

MALVACEAE

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A largely tropical family extending to temperate regions with 243 genera and ~4,225 species of shrubs, trees or rarely subshrubs or lianas. The 42 species of climbing Malvaceae in the Neotropics all belong to the genus *Byttneria* all of which are endemic to this region. Most climbing species in *Byttneria* are found in moist forests, riparian vegetation such as igapó, varzea, primary or secondary non-flooded forests, while a few species are found in dry forests or in open moist, savanna-like formations

Diagnosics: Armed scrambling shrubs with angled, ribbed or deeply lobed stems, or unarmed twining lianas with terete stems, leaves simple, alternate, commonly with plinerved venation and long-petioled, margins entire or serrate, sometimes bearing 1–5 nectaries at the base of the abaxial side of the midvein; petals unguiculate, hooded right above the claw, and bearing a distal ligulate portion; fruits dehiscent, spiny capsules that split into dorsally dehiscent mericarps.

General Characters

1. **STEMS.** Quite variable, some species are herbaceous with little secondary growth, while others have substantial secondary growth. In twining lianas, stems are cylindrical and unarmed, reaching up to 4 cm in diam. and up to 20 m in length; in scrambling shrubs, for the most part, they are deeply lobed, ribbed or fluted, solid or fistulose, and armed with recurved prickles; cross sections in some species with regular vascular anatomy where the xylem forms a continuous large cylinder traversed by narrow rays (Figure 166C) or inconspicuous rays; or the stems asymmetrical, i.e., 4- or 5-lobed, formed by the unequal activity of the cambium that produce more secondary xylem and phloem in certain areas of the stem (Figure 165A), in addition, some species have fistulose stems

(Figure 166B). Commonly, Malvaceae shows stratified fiber bands in the phloem-cortex area (Figure 166C), a character that helps in the identification of members of this family (M. Pace, pers. comm.).

2. INDUMENT. Commonly of stellate hairs, less often simple or glandular hairs.
3. EXUDATES. Commonly, no visible exudates; mucilage noticed in the phloem area, e.g., *B. catalpifolia* Jacq.
4. CLIMBING MECHANISMS. Most species are scramblers, either unarmed, or aided by numerous prickles along the stems and the short, lateral, plagiotropic branches; few species of unarmed lianas are recorded as twiners (Figure 167B), e.g., *B. benensis* Britton, *B. catalpifolia* and *B. fulva* Poepp.
5. LEAVES. Alternate, spirally arranged or distichous, of variable size (2–20 cm long), unlobed or basal leaves sometimes trilobed (e.g. *B. aculeata*), coriaceous to membranaceous, with abaxially prominent midvein, often with 1–5 extrafloral nectaries at the abaxial base of midvein or rarely on distal portion of petiole, some species have domatia on the abaxial side of secondary vein angles; venation plinerved (Figure 167A) or less often pinnate; petioles very short to very long, terete or adaxially flattened, sometimes with prickles, the distal portion commonly slightly swollen and curved. Stipules small, caducous.
6. INFLORESCENCE. Axillary, few- to many-flowered cymes (Figure 168A).
7. PEDICELS. Usually longer than the perianth.
8. FLOWERS. Flowers bisexual, actinomorphic; sepals elongate, commonly spreading, connate at base, green, or often the same coloration as the petals; petals unguiculate, cucullate and ligulate, light yellow, white, light green or purple, sometimes with

combined colors; stamens 5 and staminodia 5 both connate into a staminal tube, with anthers on short filaments alternating with the staminodes, the anthers 2-thecate, dehiscent longitudinally; ovary superior, syncarpous, 5-carpellate, with 2 ovules per locule, the style simple, the stigma capitate or 5-lobed.

9. FRUIT. Fruit a woody or subwoody, echinate capsule that splits into 5, 1-seeded ventrally dehiscent mericarps (Figure 168B, C).

USES

There are only a few reports on the traditional uses of *Byttneria*. Cristóbal (1976) mentioned that herbaria collections note that *B. aculeata* has been used in the treatment of amoebic dysentery, and the hollow stems as straws for drinking chicha, an alcoholic drink, and also in the confection of flutes. The maceration of seeds have been used by “Ribeirinhos” in the region of North Araguaia in Mato Grosso, Brazil for the treatment of various ailments such as bursitis, inflammations, vaginal infection and headaches (Ribeiro et al 2017). A decoction of leaves and stems are used for urinary infections and stomach flu by the Charayahuita Indians in the Peruvian Amazon (Odonne et al. 2013)

