

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

## LORANTHACEAE

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*Struthanthus interruptus*, photo by P. Acevedo

A pantropical family of 76 genera and about 1046 species of mainly hemiparasitic aerial shrubs, sometimes with climbing branches. In the Neotropics, the family is represented by 19 genera and about 339 species, of which 5 genera and 27 species are consistently known hemiparasitic vines. For the most part, they are found in humid or wet lowland forests.

**Diagnosics:** Hemiparasitic vines, climbing by aerial haustoria, down-pointing young leaves acting as hooks, or twining branches or prehensile petioles; many Neotropical Loranthaceae reported with basal epicortical roots, aerial roots common in some species; leaves opposite, alternate, or rarely verticillate, coriaceous to subfleshy, simple, lacking stipules; flowers in most Neotropical genera minute or small, typically white, cream,

yellowish green or red, with inferior ovary; fruit a 1-seeded berry; seed covered with sticky viscin, usually concentrated as a thick disk at the distal end.

## General Characters

1. STEMS. Flexible, moderately woody, developing cylindrical, tetragonous, or slightly flattened, reaching 2-5 m long and < 1 cm in diam.
2. EXUDATES. Watery or not visible. The viscin from fruits can be whitish, yellowish, or purplish.
3. CLIMBING MECHANISMS. Epicortical roots, formed from the base of the plant or along stems, these modified into *hooks* (that grasp and embrace branches of neighboring plants) and producing *haustoria* with which adhere and parasitize host plants; in addition, some species of *Cladocolea*, *Peristethium* and *Struthanthus* have rigid recurved (*hook-like*) leaves and *prehensile petioles*, while some *Cladocolea* and *Struthanthus* in addition to haustoria have *twining* stems.
4. LEAVES. Opposite, alternate or whorled, exstipulate; blades coriaceous to subfleshy, often fragile, venation penninerved, midvein commonly abaxially prominent, secondary and tertiary venation commonly inconspicuous, margins entire; petioles short, commonly grooved, although in species of *Cladocolea* and *Struthanthus* they can be elongated and prehensile.
5. INFLORESCENCE. Axillary or terminal, simple or fascicled spikes or racemes, sometimes paniculate or flowers solitary and axillary; determinate or indeterminate; flowers arranged in monads, dyads or triads.
6. PEDICELS. Commonly very short or lacking.
7. FLOWERS. Bisexual, unisexual, sometimes with rudimentary opposite sex parts, actinomorphic, 4-6-merous; calyx in form of a calyculus, i.e., greatly reduced to a rim with edge smooth or with minute teeth; petals fleshy, usually white, cream, light yellow, greenish white or red, commonly connivent along lower half to form a short tube, upper half spreading; stamens epipetalous, as many as the petals, anthers opening along longitudinal slits, sometimes crowned with an apical appendage; style 1, terete, straight or less often twisted, the stigma capitate or bilobed; ovary inferior, unilocular, with 4-12 ovules, the placentation free, central.
8. FRUIT. A small, cylindrical or ellipsoid fleshy berry with a single seed and abundant endosperm. Ripe fruits commonly red, orange, yellow, or black.

## KEY TO THE GENERA

- 1. Inflorescences indeterminate; flowers with bracteoles .....2
- 1. Inflorescences determinate; flowers lacking bracteoles .....4
- 2. Stamens of similar length; filaments long and slender .....*Struthanthus*
- 2. Stamens in two alternating series of different length; filaments short and stout or absent .....3
- 3. Flowers in monads; inflorescences with caducous bracts at the base..... *Panamanthus*
- 3. Flowers in triads; inflorescences lacking bracts at the base ..... *Passovia*
- 4. Leaves usually alternate; inflorescences lacking basal scales; filaments slender and distinctive..... *Cladocolea*
- 4. Leaves opposite; inflorescences with distinctive basal scales; filaments absent or obscure..... *Peristethium*

## GENERIC DESCRIPTIONS

**CLADOCOLEA** Van Tieghem, Bull. Soc. Bot. France 42: 166. 1895.

Mainly dioecious hemiparasitic shrubs with spreading, hanging or climbing branches, some



*C. loniceroides* (Tiegh.) Kuijt, photo by M. Carballo

species slender vine-like, reaching 1.5-2 m in length. Some species bearing epicortical roots with haustoria which attach to host plants, sometimes with twining stems, stiff recurved leaves, or prehensile petioles (e.g., *C. harlingii* Kuijt). Stems nearly cylindrical. Leaves usually alternate, sometimes opposite or whorled, petiolate; blade coriaceous, often elliptic or lanceolate. Inflorescence axillary, short spikes or racemes, some

species with inflorescences restricted to stems one year old or older. Flowers typically unisexual,

rarely bisexual, 4-6-merous, in ebracteolate monads; calyculus commonly with minute teeth crowning the light green inferior ovary; petals light green, fleshy, free or slightly fused at the base, sometimes revolute at apex; stamens epipetalous, in 2 series of similar or slightly different lengths, anthers basifixed, subtended by short slender filaments; disc annular; style terete, as long as the corolla, with capitate stigma, twisted in several species. Fruit a one-seeded, cylindrical to ellipsoid berry, often bright red or black when ripe.

