

## SOLANACEAE

P. Acevedo-Rodríguez

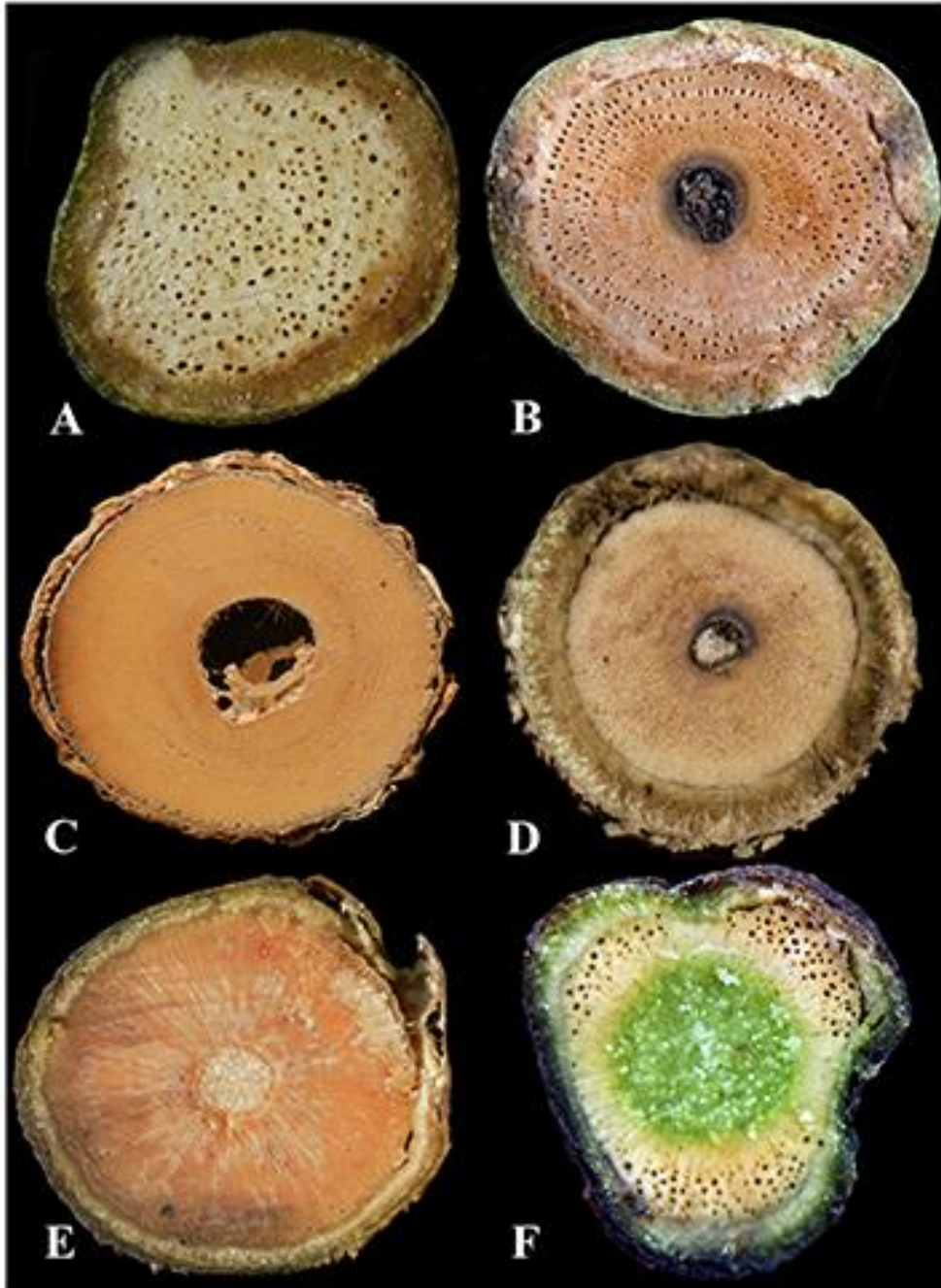
A nearly cosmopolitan family of ~99 genera and ~2,300 species of herbs, shrubs, trees, and lianas. In the Neotropics, there are 74 genera and ~2,000 species of which 19 genera and 211 species are reported as climbing plants. Solanaceae is a ubiquitous family that is found in numerous habitats, but for the most part it is common in moist to wet lowland forests, few species occur in open savanna-like formations or disturbed habitats.

**Diagnosics:** Climbing Solanaceae are mostly scramblers or twiners, with unarmed or armed stems, leaves, and inflorescence axes. Leaves are alternate, commonly simple, or less often dissected or compound. Stems are terete, woody or less often herbaceous, with regular vascular anatomy and distinguishable by the presence of intraxylary phloem. Fruits in climbing Solanaceae are berries or rarely capsules (e.g., *Schwenckia*).

