

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

## BORAGINACEAE<sup>1</sup>

By Pedro Acevedo-Rodríguez (Jun 2020)



*Myriopus volubilis* (L.) Small, photo by S. Carrington

A tropical to warm temperate family with about 200 genera and about 2,600 species of shrubs, trees, herbs, or less often twining or scrambling climbers. In the Neotropics, the Boraginaceae has 875 species in 45 genera, of which only 38 species in 3 genera are reported as lianas or clambering shrubs. Two of these genera, *Myriopus* and *Varronia* are endemic to the Western Hemisphere. For the most part, they are found in the lowlands in seasonal to dry forests, woodlands and savanna-like formations.

**Diagnosics:** Predominantly twining lianas or scrambling; leaves simple, alternate with entire or serrate margins, exstipulate; inflorescences often scorpioid cymes; flowers 5-merous,

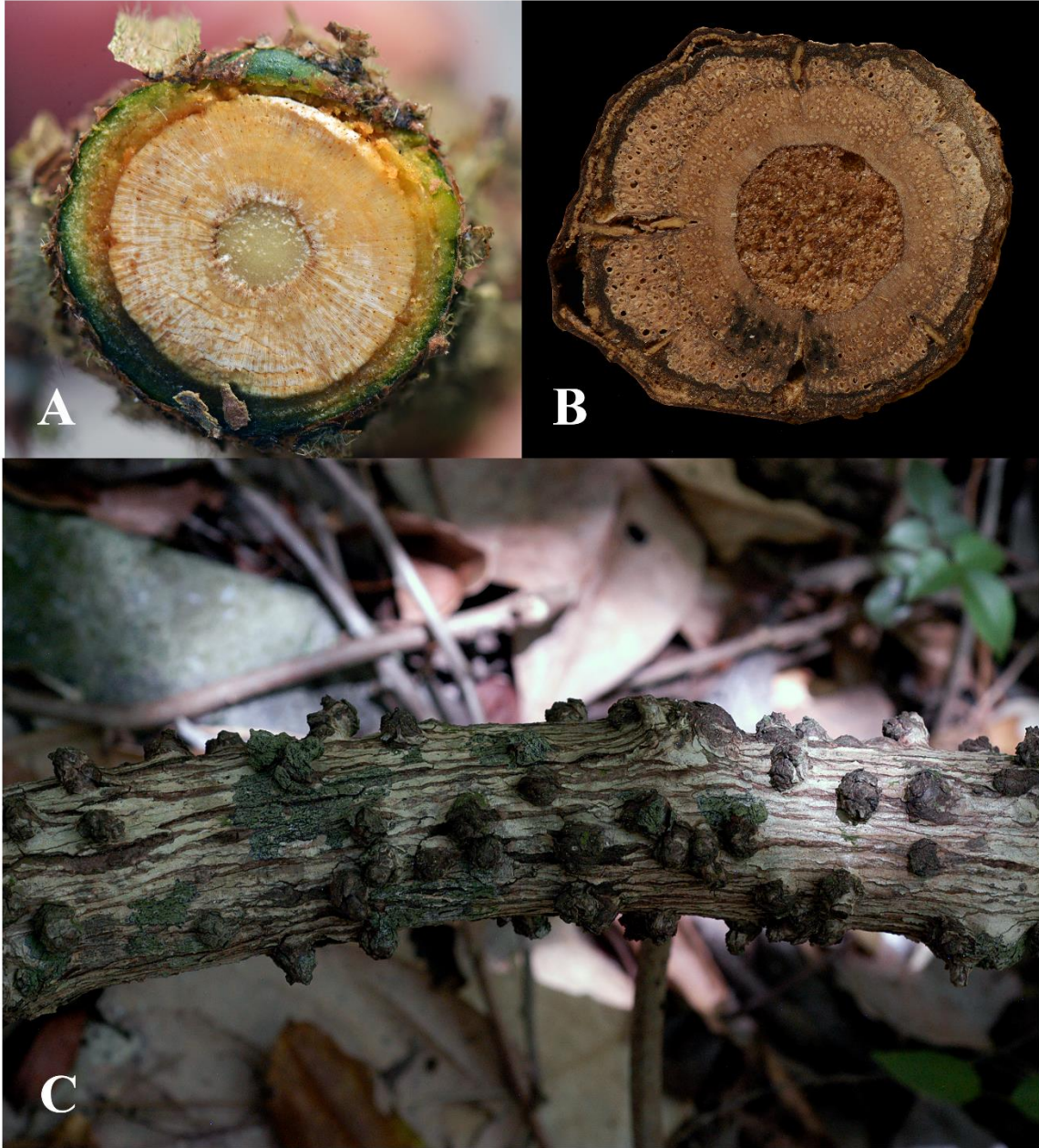
corollas gamopetalous, stamens inserted on the corolla tube, and ovary superior; fruits fleshy drupes.