**Distinctive features:** Dioecious parasitic vines; leaves mostly alternate; spikes or racemes short, mainly determinate, axillary, sometimes restricted to mature stems; seeds surrounded by sticky viscin.

**Distribution:** A neotropical genus of about 28 species, with *C. glauca* Kuijt, *C. gracilis* Kuijt, *C. grahamii* (Benth.) Tiegh., *C. mcvaughii* Kuijt, *C. pringlei* Kuijt and *C. tehuacanensis* (Oliv.) Tiegh. from Mexico and *C. harlingii* Kuijt from Ecuador reported as slender vines; moist and dry forests; 300-3,000 m.

**PANAMANTHUS** Kuijt, Ann. Missouri Bot. Gard. 78: 172. 1991.

Aerial hemiparasitic vines with spreading, pendant branches, reaching about 3 m in length; branches with stout epicortical roots equipped with haustoria which affix these parasitic vines to a host. Stems slightly tetragonous when young, becoming cylindrical with age. Leaves opposite and decussate, petiolate; blade chartaceous, elliptic. Inflorescence axillary, solitary, indeterminate, short spikes that are subtended by a series of caducous bracts. Flowers bisexual, 6-merous, in bracteolate, pedunculate monads; bracts and bracteoles partially fused and covering the ovary; calyculus inconspicuous, rim slightly wavy; petals pale yellow, in two slightly dimorphic series, fleshy, connivent into a short tube at base, upper half spreading and revolute; stamens epipetalous, in two alternating series with different lengths, anthers from each series dimorphic, basifixed, often shortly apiculate at apex, filaments very short and slender, widening at the base; style terete, slightly flattened at the tip, straight, as long as the corolla, with oblique stigma. Fruit a spherical, one-seeded, yellowish-orange berry. Seed surrounded by sticky viscin concentrated in a disc at the distal end.

**Distinctive features:** Pendant parasitic vines; leaves simple, alternate; stout aerial epicortical roots producing haustoria sometimes present along branches; monadic yellow flowers with partially fused bracts and bracteoles and two series of stamens with different heights; seeds surrounded with sticky viscin.

**Distribution:** A neotropical genus with a single species, *P. panamensis* (Rizz.) Kuijt; southern Panama and northern Costa Rica; wet forests; 1,200-2,450 m.

**PASSOVIA** Karsten, Bot. Zeitung 4: 107. 1846.



*P. ensifera* Kuijt, photo by P. Acevedo

Hemiparasitic shrubs with spreading, hanging or climbing branches, some species vine-like, reaching up to 5 m in length and climbing through the aid of haustoria produced by the epicortical roots along branches. Stems cylindrical or keeled, slightly enlarged in nodal area. Leaves opposite or subopposite, decussate, blade coriaceous, often elliptic, ovate, or lanceolate,

petiolate. Inflorescence mostly axillary, solitary or fasciculate, short spikes or racemes, sometimes paniculate. Flowers typically bisexual, rarely unisexual (in dioecious species), (4-)6-merous, in bracteolate triads where the medial flower is often sessile; calyculus a rim crowning the light green inferior ovary; petals dark red, cream, or greenish, slightly fleshy, connivent into a short tube at base, upper half spreading; stamens epipetalous, in 2 alternate series, anthers basifixed, sessile or on short stout filaments, often with an apical sterile appendage in at least one of the series; style terete, as long as the corolla, with subcapitate stigma. Fruit a one-seeded, terete to ellipsoid berry, variously colored but usually orange or yellow. Seeds whitish, covered in a thin layer of sticky viscin, with a thick disk at the distal portion.

**Distinctive features:** Parasitic vines; leaves opposite, decussate; inflorescence solitary or fasciculate spikes or racemes, sometimes a laxly branched panicle; flowers usually bisexual, in triads; stamens in two alternate series with strikingly different lengths; anthers often crowned with acute or acuminate appendages; filaments thick, the long series bearing cavities to accommodate anthers from the short series; fruits commonly between 5-10 mm long; seeds surrounded by sticky viscin.

