

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

TRIGONIACEAE

By Pedro Acevedo-Rodríguez (Jun 2020)



T. spruceana, photo by P. Acevedo

With the exception of the monotypic genus *Hubertiodendron* (endemic to Madagascar), the Trigonaceae is a small neotropical family of lianas or trees, consisting of 4 genera and about 32 species. In the Neotropics the family is represented by 3 endemic genera, two of which are monotypic, and the genus *Trigonias* with a total of 29 species, 25 of which are twining vines or lianas. These are distributed from southern Mexico to southern Brazil, for the most part, they are found in lowland moist or wet forests in flooded or non-flooded habitats.

Diagnosics: Vegetatively similar to members of Malpighiaceae as they share twining stems and simple opposite leaves, however, *Trigonias* is distinguished by the lack of petiolar glands and the presence of

interpetiolar stipules and 4 phloem wedges in old stems. Flowers and fruits in Trigonaceae are quite distinctive from those of Malpighiaceae. The stems of *Trigonias* could be confused with those of lianoid Bignoniaceae because of the presence of 4 phloem wedges, however, in the

former, they are formed by a continuous cambium, while in Bignoniaceae the cambium is discontinuous; in addition, these two families are vegetatively quite distinctive.

General Characters

1. **STEMS.** Smooth, glabrous or pubescence of simple hairs; cylindrical or sub-quadrangular, with moderate secondary growth, reaching 2-10 m in length and 1-1.5 cm in diam.; bark is moderately rough (fig. 1c); cross sections commonly with a quadrangular medulla, conspicuously wide vessels, abundant narrow rays and in older stems **4 phloem wedges** with continuous cambium (fig. 1a & b).
2. **EXUDATES.** No visible exudate.
3. **CLIMBING MECHANISMS.** All climbing *Trigonias* have **twining** main shoots, often with short, opposite lateral branches. (fig. 1d & 2a).
4. **LEAVES.** Opposite, with conspicuous interpetiolar stipules (fig 2b), chartaceous to sub-coriaceous, simple, with entire margins and pinnate venation, in some species abaxially villose or lanate; petioles short, glandless.
5. **INFLORESCENCE.** Axillary or distal, racemose or paniculate thyrses (fig 3b), with flowers in lateral cincinni or simple dichasia (fig. 4a); bracts conspicuous and persistent.
6. **PEDICELS.** Short.
7. **FLOWERS.** Bisexual, zygomorphic; calyx of 5, free, unequal, imbricate sepals; petals 5 greenish yellow or light yellow, unequal, the anterior 2 forming a keel and often with distinctive coloration along medial portion, the 2 lateral free often longer than the remaining petals, the posterior petal saccate at the base, fleshy and bright yellow in the middle, the apex reflexed; stamens 5-8, unequal, the filaments partly connate forming a sheath around the pistil, the anthers opening along longitudinal slits; ovary superior, trigonous, 3-carpellate, subtended by a nectary on the posterior side, the placentation axile, ovules numerous per locule, the style elongate with cupular stigma.
8. **FRUIT.** A septicidal trigonous (fig. 5a), elongated, woody capsule, often ferruginous-pubescent; seeds covered by long, woolly hairs (fig. 4b), often remaining attached to the placenta tissue long after the valves have fallen away (fig. 5b).