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<sup>1</sup> Here family Boraginaceae is treated as sensu lato, as the studies leading to the recognition of families Cordiaceae, Ehretiaceae, and Heliotropiaceae by Luebert et al. (2016) lack strong bootstrap support in the presented cladogram.

## General Characters

1. **STEMS.** Young stems cylindrical; mature stems woody with substantial secondary growth, cylindrical or sometimes flattened (fig. 2a) (e.g., *Tournefortia bicolor* Sw.); commonly 3-5 m long, but some species (e.g., *Tournefortia hirsutissima* L.) reaching 20 or more m in length, and commonly a few cm in diam. (up to 6 cm in *Tournefortia bicolor*); bark beige and smooth with wart-like protuberances (fig. 1c & 2a); cross sections with **regular anatomy**, showing a large medulla, wide vessels and numerous narrow rays (fig. 1a), some species with shallow phloem wedges (fig. 1b).
2. **EXUDATES.** Inconspicuous and clear exudates.
3. **CLIMBING MECHANISMS.** Climbing Boraginaceae are either *twiners* or *scramblers*.
4. **LEAVES.** Alternate, simple, chartaceous to coriaceous with entire to serrate margins; blades sometimes with punctate glands (fig. 3a); veins pinnate (fig. 2b); petioles short, sometimes geniculate, glandless; stipules absent.
5. **INFLORESCENCE.** Scorpioid cymes, terminal on short branches (fig. 3b), or axillary glomerules.
6. **PEDICELS.** Short or flowers sometimes sessile.
7. **FLOWERS.** Bisexual, actinomorphic, 5-merous; calyx 5 distinct equal sepals; corolla gamopetalous, campanulate or funnel-shaped; stamens 5, equal, the filaments inserted on the corolla tube, the anthers opening along longitudinal slits; ovary superior, of 2 connate carpels, bilocular; ovules 1 per locule, axile, the style 1, terminal, branched or capitate.
8. **FRUIT.** A fleshy drupe with 1-4 pyrenes.



**Figure 1.** Stems in *Tournefortia hirsutissima*. **A.** Cross section of fresh stem showing wide vessels and narrow rays. **B.** Cross section of dry stem showing shallow phloem wedges. **C.** Bark with wart-like protuberances. Photos by P. Acevedo.



**Figure 2.** A. *Tournefortia bicolor* with twining flat stem. B. *Tournefortia sp.*, leaves pinnate veined. Photos by: A by A. Popovkin; B. by P. Acevedo.



**Figure 3.** **A.** *Tournefortia bicolor*, leaves with punctate glands. **B.** *Myriopus* sp., showing scorpioid cymes. Photo by: A. by A. Popovkin; B. by P. Acevedo.

## KEY TO THE GENERA

1. Scrambling shrubs; leaves serrate or serrulate; corolla campanulate, white; style distally divided in 4 stigmatic branches ..... *Varronia*
1. Twining vines or lianas or sometimes scrambling shrubs; leaves entire or undulate; corolla infundibuliform, white, orange, yellow; style distally unbranched, the stigma ovoid-pyramidal ..... 2
2. Corolla lobes ovate, short, obtuse (sometimes apiculate) at apex; anthers free, glabrous; stigma round-pyramidal, rimmed at the base ..... *Tournefortia*
2. Corolla lobes lanceolate, acute at apex; anthers connate, pubescent at the apex; stigma ovoid, with short stigma-phore above the basal rim.....*Myriopus*

## GENERIC DESCRIPTIONS

**MYRIOPUS** Small, Manual Southeast. Fl. 1131. 1933.

Twining lianas, scrambling shrubs or less often erect shrubs. Stems more or less cylindrical.



