

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

## ARACEAE

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*Philodendron sp.*, photo by P. Acevedo

A cosmopolitan family (except for the arctic zone) with about 145 genera and 3,200 species of terrestrial, epiphytic or aquatic, large to minute, erect, prostrate or hanging, commonly rhizomatous herbs, or root-climbing vines. In the Neotropics, the family contains 50 genera and about 1,943 species of which 8 genera and 425 species are reported as vines. For the most part, they are found in moist and wet forests from low to middle elevations.

***Diagnostics:*** Root-climbing vines, commonly with long, hanging branches; leaves alternate, distichous, commonly large and coriaceous; petioles sheathed at the base; may be confused with Cyclanthaceae but distinguished from it by the distichous leaves with veins commonly

radiating from the petiole junction and the inflorescence subtended by a single bract (vs. commonly spiral leaves with parallel venation and inflorescences subtended by two bracts in Cyclanthaceae).

## General Characters

1. **STEMS.** Herbaceous to slightly woody, cylindrical, smooth or sometimes with shedding, thin bark, in some genera known to attain up to 10-25 m in length and in some species up to 3 cm in diam. All species have an *atactostele* with collateral vascular bundles scattered in the ground tissue.
2. **EXUDATES.** In some genera copious and watery or sometimes milky white, or caustic exudates.
3. **CLIMBING MECHANISMS.** All species are *root-climbers* either produced in the nodal or internodal areas.
4. **LEAVES.** Alternate, distichous (in vines), commonly fleshy-coriaceous, simple, commonly cordiform, less often compound or lobed. Petioles commonly long and forming a sheath at base.
5. **INFLORESCENCE.** Axillary, solitary or less often several per node, a densely flowered spadix with a large subtending bract (spathe) of variable size and shape.
6. **FLOWERS.** Bisexual or unisexual (the plant monoecious), actinomorphic, minute; perianth of 4 or 6 distinct or connate tepals in two whorls, or these reduced or wanting; stamens 4 or 6 (8), the filaments short, free, or connate, the anthers opening by terminal pores or longitudinal slits; ovary superior, often unilocular with basal or lateral parietal placentation, the ovules few, the style terminal and short or wanting.
7. **FRUIT.** A berry or developing with the spadix and maturing as a multiple fruit.

## USES

Numerous species of climbing Araceae are commercially cultivated as garden plants due to their beautiful foliage and inflorescences. The stems of various species of *Heteropsis* and the young prop roots of some species of *Philodendron* are used in the making of baskets due to their strong resistant, fibrous nature. The aggregate fruits of some species of *Monstera* are edible when ripe. The foliage of species of *Philodendron* are macerated and used as fish stupefactants in parts of the Neotropics (Acevedo, 1990).

## KEY TO THE GENERA

1. Flowers bisexual .....2
1. Flowers unisexual .....7
2. Perianth present ..... *Anthurium*
2. Perianth absent .....3
3. Leaves pinnately divided or simple with cordiform base and variegated lamina; ovary  
    unilocular ..... *Epipremnum*
3. Leaves simple, elliptical or ovate, with obtuse or rounded base, lamina not variegated; ovary  
    bilocular .....4
4. Leaf blade ovate, perforated ..... *Monstera*
4. Leaf blade elliptical, not perforated .....5
5. Petioles 1-1.5 cm long ..... *Heteropsis*
5. Petioles > 1.5 cm long .....6
6. Leaf secondary veins inconspicuous forming an acute angle with the midvein; placenta basal;  
    seeds fusiform to clavate ..... *Stenospermation*
6. Leaf secondary veins conspicuous forming an obtuse to right angle with the midvein; placenta  
    axile; seeds lenticular ..... *Rhodospatha*
7. Plant with abundant milky, white sap; leaves pedately dissected ..... *Syngonium*
7. Plants with watery, clear sap; leaves entire, cordate, or pinnately compound ..... *Philodendron*

