

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

MALVACEAE

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Byttneria catalpifolia Jacq., photo by P. Acevedo

A largely tropical family extending to temperate regions with 243 genera and about 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, non-flooded forests, primary or secondary while a few species are found in dry forests or in open moist, savanna-like formations

Diagnostics: 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 scandent 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 (fig. 1b; fig. 2 c) or inconspicuous rays (fig. 2a); 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 (fig. 1a; 2a), in addition, some species have fistulose stems (fig. 1a). Commonly, Malvaceae shows stratified fiber bands in the phloem-cortex area (fig. 1b & fig. 2c), 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 (fig. 2b & c); mucilage noticed in the phloem area, e.g., *B. catalpifolia* Jacq. (fig. 1b)
4. **CLIMBING MECHANISMS.** Most species are *scramblers*, either unarmed, or aided by numerous prickles along the stems and the short, lateral, plagiotropic branches (fig. 3a); few species of unarmed lianas are recorded as *twiners* (fig. 3b), 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 to 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 (fig. 3a) 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 (fig. 4a).
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 (fig. 4b &c).

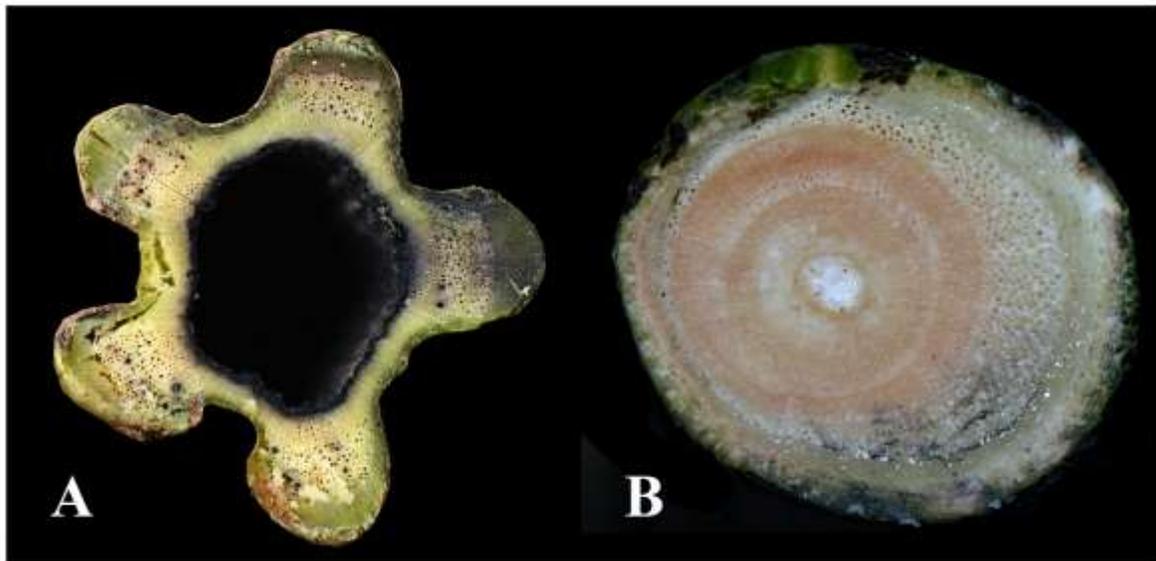


Figure 1. Cross sections of stems in *Byttneria*. **A.** *B. aculeata*, with 5-lobed, fistulose stem. **B.** *Byttneria* sp., nearly cylindrical, with mucilage in the phloem area stratified fiber bands in phloem-cortex area. Photos by P. Acevedo.

