

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

RANUNCULACEAE

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Clematis sp., photo by P. Acevedo

A cosmopolitan family with larger diversity in the wet temperate regions extending into the mountains of the tropics; 52 genera and about 2,500 species of erect, prostrate or acaulecent herbs and herbaceous to woody vines. The family is represented in the Neotropics by about 11 genera and 100 species, of which only 22 are reported as

climbers. With the exception of *Thalictrum podocarpum* DC., all climbing species in the Neotropics belong to the genus *Clematis*; most species occur in moist, middle to high elevation humid forests.

Diagnosics: Vines with compound leaves, in *Clematis* opposite with prehensile petioles and/or leaf rachides; flowers with numerous stamens and apocarpous gynoecium.

General Characters

1. **STEMS.** Stems slender to woody, unarmed, in some species of *Clematis* reaching 5 cm in diam. and over 10 m in length; cross section asymmetrical with deeply lobed xylem (fig. 1b) to cylindrical (fig. 1a), with abundant multiseriate rays, in some species the rays dividing the vascular axial elements into *radial segments* (fig. 1a); bark in *Clematis* commonly shaggy, peeling off in fibrous strands (fig. 1c).
2. **EXUDATES.** Scanty, watery, inconspicuous.
3. **CLIMBING MECHANISM.** All climbing species of *Clematis* have prehensile leaves, while *Thalictrum* is a leaning or scrambling herb.
4. **LEAVES.** Leaves compound (impari-pinnate, trifoliolate, 3-5-ternate), opposite in *Clematis* or alternate in *Thalictrum*; leaflets with entire, remotely serrate or lobed margins, 3-7-nerved from base; rachis and petiole commonly elongated, smooth; stipules absent.
5. **INFLORESCENCES.** Terminal or axillary cymes, often in racemes or panicles.
6. **FLOWERS.** Actinomorphic or zygomorphic, bisexual or unisexual; long-pedicelled. Sepals 4-5, free, white or greenish; petals absent; stamens numerous, the filaments equal; gynoecium superior, with numerous free, uniovulate carpels.
7. **FRUITS.** Small achene, several per flower, with a long plumose, persistent style in *Clematis*.

USES

Clematis and *Thalictrum* have been brought into cultivation because of their attractive flowers. In *Clematis* alone there are more than 700 cultivars developed for their showy, large flowers.