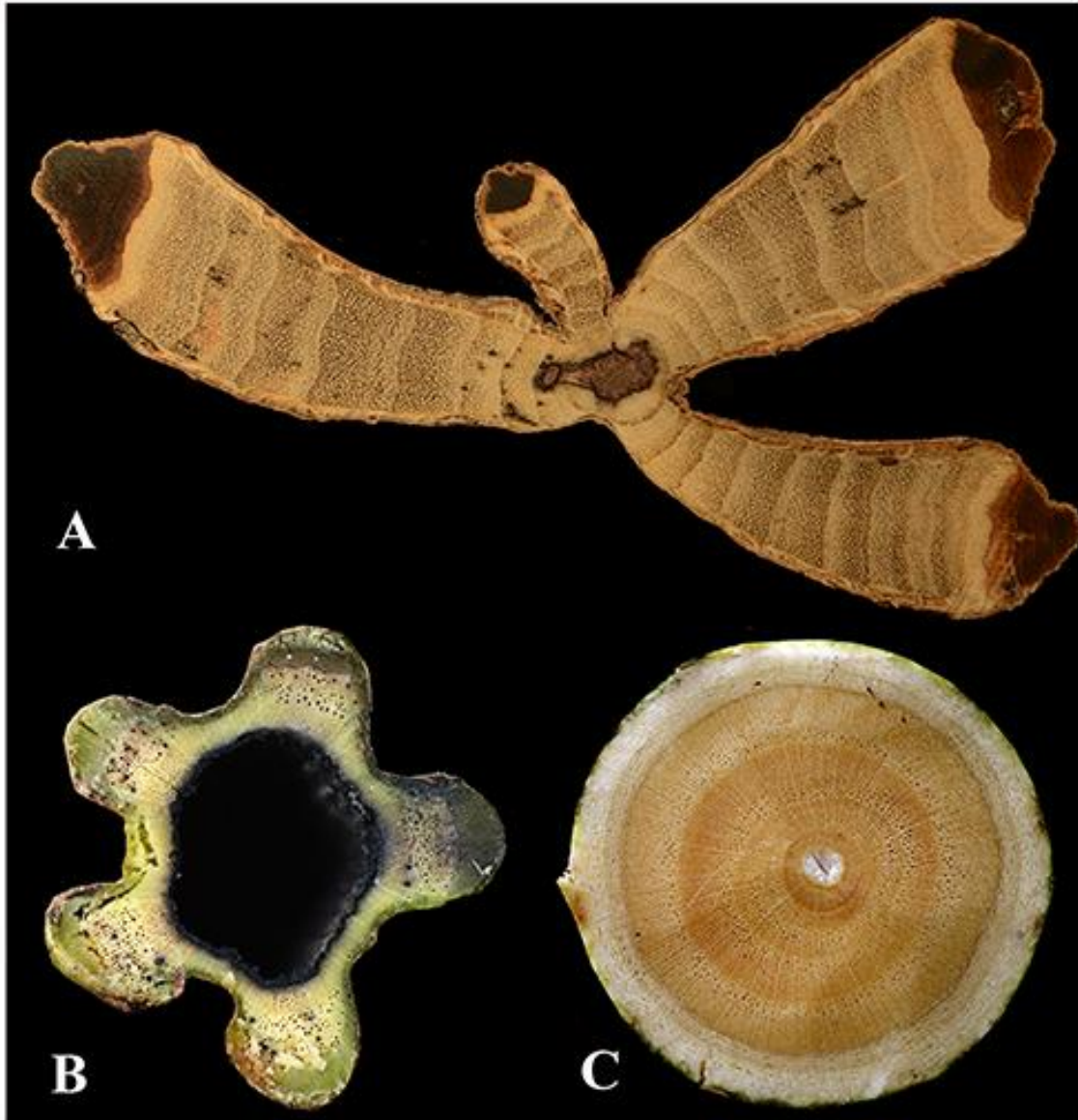


Figure 166. Cross sections of stems in *Byttneria*. **A.** *B. divaricata*, with deeply lobed (lobes flattened) or fluted stem. **B.** *B. aculeata*, with 5-lobed, fistulose stem. **C.** *B. catalpifolia*, cylindrical stem and conspicuous wide vessels, phloem-cortex area with stratified fiber bands. Photos by P. Acevedo.



Figure 167. Climbing mechanisms in *Byttneria*. **A.** *Byttneria* cf. *aculeata*, a scrambling shrub with armed stems, and short, plagiotropic branches. **B.** *Byttneria* sp., unarmed twining liana. Photos by P. Acevedo.

BYTTNERIA Loefling, Iter Hispan. 313. 1758 (nom. cons.).

Unarmed scrambling or twining lianas, or armed (with prickles) erect or scrambling shrubs, commonly with short, alternate, lateral branches, or erect subshrubs, shrubs or small trees. Lianas with solid terete stems with regular anatomy, some species reaching up to 20 m in length and 4 cm in diam. Scrambling shrubs with 4- or 5-lobed, costate or furrowed, solid or fistulose stems, armed with prickles mostly along the edges, some species reaching up to 8 m in length and ~10 cm in width; exudates inconspicuous; cross sections (see General Characters). Leaves alternate, simple, entire or serrate; petioles short to elongate; stipules caducous. Inflorescences axillary dichasial cymes, with few to many flowers; bracts small, ephemeral. Flowers 5-merous, bisexual, actinomorphic; sepals commonly elongate, connate at base; petals unguiculate, cucullate and ligulate at the apex; stamens 5, staminodia 5, connate into a staminal tube, with anthers on short filaments alternating with the staminodes, the anthers 2-thecate, dehiscent longitudinally; ovary superior, syncarpous, 5-carpellate, with 2 ovules per locule, the style simple, the stigma capitate or 5-lobed. Fruit a woody or subwoody, echinate capsule that splits into 5, 1-seeded ventrally dehiscent mericarps.

Distinctive features: The unarmed liana species superficially resemble the genus *Sparattanthelium* (Hernandiaceae) because of the simple leaves with plinerved venation. However, *Byttneria* can be distinguished by the presence of stipules or stipule scars, which are lacking in *Sparattanthelium*. For other characters, refer to the family diagnostics above.

Distribution: A pantropical genus of ~140 species, 88 of which are native to the Neotropics, with a total of 42 species reported as lianas or scrambling shrubs; distributed from Mexico south to Argentina and Cuba and Hispaniola, with many species in the Amazon basin; primary or

secondary moist forests, riparian vegetation, non-flooded forests, dry forests or in open, moist, savanna-like formations.



Figure 168. A. Cymose inflorescence with white flowers in *B. catalpifolia*. B. Capsule with long spikes in *B. aculeata*. C. Oblate woody capsule with short conical spikes in *Byttneria* sp. Photos by P. Acevedo.