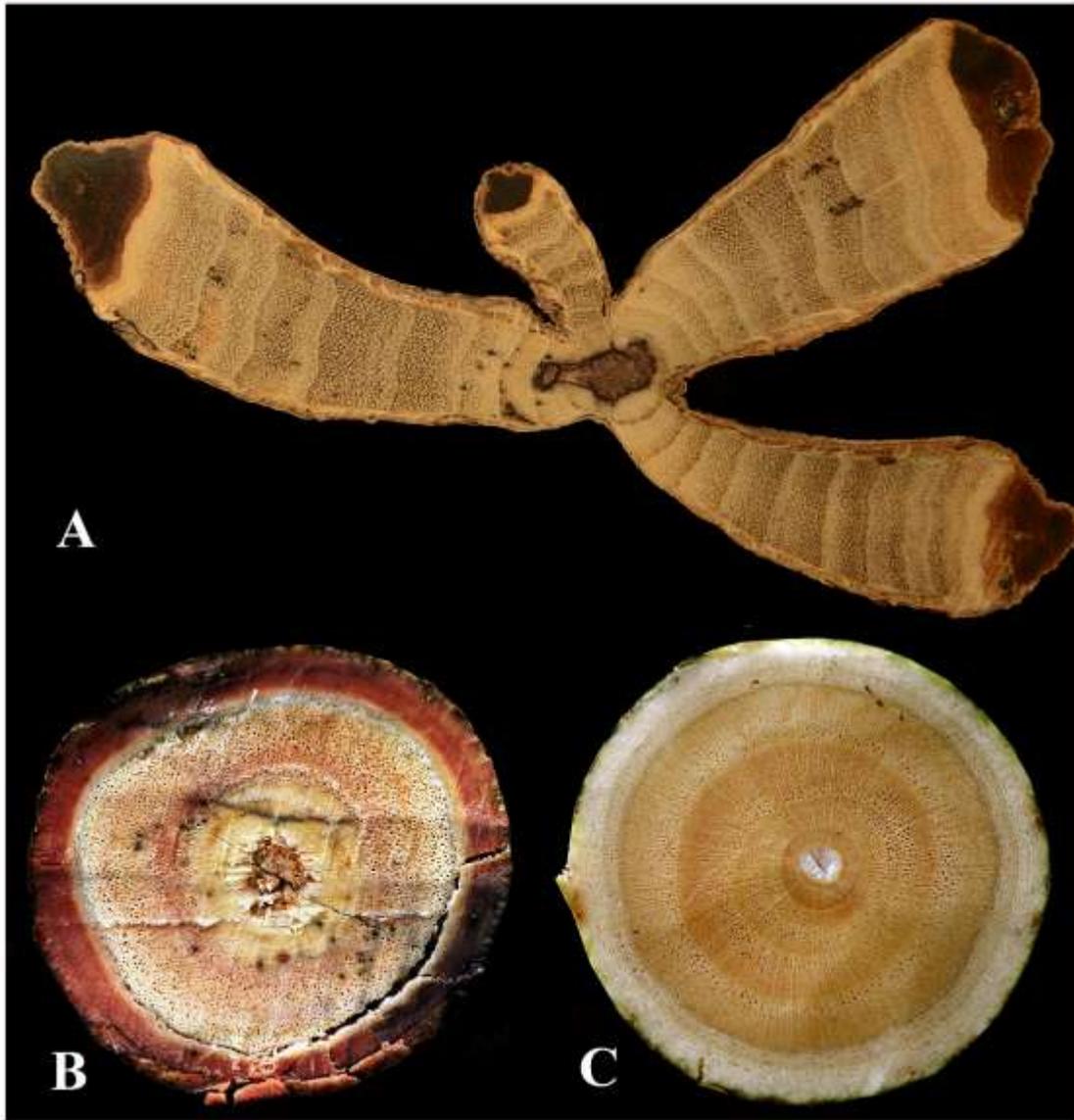


Figure 2. Cross sections of stems in *Byttneria*. **A.** *B. divaricata*, with deeply lobed or fluted stem. **B.** *B. pescapriifolia*, with cylindrical stems and conspicuous wide vessels. **C.** *B. catalpifolia*, with cylindrical stems and conspicuous wide vessels, phloem-cortex area with stratified fiber bands. Photos by P. Acevedo.



Figure 3. Climbing mechanisms in *Byttneria*. **A.** Scrambling shrub with short, plagiotropic, armed branches and main stems. **B.** Unarmed twining liana. Photos by P. Acevedo.



Figure 4. **A.** Cymose inflorescence with white flowers in *B. catalpifolia*. **B.** Capsule with long spines in *B. aculeata*. **C.** Oblate woody capsule with short conical spines in *Byttneria* sp. Photos by P. Acevedo.

GENERIC DESCRIPTION

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



Byttneria sp., photo by P. Acevedo.

Unarmed scrambling or twining lianas, armed, leaning 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 ca. 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 plicate 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 about 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.

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 Riberinhos 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)

RELEVANT LITERATURE

Cristóbal, C.L. 1976. Estudio taxonómico del género *Byttneria* Loefling (Sterculiaceae).

Bonplandia 4:1-427.

Dorr, L.J. 2002. Sterculiaceae. In S.A. Mori et al., Guide to the Vascular Plants of Central French Guiana. Part 2. Mem. New York Bot. Gard. 76(2): 700-706.

Odonne, G., C. Valadeau, J. Alban-Castillo, D. Stien, M. Sauvain and G. Bourdy. 2013. Medical ethnobotany of the Chayahuita of the Paranapura basin (Peruvian Amazon). *J. of Ethnopharmacology* 146: 127-153.

Ribeiro, R.V., I.G.C. Bieski, S.O. Balogun and D.T.O. Martins. 2017. Ethnobotanical study of medicinal plants used by Riberinhos in the North Araguaia microregion, Mato Grosso, Brazil. *J. of Ethnopharmacology* 205: 69-102.

PICTURE VOUCHERS

Figure 1.

A. *Byttneria aculeata* (Jacq.) Jacq. (Acevedo 16123).

B. *Byttneria* sp. (Acevedo 16859)

Figure 2.

A. *Byttneria divaricata* Benth. (Acevedo 3516)

B. *Byttneria pescapriifolia* Britton (Acevedo 14293)

C. *Byttneria catalpifolia* Jacq. (Acevedo 16352).

Figure 3.

A & B. Unidentified *Byttneria* spp. from Brazil (no vouchers)

Figure 4.

A. *Byttneria catalpifolia* (Acevedo 16352)

B. *Byttneria aculeata* (Acevedo 1623)

C. *Byttneria* sp. (Acevedo 16859)