### General Characters

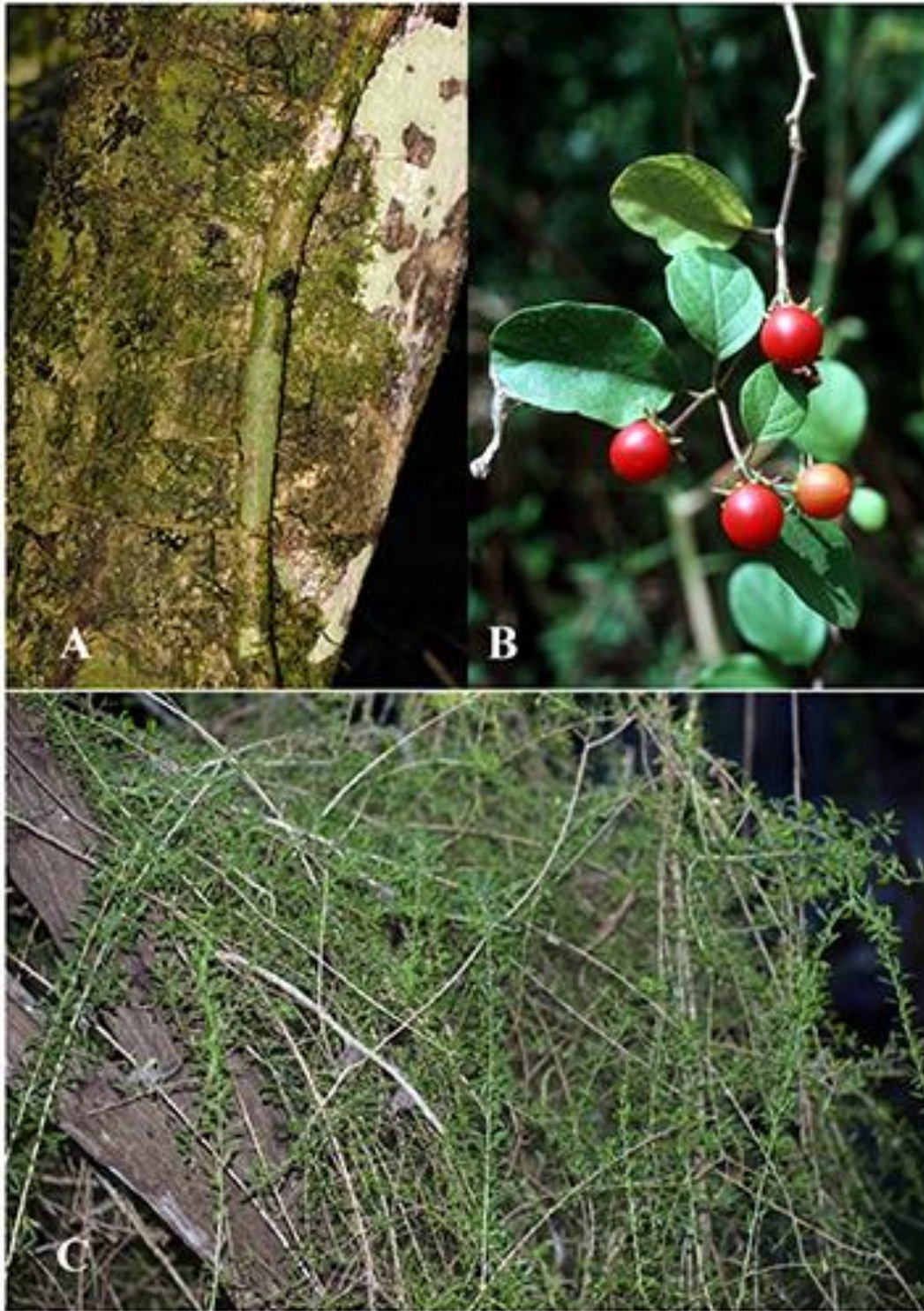
1. **STEMS.** Herbaceous or woody with substantial secondary growth, for the most part cylindrical, some species trigonous or pentagonal when young, becoming terete with age, or less commonly asymmetrical (e.g., *Dysochroma viridiflorum* (Sims) Miers), some species reaching 20 or more m in length and up to 12 cm in diam. Most genera have unarmed stems except for *Solanum* which has numerous species that are armed all over with prickles. Cross sections show regular vascular anatomy commonly with narrow vessels and inconspicuous rays (Figure 229B–F); all members have intraxylary phloem associated with the medulla in the form of a continuous cylinder or strands (Metcalf & Chalk 1957); mature stems in *Dysochroma viridiflorum* are known to be non-cylindrical with an acentric medulla (Figure 229A).

2. EXUDATES. No visible exudate.
3. CLIMBING MECHANISMS. Twiners are known in *Cestrum*, *Lycianthes*, *Schwenckia* and *Solanum*, scramblers are found in most genera (Figures 230C; 231), root-climbers are known in *Dysochroma* (Figure 230A), *Juanulloa*, *Markea*, *Solandra*, *Solanum*, prehensile petioles are known in a few species of *Solanum* (e.g., *S. pyriformis* Lam.).
4. LEAVES. Alternate, spirally arranged, simple or rarely pinnatifid, coriaceous to membranaceous, commonly short-petioled, with gland-less blades and entire margins; stipules absent, but some species of *Solanum* with pseudo stipules (i.e., conspicuous prophylls).