## GENERIC DESCRIPTION

**ANTHURIUM** H. W. Schott, Wiener Z. Kunst 1829: 828. 1829.



*A. scandens* (Aubl.) Engl., photo by P. Acevedo

Erect herbs or vines climbing by adventitious roots, terrestrial or epiphytic; stems elongate, fleshy or the plant acaulescent; in vine stems commonly slender and reaching a few m in length. Leaves alternate, simple, or palmately lobed, long-petiolate, enveloped by a cataphyll in early stages, often weathering into persistent fibers. Inflorescence solitary.

Spathe usually herbaceous, not enclosing the spadix, usually long-lived, green, whitish to brightly colored; spadix sessile or short-stipitate, cylindrical or conical, many-flowered, flowering from base to apex. Flowers bisexual, sessile; perianth segments 4; stamens 4; ovary 2-locular, with 1 or 2 pendulous ovules per locule, the style short or wanting, the stigma disk-like to 4-lobed. Fruit a 2-locular, fleshy, bright red, white or lavender berry, often pendulous from a threadlike structure when ready for dispersal; seeds oblong.

**Distinctive features:** Herbaceous root-climbing vines; stems commonly slender but reaching up to 3 cm in some species; spathe persistent, herbaceous, usually reflexed and shorter than the spadix.

**Distribution:** A neotropical genus with over 1,000 species, of these, about a dozen have been reported as vines longer than 2 m; found in moist and wet forests, at elevations between 200-3000 m.

**EPIPREMNUM** H. W. Schott, Bonplandia 5: 45. 1857.



*E. aureum* (Linden & André) G. S. Bunting, photo by P. Acevedo

Robust, root-climbing vines; stems cylindrical often smooth, yellowish, reaching 2-3 cm in diam., and more than 25 m in length in some species. Leaves alternate, simple or pinnately dissected, the blade sometimes abaxially with a line of domatia along both sides of the midvein; stems with abundant trichosclereids; petioles distally pulvinate, with a winged sheath that usually withers into numerous, persistent fibers. Inflorescences 1(2) per node. Spathe fleshy, boat-shaped, not constricted, usually deciduous or withering after anthesis, covering the spadix; spadix subcylindrical, thickened, erect, sessile or stipitate, shorter than the spathe, flowers fertile throughout. Flowers bisexual, without perianth; stamens 4, free; ovary prismatic, truncate at apex, unilocular, with 2 (-8) basal or parietal ovules. Berries yellowish, 1- to 8-seeded; seeds

reniform, smooth.

**Distinctive features:** Robust subwoody, root-climbing vines, attaining > 20 m long and forming large entanglements. One species with yellow-green variegated leaves

**Distribution:** Genus of 20 species native to tropical SE Asia, Australia, and western Pacific, with two taxa (*E. pinnatum* (L.) Engl. & *E. pinnatum* cult. *aureum* Nicolson) cultivated and naturalized throughout the tropics; in moist secondary forests of low elevations.

**HETEROPSIS** Kunth, Enum. 3: 59. 1841.



*Heteropsis* sp., photo by P. Acevedo

Long, herbaceous, root-climbing vine; stems slender and fibrous, strong, reaching 20-30 m in length in some species; branches subflexuose, lacking trichosclereids. Leaves commonly about 15 cm long, elliptic, oblong or lanceolate, cuspidate, with finely ascending, pinnate venation forming a

submarginal vein close to the margin, fine veins reticulate; petioles 1-1.5 cm long, geniculate, canaliculate or adaxially flattened; sheath caducous, leaving a scar at the junction with node. Inflorescences solitary, subtended by several cataphylls, distal on short axillary branches; peduncle short; spathe ovate-elliptic to oblong, cuspidate, convolute, opening at anthesis, caducous; spadix erect, stipitate, shortly stipitate, shorter than the spathe, densiflorous. Flowers bisexual or lower ones pistillate by abortion of stamens, without perianth; stamens 4, free; ovary obpyramidal-prismatic, truncate at apex, bilocular, with 2 axile basal ovules per locule, the style broader than the ovary. Berries orange or greenish white, obovoid, prismatic, with a scar at the stylar region, 1- to 4-seeded; seeds obovoid to ellipsoid.