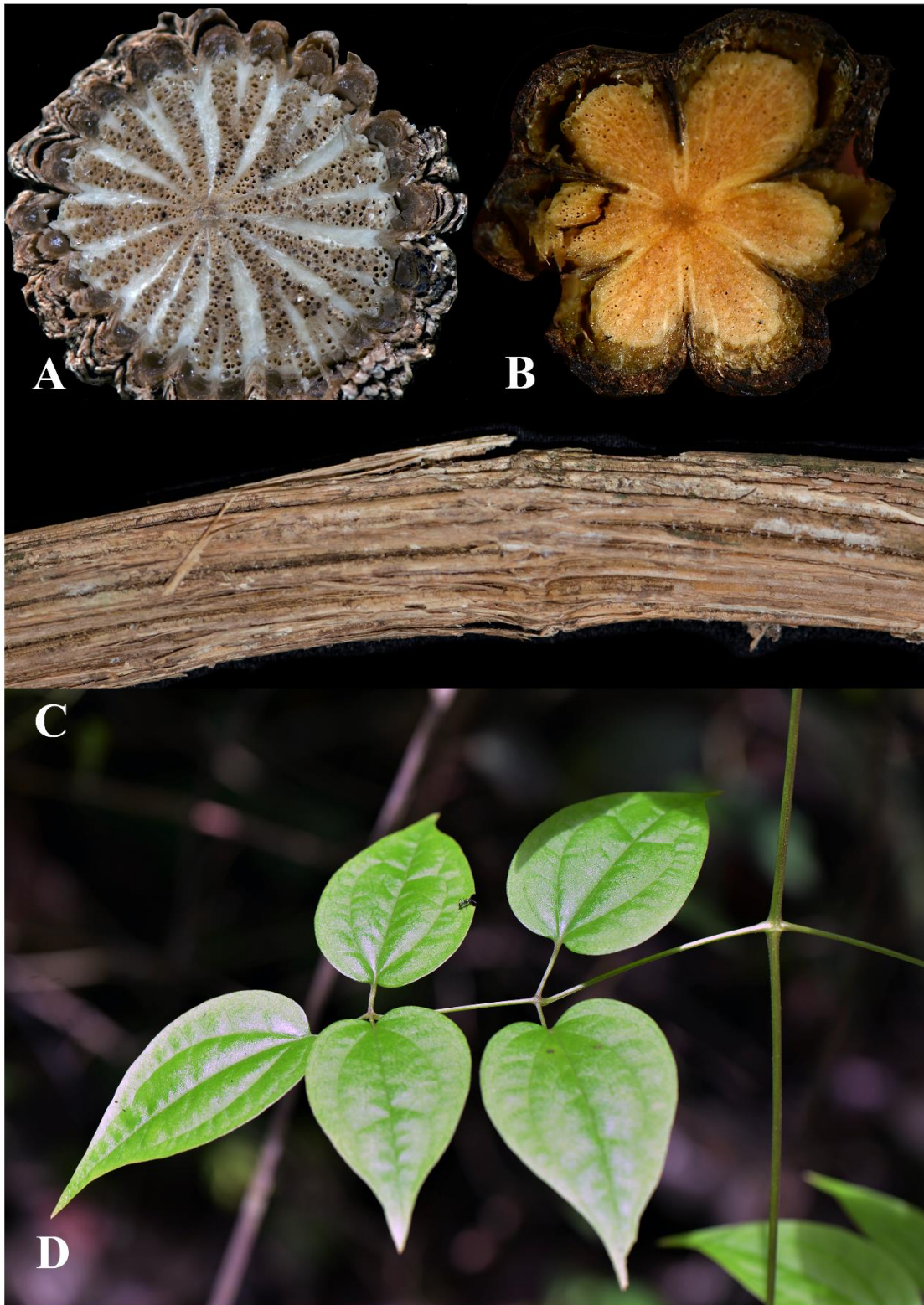


Figure 1. **A.** Stem cross section of *Clematis sp.*, with vascular axial elements divided into radial segments. **B.** Cross section of asymmetrical, deeply 6-lobed stem of *Clematis grossa*. **C.** Shaggy bark of *Clematis sp.* **D.** 5-pinnate leaf of *Clematis sp.* Photos by P. Acevedo.

KEY TO THE GENERA

1. Plants woody, climbing by short prehensile leaves; leaves opposite; achenes with persistent plumose style *Clematis*
1. Plants herbaceous, scramblers; leaves alternate; achenes with slender persistent style *Thalictrum*

GENERIC DESCRIPTION

CLEMATIS Linnaeus, Sp. Pl. 543. 1753.

Woody vines that climb by means of twining petioles and/or leaf rachides. Stems angular to cylindrical when young, 3-15 m in length and up to 5 cm in diam.; cross section deeply lobed to cylindrical, with conspicuous multiseriate rays, these in some species dividing the vascular axial elements into radial segments. Leaves opposite, trifoliolate, pinnate, 2-5-ternate; petioles elongate; stipules absent. Inflorescences of axillary cymes, simple, racemose, paniculate or umbellate. Flowers commonly < 2.5 cm diam., white or greenish white (in our region), unisexual or bisexual, actinomorphic or zygomorphic, long-pedicelled; calyx of 4-5 free petaloid sepals; petals absent; stamens numerous, the filaments free, the anthers dehiscent longitudinally; ovary superior, of numerous free carpels, with a single ovule and a terminal, slender, plumose style. Achenes several per flower, small, flattened, with a persistent elongate, plumose style, wind-dispersed.

Distinctive features: Vines and lianas with prehensile petioles or leaf rachis; leaves opposite, compound, exstipulate; bark peeling off in long fibrous strands.

Distribution: A genus with nearly cosmopolitan distribution (except for arctic regions) of about 385 species of lianas or trailing sub-shrubs, the great majority of which are of the temperate zone. The genus is represented in the Neotropics by 26 species, all of which are lianas; in middle to high elevation, humid to seasonally dry forests.



Figure 2. *Clematis dioica*. **A.** Prehensile leaf. **B.** Distal portion of shoot with long-petioled leaves prior to becoming prehensile. Photos by P. Acevedo.



Figure 3. A. Flowering branch with trifoliate leaves of *Clematis dioica*. B. Fruiting branch with trifoliate leaves of *Clematis sp.* Photos by P. Acevedo.

THALICTRUM Linnaeus, Sp. Pl. 545. 1753.



T. podocarpum, photo by P. Acevedo

Erect herbs or sub-shrubs, with one species (*T. podocarpum* Kunth ex DC.) sometimes growing as a clambering herb reaching 2-2.5 m in length. Stems cylindrical, fragile ca. 5 mm diam. Leaves alternate, bipinnate, ca. 60 cm long; leaflets chartaceous, ovate, trinerved, trilobed, cordate at base; rachides elongate, maculate, cylindrical, and slightly swollen at the junctions; petioles elongate and

expanded into a sheath at base. Inflorescences of axillary elongated paniculate cymes. Flowers bisexual, hanging, actinomorphic, long-pedicelled; calyx of 4 free petaloid light green sepals, with marginal pinkish tinge; petals absent; stamens numerous, the filaments free, the anthers dehiscent longitudinally; ovary superior, of numerous free carpels, with a single ovule and a terminal, elongated style. Achenes several per flower, divaricate, flattened, with a persistent elongate style.

Distinctive features: Clambering or leaning herb a few m long; leaves alternate, bipinnate with trilobed leaflets.

Distribution: A genus of the northern temperate zone extending into the mountains of the tropics, with about 207 species, of which 39 are present in the Neotropics, with *T. podocarpum* sometimes reported as a vine; highlands of Colombia to Bolivia.

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.
- Ibarra-Manríquez, G., F.J. Rendón-Sandoval, G. Cornejo-Tenorio and P. Carrillo-Reyes. 2015. Lianas of Mexico. *Botanical Sciences*. 93: 365-417.
- Moreno, N.P. 1993. Taxonomic revision of *Clematis* L. subgenus *Clematis* (Ranunculaceae) for Latin America and the Caribbean. Doctoral thesis, Rice University.

PICTURE VOUCHERS

Figure 1.

- A. *Clematis* sp. (no voucher)
- B. *Clematis grossa* Benth. (Acevedo 16220)
- C. *Clematis* sp. (no voucher)
- D. *Clematis* sp. (no voucher)

Figure 2.

- A-B. *Clematis dioica* L. (no voucher)

Figure 3.

- A. *Clematis dioica* L. (Acevedo 17254)
- B. *Clematis* sp. (Acevedo 17277)