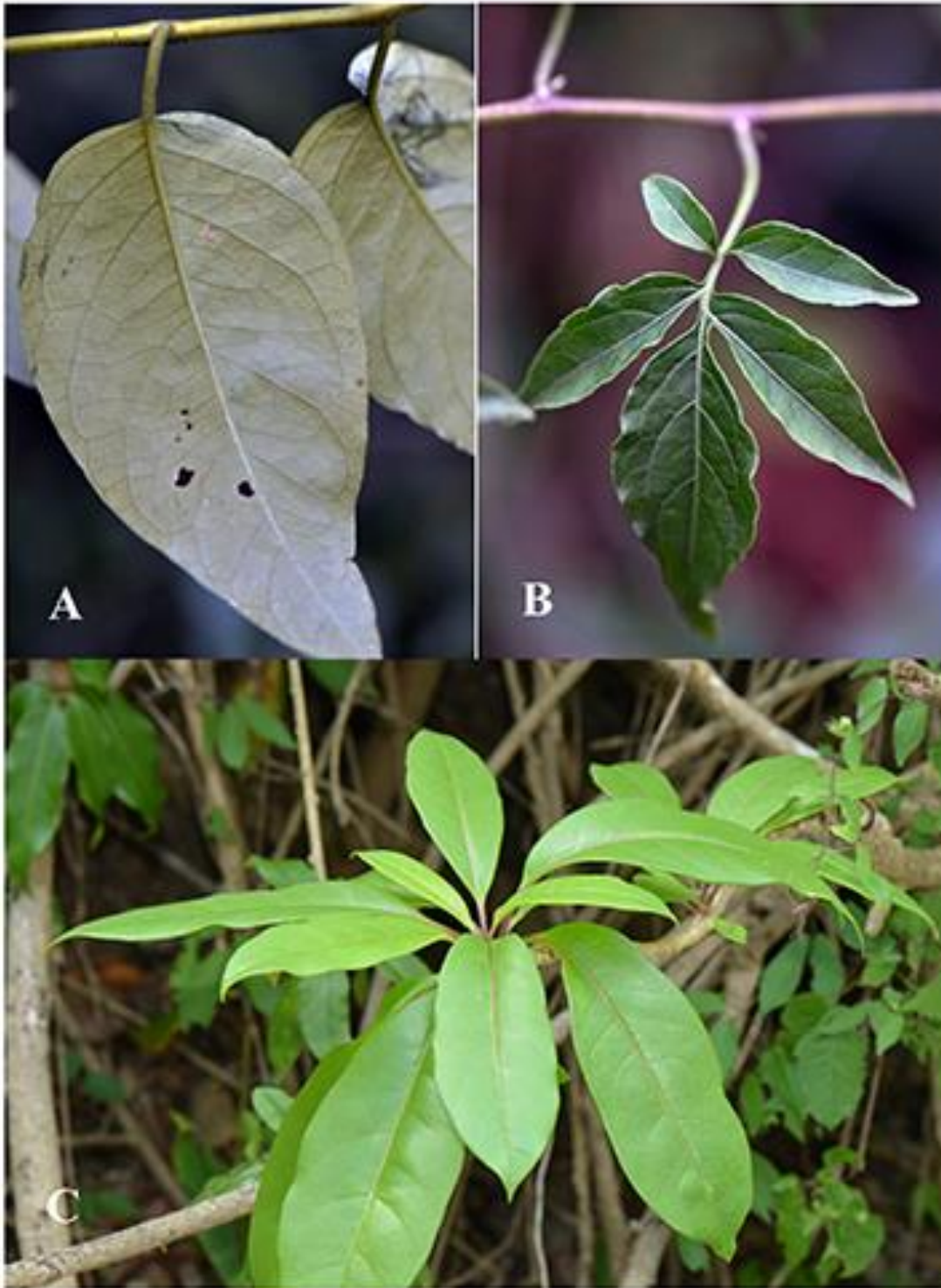


**Figure 229.** Cross sections of stems in Solanaceae. **A.** *Dyssochroma viridiflorum*, with non-cylindrical, unidirectional growth, medulla is in upper left corner. **B.** *Lycianthes* sp. with slightly non-cylindrical stem with regular anatomy and large vessels. **C.** *Solandra boliviana*, with regular anatomy and inconspicuous vessels. **D.** *Solanum* sp., with regular anatomy and wide vessels. **E.** *Solanum glaucescens*, with regular anatomy, inconspicuous vessels and numerous narrow rays. **F.** *Solanum* sp., with young, trigonous stem with regular anatomy and large vessels. Photos by P. Acevedo.

5. INFLORESCENCE. Terminal to lateral sympodial, few- to many-flowered, erect to pendent cymes, or flowers sometimes solitary and axillary.
6. PEDICELS. Of variable lengths but usually short.
7. FLOWERS. Bisexual or rarely unisexual, actinomorphic or rarely zygomorphic, commonly 5-merous; calyx synsepalous; corolla sympetalous, rotate, tubular, salverform, urceolate, the lobes commonly plicate, quincuncial or convolute, sometimes longer than the tube, white, yellow, red, orange, purple or blueish ; stamens inserted on the corolla tube, as many as, and alternate to the corolla lobes, the anthers opening by terminal pores or along longitudinal slits; ovary superior, 2-carpellate, placentation axial with few to numerous ovules, the style 1 with bilobed or capitate stigma.
8. FRUIT. Quite variable climbers commonly have fleshy to coriaceous berries, less often capsules (e.g., *Schwenckia*), few- to many-seeded.