**Distinctive features:** Root-climbing vines, with slender, wiry stems; leaves simple, distichous, with a collective submarginal vein and reticulate fine veins; petioles very short, geniculate; spathe caducous.

**Distribution:** A neotropical genus of lianas with 18 species, distributed from Honduras south to SE Brazil; in lowland moist and humid forests.

**MONSTERA** Adanson, Fam. 2: 470. 1763, (nom. cons.).



*M. spruceana* (Schott) Engl., photo by P. Acevedo

Robust or slender root climbers; stems smooth or verrucose, reaching 20 m in length in some species.

Leaves alternate; blades simple, entire or lacinate, usually perforated; petioles elongated and winged.

Inflorescences 1-several per node.

Spathe thickened,

ovate, oblong-ovate, boat-shaped, not constricted, convolute at base, white to rose within, caducous; spadix sessile, cylindrical, thickened, erect, little shorter than the spathe; lower flowers usually sterile. Flowers bisexual, lacking perianth; stamens 4, free; ovary prismatic, truncate at apex, bilocular, with 2 basal ovules per locule, the stigma punctate or linear. Berries green, white, yellow or orange; seeds 1-3, obovoid or ellipsoid.

**Distinctive features:** Herbaceous to subwoody root-climbers with abundant trichosclereids in all tissues; leaves alternate, ovate to cordiform, simple or pinnatifid, often perforated; petioles long, geniculate at apex; inflorescences 1 to several per node, stout, spathe caducous.

**Distribution:** A neotropical genus of 45 species, 34 of which are vines, distributed from central-eastern Mexico to continental tropical America and the Lesser Antilles, introduced in areas of the Paleotropics.

**PHILODENDRON** H. W. Schott, Wiener Z. Kunst 1829: 780. 1829.



*P. hederaceum* (Jacq.) Schott, photo by P. Acevedo

Stout or slender vines, climbing by means of adventitious roots, or less often erect herbs; stems elongate, usually producing a watery, caustic sap, in some species reaching 30 m in length. Leaves simple, lobed or variously divided or pinnatifid, long-petiolate. Inflorescence 1-11 per node. Spathe erect, convolute, surrounding the spadix, usually thickened, and constricted between the tube and the blade, not adnate to the spadix; spadix cylindrical, erect, usually nearly sessile, pistillate zone basal, separated from the staminate zone by a zone of sterile staminate flowers. Flowers unisexual, the perianth wanting; stamens 2-6; ovary 2- to many-locular, with 1 to many ovules per locule, the stigma sessile, entire or lobed. Fruit a fleshy, 1- to many-seeded berry; seeds ovoid to ellipsoid. A genus of about 275 species native to the Neotropics.

**Distinctive features:** Root climbers, with herbaceous to stout, cylindrical stems, up to 3 cm in diam., often with copious caustic exudate; leaves alternate, spiral or distichous, commonly cordiform, or less often lobed or variously divided, with long petioles; spathe erect, convolute, as long as the spadix; spadix with pistillate and staminate zones separated by a sterile zone.

**Distribution:** A neotropical genus of about 530 species, 215 of which have been reported as root climbing vines, distributed from Mexico south to south-eastern Brazil, including the West Indies.