**Distribution:** A neotropical genus of 21 species, with *P. pedunculata* (Jacq.) Kuijt consistently observed as a climber and equipped with stout epicortical roots that bend as hooks to grasp and embrace branches of hosts, then producing haustoria to parasitize them. Two other species (*P. ensifera* Kuijt and *P. pyrifolia* (Kunth) Tiegh.) are sometimes reported as vines; southern Mexico to Bolivia and SE Brazil, including the West Indies (Jamaica & Grenada); moist to wet, terra-firme or flooded forests; 200-500 m.

**PERISTETHIUM** Van Tieghem, Bull. Soc. Bot. France 42: 175. 1895.



*P. archeri*, photo by R. Foster

Dioecious aerial hemiparasitic vines with spreading, hanging and climbing branches, some species reaching over 10 m in length, climbing through the aid of numerous epicortical roots with haustoria produced from the stems. Stems tetragonous or cylindrical. Leaves mostly opposite or subopposite, decussate, blade coriaceous, elliptic or ovate, petiolate. Inflorescence mostly axillary, short spikes or racemes, subtended by chaffy scales, determinate, in monads, triads, pentads, or mixed. Flowers bisexual or unisexual by reduction of sexual organs, commonly 6-merous but sometimes 4-merous and rarely 5-merous, bracteolate, lacking bracteoles, sessile or with short pedicels; calyx a rim crowning the light green ovary, smooth or dentate; petals yellowish or cream-whitish, fleshy, connivent

into a short tube at base, upper half spreading; stamens epipetalous, in two alternating series of different heights, anthers basifixed, minute, sometimes shortly apiculate, sessile or with obscure filaments,; style terete, sometimes contorted, absent in staminate flowers, as long as the corolla, with bilobed stigma. Fruit a one-seeded berry, ellipsoid, orange-red or black. Seed covered with sticky viscin, concentrated in a disk at the distal end.

**Distinctive features:** Aerial hemiparasitic lianas with stout epicortical roots emerging from the base and stems producing haustoria; leaves opposite or subopposite, decussate; inflorescence subtended by a series of chaffy scales, determinate, terminal flower reaching anthesis before basal flowers, solitary spikes or racemes, monadic or triadic but sometimes with triads at the base and monads at distal portions; flowers usually unisexual, anthers minute, filaments very short or absent; fruits 5-10 mm long; seeds surrounded by sticky viscin.

**Distribution:** A neotropical genus of about 18 species, with *P. archeri* (A.C. Sm.) Kuijt from Colombia and *P. leptostachyum* (Kunth.) Tiegh. from southern Central America and northwestern South America reported as lianas; two additional species, *P. lojiae* (Kuijt) Kuijt (from Ecuador) and *P. primarium* (Kuijt) Kuijt (from Panama) are reported as vines that produce aerial epicortical roots; moist and wet forests; 0-2,900 m.

**STRUTHANTHUS** Martius, Flora 13: 102. 1830 (nom. cons.).



*S. interruptus* (Kunth) G. Don, photo by P. Acevedo

Dioecious, hemiparasitic vines with spreading, hanging and climbing branches, some species reaching 10 or more m in length, climbing through the aid of stout epicortical roots equipped with haustoria produced from the stems, and sometimes by stiffly recurved leaves and prehensile petioles, or by twining branches. Stems cylindrical or tetragonous, slightly enlarged in nodal area. Leaves mostly opposite and

decussate, but alternate and distichous in some species, blade coriaceous, elliptic, ovate or lanceolate, often involute, petiolate. Inflorescence mostly axillary, solitary or fasciculate, short spikes or racemes. Flowers unisexual by reduction of sexual organs, 6-merous, in bracteolate, sessile or pedunculate triads; calyculus a rim crowning the light green ovary; petals yellowish green or greenish white, fleshy, connivent into a short tube at base, upper half spreading and revolute; stamens epipetalous, in two series of similar length, anthers dorsifixed, on slender filaments, often shortly apiculate at apex; style terete, sometimes recurved, as long as the corolla, with bilobed stigma. Fruit a one-seeded, terete to ellipsoid, commonly orange or yellow berry. Seed whitish, surrounded by white sticky viscin concentrated in a disk at the distal end.

**Distinctive features:** Twining lianas; stems with successive cambia; leaves simple, alternate with tertiary clathrate venation; stout aerial roots with haustoria often present along branches; some species with stiff recurved leaves and prehensile petioles that anchor on neighboring hosts and parasitize them with haustoria from epicortical roots; seeds surrounded with sticky viscin.

**Distribution:** A neotropical genus of about 47 species; Mexico to northern Argentina; over 20 species consistently reported as vines; seasonal savannas, moist or wet forests; 0-2,900 m.

## RELEVANT LITERATURE

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