**Figure 230.** Climbing mechanisms in Solanaceae. **A.** *Dyssochroma viridiflorum*, a root-climber liana. **B.** *Lycianthes virgata*, a twining vine. **C.** *Lycium americanum*, a scrambling shrub. Photos by P. Acevedo.



**Figure 231.** Leaves in Solanaceae. **A.** *Solanum* sp., leaves simple, widely spaced with sericeous pubescence underneath. **B.** *Solanum seaforthianum*, with pinnatisect leaves. **C.** *Solandra* sp., leaves simple, congested at the end of branches. Photos by P. Acevedo.

## USES

Although Solanaceae is a family with a substantial number of useful species, ranging from production of main crops (e.g., peppers, tomatoes, potatoes, tobacco), source of alkaloids, medicines, and ornamental plants, liana and vines species are of little economic importance except as ornamental, garden plants. *Hawkesiophyton ochraceum* (Cuatrec.) A. Orejuela & C.I. Orozco and *Markea coccinea* Rich. have been used as medicinal plants by local people in the NW Amazon, while species of *Solandra* have psychoactive effects (Orejuela et al 2017).

### Key to the genera of climbing Solanaceae

1. Root-climbing lianas .....2
1. Twining or scrambling lianas or vines .....12
2. Corolla rotate; anthers poricidal.....*Solanum*
2. Corolla tubular, campanulate or funnel-shaped; anthers opening along longitudinal slits.....3
3. Inflorescences with long (15–60 cm), hanging, filiform peduncles .....4
3. Inflorescences sessile, on short peduncles (<5 cm long), or flowers solitary .....7
4. Pedicels much longer than the calyx..... *Trianaea*
4. Pedicels shorter to slightly longer than the calyx .....5
5. Pedicels 5-ribbed..... *Doselia*
5. Pedicels not-ribbed, nearly cylindrical .....6
6. Corolla orange or yellow; anthers basifixed .....*Markea*
6. Corolla green, pink or pink tinged within; anthers dorsifixed .....*Merinthopodium*
7. Ovary 2-carpellate .....8
7. Ovary 4–5-carpellate.....11

8. Calyx orange, yellow, less often greenish or purple; corolla tubular sometimes gibbous, orange or less often yellow or red; anthers dorsifixed .....	<i>Juanulloa</i>
8. Calyx green sometimes purplish tinged; corolla funnel-shaped or campanulate, green, pale green, pale yellow, cream or green-purple; anthers basifixed.....	9
9. Inflorescence axillary, racemiform cymes .....	<i>Hawkesiophyton</i>
9. Inflorescence terminal, congested, few-flowered cymes .....	10
10. Calyx lobes lanceolate, free to the base; corolla lobes entire; filaments glabrous	<i>Dyssochroma</i>
10. Calyx lobes deltoid or circular, free only ½ way; corolla lobes fimbriate; filaments pubescent .....	<i>Schultesianthus</i>
11. Flowers in few-flowered cymes; calyx campanulate, 5-lobed; corolla green with entire lobes; ovary superior, 10-locular .....	<i>Poortmannia</i>
11. Flowers solitary; calyx tubular, irregularly cleft, 3–5-lobed; corolla yellow or cream with maroon lines and fimbriate or laciniate lobes; ovary partly inferior, 4-locular .....	<i>Solantra</i>
12. Anthers opening by terminal pores .....	13
12. Anthers opening by longitudinal slits .....	14
13. Calyx campanulate or crateriform, truncate, with 5 or 10 linear appendages on or near the margin; corolla limb pentagonal.....	<i>Lycianthes</i>
13. Calyx deeply lobed; corolla limb pentagonal with shallow sinuses or deeply lobed ..	<i>Solanum</i>
14. Corolla long-tubular .....	15
14. Corollas rotate, shortly tubular .....	19
15. Fruit capsular .....	16
15. Fruit a berry.....	17



16. Twining vines; corolla tubular to narrowly urceolate; androecium of 2 fertile stamens & 3 staminodes .....*Schwenckia*
16. Scrambling vines; corolla salverform; androecium of 5 fertile stamens .....*Petunia*
17. Calyx campanulate, shallowly lobed; corolla with long spreading lobes.....*Cestrum*
17. Calyx of 5 linear or lanceolate, nearly free lobes .....18
18. Corolla tubular with very short, narrow spreading lobes.....*Salpichroa*
18. Corolla salverform, with pentagonal limb .....*Petunia*
19. Leaves in pairs (geminate), one of them smaller; inflorescence fasciculate.....*Witheringia*
19. Leaves alternate or fasciculate, more or less of equal size; inflorescence not fasciculate.....20
20. Unarmed scrambling herbs; leaves alternate, chartaceous; stamens of equal size ....*Capsicum*
20. Armed, scrambling shrubs (short branches often spiny tipped); leaves fasciculate, fleshy; stamens unequal .....*Lycium*