**RHODOSPATAHA** Poeppig in Poeppig & Endlicher, Nova Gen. Sp. 3: 91. 1845.



*R. oblongata* Poepp., photo by Alex Popovkin

Root-climbing vines or erect herbs; vines reaching few m in length; stems 1-2 cm in diam., commonly with very short internodes. Leaves alternate, distichous, oblong to elliptic, abruptly acuminate at the apex, attenuate and commonly asymmetrical at the base, veins numerous, pinnate, forming an obtuse to nearly a right angle with the stout midvein, the blade sometimes

lineolate; petioles elongated, geniculate at the apex, invaginate along most of its length, the invaginations commonly weathering into persistent fibers. Inflorescences axillary, 1 or few per node, shorter than the leaves, pedunculate; spathe convolute, not constricted, cuspidate at apex, longer or shorter than the spadix, caducous or persistent after anthesis; spadix erect, stipitate, densiflorous. Flowers bisexual; perianth absent; stamens 4; ovary bilocular, the ovules several or numerous per locule. Berries cylindrical-prismatic, truncate, commonly greenish; seeds numerous, rounded-reniform.

**Distinctive features:** Herbaceous to subwoody root-climber; leaves alternate, distichous, in many species similar to those of *Heliconia* or *Musa*, petioles as long as the blade; venation conspicuous.

**Distribution:** Primarily a South American genus with 71 species, 11 of which are reported as root-climbing vines; distributed from southern Mexico south to the Amazon region and the Atlantic coast of Brazil with most species occurring in Ecuador and the Andean foothills; in wet forests at middle to low elevations.

**STENOSPERMATION** H. W. Schott, Gen. Aroid. 70. 1858.



*S. angustifolium* Hemsl., photo by I. Coronado

Root-climbing vines or erect herbs; vines attaining few m in length; stems commonly with very short internodes, rooting at the nodes; cataphylls caducous. Leaves alternate, distichous, oblong to elliptic, acuminate at the apex, attenuate and at the base, veins pinnate, inconspicuous, midvein prominent beneath; petioles

elongated, geniculate at the apex, invaginate along most of its length. Inflorescences axillary, 1 per node, long-pedunculate; spathe convolute, not constricted, early caducous; spadix erect or slightly curved, stipitate or sessile, densiflorous. Flowers bisexual; perianth absent; stamens 4, filaments with a connective; ovary bilocular, with 4 ovules per locule. Berries obovoid, subtruncate, slightly angular, commonly white to brownish; seeds 3 or more per locule.

**Distinctive features:** Herbaceous vines with adventitious roots at the nodes; leaves elliptic with inconspicuous venation; petioles long; spadix slender, cylindrical; spathe early caducous.

**Distribution:** A neotropical genus of about 50 species, 8 of which are reported as vines; distributed from Guatemala south to southern Brazil, in moist or wet lowland forests.

**SYNGONIUM** H. W. Schott, Wiener Z. Kunst 1829: 780. 1829.



*S. podophyllum* Schott, photo by P. Acevedo

Epiphytes or hemi epiphytes, usually with long, root-climbing stems, producing milky sap. Leaves simple or variously divided, with 5-11 leaflets; petioles long, sheathed toward the base. Inflorescences 1-11 per axil; peduncles erect in flower, pendant in fruit; spathe fleshy, convolute, conspicuously constricted medially, the tube ellipsoid, the blade whitish to greenish, broadly spreading at anthesis; spadix much shorter than the spathe, erect, with pistillate flowers on basal portion. Flowers unisexual, the perianth wanting; stamens 3-4, united into a synandrium; ovary (1-) 2 (-3)-locular, with 1 (-2) ovules per locule, the stigma discoid or bilabiate. Fruit a 1-seeded berry, connate into an ovoid syncarp; seeds obovoid or ovoid.

**Distinctive features:** Robust root-climbing lianas with white exudate; leaves commonly divided into 5-11 leaflets; inflorescences commonly several per node; spathe constricted at the middle, with upper portion reflexing and caducous after anthesis.

**Distribution:** A Neotropical genus of 32 species, distributed from Mexico to southern Brazil, with most species between Costa Rica and Colombia.

## RELEVANT LITERATURE

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