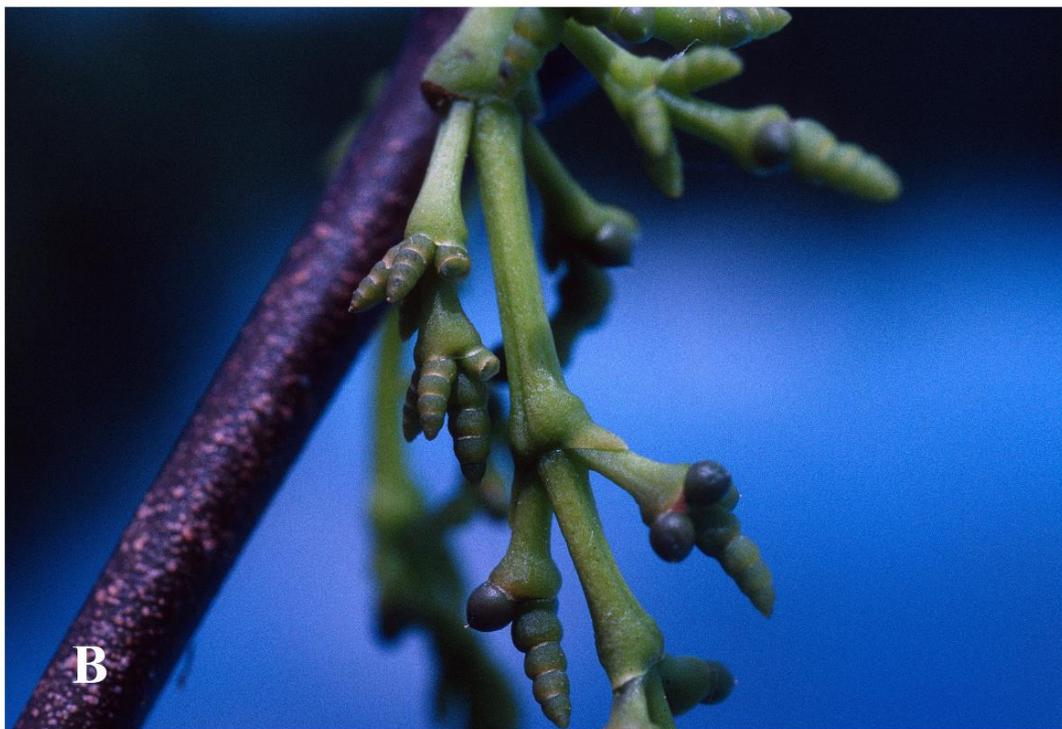
**Diagnosics:** Broad-leaved gymnosperm twining lianas with cylindrical woody stems, reaching 5-10 cm in diameter; branches with conspicuous swollen nodes; exudate cream or light yellow resinous; leaves opposite, simple, entire and petiolate. General appearance like some Malpighiaceae but distinguished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