**CAPSICUM** Linnaeus, Sp. Pl. 188. 1753.

Unarmed, herbs or subshrubs, one species (*C. coccineum* (Rusby) Hunz.) reported as a



*Capsicum coccineum*, photo by Claudio Dal Zovo

scrambling vine reaching 5–6 m long. Branches 5-angled, flexuose due to lateral sympodial inflorescences. Leaves simple, alternate, entire, penninerved, short petioled. Inflorescence of sympodial corymbiform cymes. Flowers actinomorphic, bisexual, 5-merous;

calyx bell-shaped, toothed; corolla yellowish brownish in the lower center, rotate, with spreading lobes; stamens 5, the filaments of equal length, adnate to the base of corolla, the anthers opening by longitudinal slits; ovary 2-carpellate, the placentation basal-axile with numerous ovules. Fruit a fleshy to leathery berry; seeds numerous, lenticular, flattened.

**Distinctive features:** Scrambling suffrutescent vine with flexuose branches; flowers dull yellow with brown; berries subglobose, bright red, spicy hot, ~8 mm diam.

**Distribution:** A neotropical genus of ~40 species, naturally occurring from northern Mexico to northern Argentina including the West Indies; many species cultivated throughout the world for their edible, often pungent pepper fruits. Only one species consistently reported as a climbing shrub or vine, occurring in Peru and Bolivia evergreen forests and thickets; 300–400 m.

**CESTRUM** Linnaeus, Sp. Pl. 191. 1753.

Unarmed, erect shrubs, exceptionally scrambling or twining vines. Stems cylindrical.



*Cestrum scandens*, photo by Don Windsor (STRI).

Leaves simple, entire, short petiolate. Inflorescence terminal on short axillary branches, racemiform or corymbiform thyrses. Flowers actinomorphic, bisexual, (4-)5-merous, fragrant; calyx bell-shaped, shallowly lobed or toothed;

corolla salverform or funnel-shaped, with spreading lobes, commonly cream or light yellow;

stamens 5, included, the filaments of equal length, adnate to the corolla tube, the anthers opening by longitudinal slits; ovary of 2 connate carpels, the placentation axile with few ovules, the style filiform, the stigma nearly capitate. Fruit a fleshy to leathery berry; seeds few, flattened, angular, lenticular.

**Distinctive features:** Scrambling or twining vines with long tubular, salverform, cream or light yellow, fragrant corollas.

**Distribution:** A New World genus of ~228 species, with ~200 species in the Neotropics, naturally distributed from Mexico to southern South America and United States (Florida) to the West Indies. Some widely cultivated through the tropics for their fragrant flowers. Only four species consistently reported as vines (*C. inclusum* Urb., *C. langeanum* D'Arcy, *C. reflexum* Sendtner, and *C. scandens* Vahl); moist evergreen forests; 300–1,250 m.

**DOSELIA** A. Orejuela & Särkinen, PhytoKeys 202: 76. 2022.

Unarmed, epiphytic, root-climbing lianas. Stems cylindrical, with non-glandular pubescence; bark papery, peeling off. Leaves simple, penninerved, entire or undulate at margins, wide-elliptic to obovate, alternate, congested and appearing subopposite at the end of branches; petioles stout, articulate. Inflorescence cymose, axillary, simple or forked, hanging, 1–3-flowered but only one or two flowers opened at the time; peduncle 1–50 cm long; pedicels 5-ribbed, sometimes distally winged. Flowers bisexual, actinomorphic, 5-merous, hanging; calyx cup-shaped, green, light green or purplish tinged usually along veins, of 5, nearly free, triangular to



*Doselia lopezii*, from PlantSystematic.org.

lanceolate, chartaceous sepals; corolla sympetalous, with spiral aestivation, 8.5–15 cm long, infundibuliform, tubular-campanulate or salverform, orange, purple, yellowish green with purplish venation, bicolored with purplish tubes and white lobes, lobes triangular to oblong, spreading to reflexed; stamens 5, equal, alternating with the lobes, included or exerted beyond the tube, filaments free, inserted on lower portion of corolla, usually pubescent at the base, the anthers basifixed, oblong-ellipsoid, dehiscent by longitudinal slits; disc 5-lobed; ovary superior, conical, sessile, bilocular, with

numerous ovules, the style filiform, as long or slightly longer than the stamens, with bilobed stigma. Fruit a conical, chartaceous to coriaceous berry, with numerous, sub-reniform seeds, subtended by the persistent, appressed enveloping sepals.

**Distinctive features:** Root-climbing lianas; inflorescences with long (30–60 cm), hanging, filiform, peduncle. Similar to *Schultesianthus*, *Markea* and *Merinthopodium*, see key for differences.