*M. maculatus* (Jacq.) Feuillet, photo by P. Acevedo

Leaves alternate, chartaceous to coriaceous, simple, with entire or crenate margins; petioles short, without glands. Inflorescences terminal, scorpioid cymes. Flowers actinomorphic, bisexual, 5-merous; calyx crateriform, with valvate aestivation; corolla funnel-shaped, white, yellow, light green,

white, the lobes lanceolate; stigma ovoid, with short stigma-phore above the basal rim. Drupes, orange, white, sometimes with 2-4 black spots, 2-4 lobed.



*M. maculatus*, photo by P. Acevedo

**Distinctive features:** Twining vines or scrambling shrubs with terminal helicoid cymes; stigma ovoid, with short stigma-phore above the basal rim.

**Distribution:** A neotropical genus of 14 species, 14 of which are reported as lianas or climbing shrubs;

distributed from Mexico, Central America, Venezuela, Colombia, Peru, Bolivia, the Guianas, Brazil, Paraguay, and the West Indies; often in wet or moist lowland forests.

#### **TOURNEFORTIA** Linnaeus, Sp. Pl. 140. 1753.



*T. hirsutissima*, photo by P. Acevedo

Twining vines reaching 15-20 m in length; stems cylindrical, or less often flattened, in some species reaching up to 6 cm in diameter; bark beige and smooth with wart-like protuberances (fig. 1c & 2a); cross sections with regular anatomy, showing a large medulla, wide vessels and

numerous narrow rays (fig. 1a), and sometimes shallow phloem wedges (fig. 1b); exudate

inconspicuous. Leaves alternate, simple, entire or undulate, with pinnate venation; petioles short; stipules absent. Inflorescences terminal, scorpioid cymes. Flowers bisexual, actinomorphic, 5-merous. Calyx crateriform, the sepals with valvate aestivation; corolla funnel-shaped, the lobes ovate and obtuse at apex; stigma round-pyramidal, rimmed at the base. Drupes fleshy, sub-globose, white, often with a sticky pulp.

**Distinctive features:** Vegetatively similar to *Myriopus* but distinguished by the floral characters.

**Distribution:** A pantropical and warm temperate genus of about 102 species, 96 of which are neotropical, with 25 species reported as lianas or vines; in lowland, wet, moist, semideciduous or secondary forests.

**VARRONIA** P. Browne, Civ. Nat. Hist. Jamaica 172. 10 Mar 1756.

Scrambling shrubs 2-4 m long; stems cylindrical; cross sections with regular anatomy.



*V. dependens* (Urb. & Ekman) Borhidi, photo by P. Acevedo

Leaves glabrous, pubescent or scabrous, coriaceous to chartaceous, with pinnate venation and serrulate or serrate margins; petioles short; stipules absent.

Inflorescence axillary, few-flowered fascicles, or terminal sub-scorpioid cymes or racemes of fascicles. Flowers bisexual, 5-merous, short-pedicellate

or sessile; calyx crateriform, sepals with valvate aestivation; corolla campanulate, white; style distally divided in 4 stigmatic branches. Drupes sub-globose, fleshy, often red, sometimes covered by the accrescent calyx.



**Distinctive features:** Scrambling shrubs a few m long; leaves alternate, simple with serrate or serrulate margins.

**Distribution:** A New World genus with 128 neotropical species, 5 of which are reported as climbing shrubs; distributed from Mexico to southern Brazil and the West Indies, often in open disturbed habitats.

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## PICTURE VOUCHERS

Figure 1.

- A. *Tournefortia hirsutissima* L. (no voucher).
- B. *Tournefortia hirsutissima* (Acevedo 10224)
- C. *Tournefortia hirsutissima* (Acevedo 15491)

Figure 2.

- A. *Tournefortia bicolor* Sw. (Popovkin 2101).
- B. *Tournefortia* sp. (Acevedo 16948)

Figure 3.

- A. *Tournefortia bicolor* Sw. (Popovkin 2101).
- B. *Myriopus* sp. (Acevedo 16384).