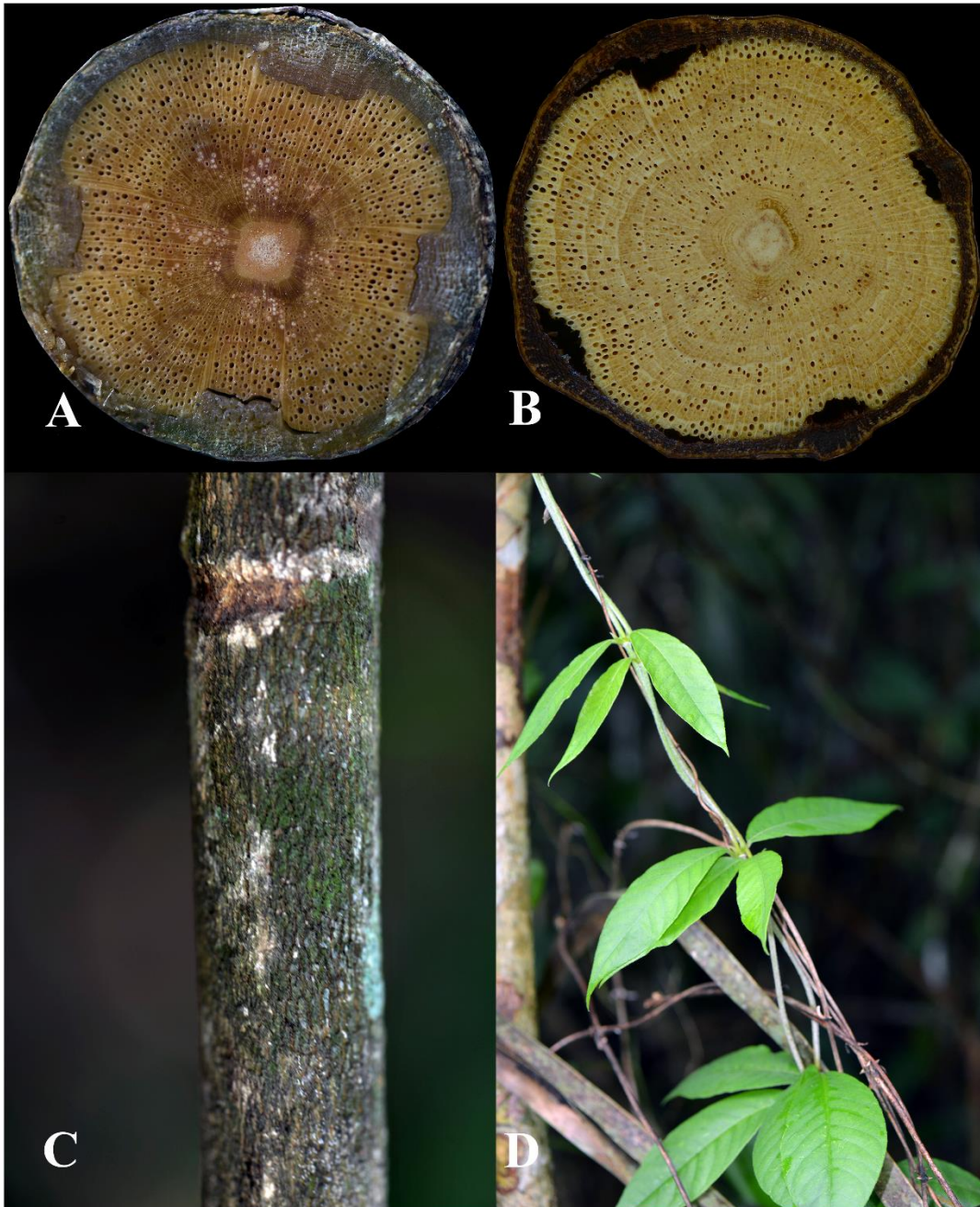


Figure 1. **A & B.** Stem cross sections in two species of *Trigonias* showing square medulla, wide vessels and 4 phloem wedges. **C.** Stem of *Trigonias laevis* with moderately rough bark. **D.** Twining shoot of *T. nivea*. Photos by P. Acevedo.



Figure 2. A. Twining stems of *Trigonía eriosperma*. B. Interpetiolar stipule of *Trigonía sp.* Photos by P. Acevedo.



Figure 3. **A.** Vegetative feature of *Trigonía* sp., a leading stem with short, opposite branches. **B.** Paniculate terminal inflorescence of *T. virens*. Photos by P. Acevedo.



Figure 4. A. Inflorescence with close-up flower of *T. virens*. B. Capsules of *T. floccosa*. Photos by P. Acevedo.



Figure 5. **A.** Cross section of immature capsule of *T. echitofolia*. **B.** Persistent comose seeds on placenta tissue of dehisced capsule of *Trigonostemon* sp. Photos by P. Acevedo.

GENERIC DESCRIPTION

TRIGONIA Linnaeus, Sp. Pl. 173. 1753.



T. nivea, photo by P. Acevedo

Twining vines or lianas or less often erect shrubs; stems cylindrical or nearly so, sub-quadrangular in some species, reaching up to 10 m in length and 1-1.5 cm in diam., the bark moderately rough (fig. 1c); cross sections commonly with a quadrangular medulla, conspicuously wide vessels, abundant narrow rays and in older stems **4 phloem wedges** with continuous cambium (fig. 1a & b), producing no exudate; branches opposite, decussate and short. Leaves simple, opposite; with conspicuous interpetiolar caducous stipules; petioles short, adaxially canaliculate. Inflorescences axillary or terminal, racemose or paniculate thryses. Flowers bisexual, zygomorphic; calyx of 5, free, unequal, imbricate sepals; petals 5 greenish yellow or light yellow, unequal, the anterior 2 forming a keel and often with distinctive coloration along medial portion, the 2 lateral free often longer than the remaining petals, the posterior petal saccate at the base, fleshy and bright yellow in the middle, the apex reflexed; stamens 5-8, unequal, the filaments partly connate forming a sheath around the pistil, the anthers opening along longitudinal slits; ovary superior, trigonous, 3-carpellate, subtended by a nectary on the posterior side, the placentation axile, ovules numerous per locule, the style elongate with cupular stigma. Fruit a septicidal, trigonous (fig. 5a), elongated, woody capsule, often ferruginous-pubescent; seeds covered by long, wooly hairs (fig. 4b), often remaining attached to the placenta tissue long after the valves have fallen away

Distribution: A genus of 29 species, 25 of which are twining vines or lianas, distributed from southern Mexico to southern Brazil; for the most part, found in lowland moist or wet forests in flooded or non-flooded habitats.

RELEVANT LITERATURE

Lleras, E. 1978. Trigonaceae. Flora Neotropica Monographs Vol. 19: 1-73.

PICTURE VOUCHERS

Figure 1.

A. & C. *Trigonía* sp. (Acevedo 17036).

B. *Trigonía laevis* Aubl. var. *microcarpa* Sagot (Daly 8183).

D. *Trigonía* sp. (no voucher).

Figure 2.

A. *Trigonía eriosperma* (Lam.) Fromm & E. Santos (no voucher).

B. *Trigonía* sp. (Acevedo 17036).

Figure 3.

A. *Trigonía eriosperma* (Lam.) Fromm & E. Santos (no voucher).

B. *Trigonía virens* J.F. Macbr. (Acevedo 7975).

Figure 4.

A. *Trigonía virens* J.F. Macbr. (Acevedo 7975).

B. *Trigonía floccosa* Rusby (Acevedo 4441).

Figure 5.

A. *Trigonía floccosa* Rusby (Acevedo 4441).

B. *Trigonía* sp. (no voucher).