**Distribution:** Four species in the Andean region of Colombia and northern Ecuador; premontane forests; 500–2,300 m.

**DYSSOCHROMA** Miers, Ann. Mag. Nat. Hist. ser. 2, 4: 250. 1849.

Unarmed, epiphytic shrubs or root-climbing lianas 3–4 m long, with spreading branches



*Dyssochroa viridiflorum*, photo by Leandro Arruda.

and often tuberous roots.

Stems cylindrical or nearly

so; cross section

asymmetrical in *D.*

*viridiflorum* (Sims) Miers

with acentric medulla in

mature stems. Leaves

alternate, congested toward

the end of branches,

coriaceous, simple, with

entire or wavy margins,

sessile to long petioled. Inflorescence axillary, condensed, 1–3-flowered cymes; peduncle very

short; pedicels elongated. Flowers bisexual, pendent, actinomorphic with valvate aestivation,

larger than subtending leaves; calyx of 5 free, fleshy, lanceolate, valvate, equal, erect sepals;

corolla gamopetalous, dull green or green-purple, fleshy, funnel-shaped to campanulate with 5,

equal, short to long, reflexed lobes with valvate or imbricate aestivation; stamens 5, equal,

exserted, filaments adnate at the corolla constriction, enlarge at base, anthers basified, lineate,

dehiscent by longitudinal sutures; nectary disc fleshy, at the base of a superior, 2-locular ovary,

style elongate, included or exserted, stigma bilobed. Fruit a conical berry, lower half covered by

the accrescent calyx.

**Distinctive features:** Root-climbing lianas with large, pendent, green flowers, turning black upon drying.

**Distribution:** A Brazilian endemic genus of three species recorded as sometimes growing as root-climbing lianas, distributed in southeastern Brazil; moist Atlantic Forest; ~1,000 m.

**HAWKESIOPHYTON** Hunziker, Kurtziana 10: 39. 1977.

Unarmed, epiphytic shrubs or root-climbing lianas a few m long, with hanging branches.



*Hawkesiophyton ulei*, photo by Sébastien Sant.

Stems slightly angled, glabrous. Leaves simple, alternate or subopposite, congested at the end of branches, chartaceous to coriaceous, glabrous with entire margins and short to long, stout petioles. Inflorescence axillary racemiform, few-flowered, cymes, hanging, commonly shorter than the

subtending leaves; pedicels stout, longer than the calyx; bracts minute, persistent. Flowers, actinomorphic, 5-merous, hanging; calyx fleshy-coriaceous, 5-angled, green, lobes valvate, nearly free; corolla campanulate, tubular at base, fleshy-coriaceous, yellow-green, sometimes purplish at base, lobes 5, obtuse, spreading; stamens 5, included or partly exserted, filaments shorter than the anthers, inserted on upper portion of the tube, anthers ellipsoid, basifixed, dehiscing by longitudinal slits; nectary disc annular; ovary superior, ovoid, 2-locular with many ovules, style exserted, stigma capitate. Fruit a fleshy berry with a non-accrecent calyx. Seeds, many, flattened.

**Distinctive features:** Root-climbing lianas, inflorescences shorter than subtending leaves, flowers greenish, berries white.

**Distribution:** A neotropical genus of three species, all of which are reported as climbers or lianas, found in Panama, Colombia, Venezuela, Ecuador, Peru, Bolivia, French Guiana, and Brazil (northern and west-central); moist evergreen forest and rainforests; 100–500 m.

**JUANULLOA** Ruiz & Pavón, Prodr. 27. 1794.

Unarmed, epiphytic shrubs or root-climbing lianas 5–30 m long, with hanging branches.



*Juanulloa mexicana*, photo by P. Acevedo.

Stems cylindrical, glabrous or pubescent, reaching 8 cm in diam. at base in *J. parasitica* Ruiz & Pav.

Leaves simple, alternate, coriaceous, and glabrous to tomentose, with entire margins and short petioles.

Inflorescence dichasial or monochasial cymes terminal in short

lateral branches, 3–8-flowered, shorter

than the subtending leaves; peduncles short, pedicels stout, short to long; bracteoles minute.

Flowers bisexual, erect, spreading or less often pendent, actinomorphic, with quincuncial aestivation; calyx gamosepalous, urceolate or tubular, 5-keeled, fleshy coriaceous, orange, or less often yellow, greenish or purplish, lobes 5, equal, deltoid to lanceolate, usually as long as the tube, sometimes free nearly to the base; corolla tubular or gibbous, longer than the calyx, fleshy-coriaceous, orange or less often yellow or red, lobes 5, short, deltoid or obtuse, spreading; stamens 5, equal, included, inserted low in the tube, anthers dorsifixed, elongate, dehiscing by longitudinal slits; nectary disc annular; ovary superior, ovoid, 2-locular with many ovules, the

style included or slightly exerted, almost as long as stigma, small. Fruit an ovoid leathery berry, many-seeded.

**Distinctive features:** Root-climbing lianas, flowers showy, fleshy-coriaceous, calyx urceolate, 5-keeled, commonly orange, corolla tubular, longer than the calyx, orange yellow.

**Distribution:** A neotropical genus of ~ nine species, five of which are reported as climbers or lianas, most diverse in western and central South America (Colombia, Ecuador, Peru, Brazilian Amazon) with one species extending through Central America to southern Mexico; moist, evergreen forest, rainforests or less often seasonal forests; 200–1,500 (–3,800) m.

**LYCIANTHES** (Dunal) Hassler, *Annuaire Conserv. Jard. Bot. Genève* 20: 180. 1917 (nom. cons.).

Unarmed, erect herbs, shrubs, twining or scrambling lianas, 3–10 m long, rarely small trees.



*Lycianthes virgata*, photo by P. Acevedo.

Stems cylindrical, to 2.5 cm in diam.; cross section with regular anatomy.

Leaves alternate, chartaceous, simple, penninerved, with entire margins; petioles short.

Inflorescence short axillary fascicles or flowers

solitary; bracts and bracteoles minute. Flowers 5-merous, ascending or spreading, actinomorphic, bisexual; calyx synsepalous, campanulate or crateriform, truncate, with 5 or 10 linear



appendages on or near the margin; corolla white, lilac, or blueish purple, rotate, pentagonal, each lobe with a thickened medial tissue forming a stellate design; stamens 5, the filaments free, shorter than the anthers, anthers concrescent, opening by terminal pores; ovary superior, 2-locular, with numerous ovules, the style filiform, commonly projecting beyond the anthers, the stigma bilobed. Fruit a globose, or ovoid berry, ~2 cm in diam., bright red, red-orange, less often green or white, many-seeded.

**Distinctive features:** Twining or scrambling lianas with stellate pubescence, calyx with 5 or 10 linear appendages, corolla rotate with a star-shape design, white lilac or blueish purple, berries commonly bright red or orange-red.

**Distribution:** A tropical genus of ~150 species naturally distributed in the Americas and the Indo-Malaysian region, with 111 species in the Neotropics, 37 of which have been reported as climbers; distributed from Mexico to southeastern Brazil, including the West Indies, most diverse from Guatemala to Colombia; in moist to wet forest; 0–1,500 (2,800) m.

**LYCIUM** Linnaeus, Sp. Pl. 191. 1753.

Armed, erect or arched shrubs, rarely scrambling, reaching 4 m long (e.g., *L. americanum* Jacq.); pubescence of simple hairs or glabrous. Stems slender, angled, striate, and with short axillary branches often ending on a sharp spiny tip. Leaves alternate or fasciculate, simple, fleshy, oblanceolate, < 2.5 cm long, with entire margins; petioles short. Flowers axillary, solitary or fascicled at nodes, 5-merous, actinomorphic; calyx campanulate; corolla white with purple marking in the throat, funnel-shaped or campanulate, the tube short (in our species) or elongated, lobes spreading, obtuse and revolute at margins; stamens 5, exserted, the filaments unequal, adnate to the corolla-tube, the anthers opening through longitudinal slits; ovary superior, 2-



*Lycium americanum*, photo by P. Acevedo.

locular, style  
filiform, as long as  
the stamens, stigma  
capitate. Fruit a few-  
to many-seeded,  
globose berry, red to  
blackish at maturity.

**Distinctive features:**

Scrambling,  
profusely branched

shrub with spiny brachyblasts, with alternate or fasciculate small, fleshy oblanceolate leaves, corollas white to light blue.

**Distribution:** A pantropical genus of 103 species extending into subtemperate zones, introduced in temperate areas, with 37 species in the Neotropics of which only *L. americanum* is known to grow as a scrambling shrub, distributed in the West Indies (except Jamaica), Venezuela, Colombia, Ecuador, Peru, Bolivia, Paraguay and north-eastern Argentina; coastal, marshy environments and sandy places; 0–3,000 m.

**MARKEA** Richard, Actes Soc. Hist. Nat. Paris 1: 107. 1792.

Unarmed, epiphytic shrubs or root-climbing lianas 5–10 m long, with hanging branches or rarely herbs. Stems cylindrical, often with hollow medulla. Leaves simple, alternate or clustered at the end of branches, chartaceous, and glabrous to tomentose, with entire margins and short to long petioles. Inflorescence lateral, pendent, corymbiform monochasial or racemiform



*Markea coccinea*, photo by P. Acevedo.

cymes, one to few flowers opened at one time, peduncle short or less often long; pedicels stout, short to long. Flowers bisexual, actinomorphic, 5-merous, with imbricate or cochleate aestivation; calyx urceolate, tubular or campanulate, green with distinctive colored venation, 1–3.5 cm long, the lobes long triangular, free or connate half of their length, membranous to fleshy; corolla orange or light yellow, tubular-campanulate or salverform, 1–10 cm long, the lobes mostly spreading; stamens 5, equal, inserted near the corolla base, included or slightly exserted, the anthers basified, oblong,

opening through longitudinal slits; nectary disc prominent or not; ovary superior, 2-locular with numerous ovules. Fruit a conical to ovoid berry, with numerous flat seeds.

**Distinctive features:** Root-climbing lianas with pendent inflorescences, calyx large with foliaceous sepals; corolla tubular or campanulate, mostly with spreading lobes.

**Distribution:** A north-central South American genus with ~21 species, 10 of which have been consistently reported as climbers; humid or rainforests; 100–2,000 m.

**MERINTHOPODIUM** J. D. Smith, Bot. Gaz. 23: 11. 1897.

Unarmed, terrestrial or epiphytic shrubs, or root-climbing lianas. Stems cylindrical.



*Merinthopodium neuranthum*, photo by P. Acevedo.

Leaves simple, alternate, subopposite or congested at the end of branches; petioles stout. Inflorescence racemose, axillary, hanging, lower portion of axis with numerous scars from fallen flowers, distal portion with 3–8 flowers; peduncle 15–50 cm long; pedicels longer

than the calyx. Flowers bisexual, actinomorphic, 5-merous, with valvate aestivation, hanging; calyx light green, of 5 nearly free, chartaceous sepals; corolla sympetalous, with valvate aestivation, campanulate, green, pink tinged within, pinnately veined from base toward each one of the 5 lobes, lobes short reflexed; stamens 5, alternating with the lobes, filaments free, inserted on lower portion of corolla and as long as the tube, the anthers dorsifixed, exserted beyond the tube, or as long as the tube, ellipsoid, dehiscent by longitudinal slits; disc absent; ovary superior, sessile, bilocular, with numerous ovules, the style filiform, exserted, with bilobed stigma. Fruit an ovoid, fleshy berry, with numerous seeds, subtended by the persistent, spreading sepals.

**Distinctive features:** Root-climbing lianas; inflorescences with long (30–60 cm), hanging, filiform, peduncle; flowers on distal portion of inflorescence.

**Distribution:** A neotropical genus of three species, all of which are reported as sometimes growing as climbers or lianas, distributed from Guatemala, Honduras and Belize, south to Colombia and Venezuela; moist evergreen and rainforests; 100–900 m.

**PETUNIA** A. L. Jussieu, Ann. Mus. Natl. Hist. Nat. 2: 215. 1803 (nom. cons.).

Unarmed, herbs, usually with glandular pubescence, one species (*P. mantiqueirensis* T.



*Petunia mantiqueirensis*, from Hashimoto B-357 (US).

Ando & Hashim.) reported as a scrambling herbaceous vine reaching 2-4 m long, with the following description. Leaves simple, alternate, oblong-lanceolate to oblong, entire, penninerved, petioled. Flowers solitary, axillary, long-peduncled, actinomorphic, bisexual, 5-merous; calyx bell-shaped, with 5 nearly free, oblong sepals; corolla salverform, pale greenish yellow, the tube with purple stripes and reticulation, the limb spreading; stamens 5, included, the filaments of unequal lengths, adnate to the base of corolla, the anthers opening by longitudinal slits; ovary 2-locular, style longer than the stamens,

stigma bilobed. Fruit a globose capsule, mucronate at apex; seeds sub-reniform, minute.

**Distinctive features:** Scrambling herbaceous vines, with branches ascending at an acute angle, flowers solitary, axillary, dull yellow, the tube with conspicuous purple reticulation.

**Distribution:** Seventeen species, naturally occurring from the southern ½ of South America, with one species from Serra da Mantiqueira, Brazil, reported as a scrambling vine; moist forest understory; ~1,460 m.

**POORTMANNIA** Drake, Bull. Soc. Philom. Paris ser. 8, 4: 128. 1892.



*Poortmannia speciosa*, photo by Robin Foster.

Epiphytic shrubs, root-climbing lianas or small trees. Stems cylindrical; bark verrucose. Leaves coriaceous, 10–30 cm long, elliptic, oblong or oblanceolate, entire, abaxially prominently veined; petioles short, stout. Inflorescence axillary, few-flowered cymes; pedicels shorter than the peduncles. Flowers pendent, large, 5-merous, with valvate aestivation; calyx green, purplish tinged, campanulate, 5-keeled, lobes coriaceous, deltoid or lanceolate, free ½ way to near the base; corolla green or greenish, campanulate, 5–15 cm long, fleshy,

lobes obtuse-deltoid, strongly reflexed; stamens slightly exserted, filaments ciliate, enlarged at base, inserted near the base of corolla, connivent around the straight style, anthers oblong, dorsifixed near the base; nectary fleshy; ovary 5-carpellate, 10-locular, stigma clavate, 5-lobed. Fruit a large berry surrounded by the accrescent calyx. Seeds numerous, reniform, elongated.

**Distinctive features:** Root-climbing lianas, distinguished from other climbing Solanaceae by the ventrifixed anthers and the 4- or 5-carpellate gynoecium, very close to *Trianaea* and apparently only distinguished (besides molecular characters) by a different type of pollen (Orejuela et al. 2017).

**Distribution:** A neotropical genus of a single species, *P. speciosa*, which is reported as sometimes growing as a root-climbing liana, distributed in north-western South America (Colombia, Ecuador and N Peru); moist evergreen and montane forests; 1,300–1,900 m.

**Note:** Although most contemporary authors have treated *Poortmannia* as a synonym of *Trianaea*, a recent phylogenetic study by Orejuela et al., (2017) recognizes it as a distinct genus based on DNA sequences and therefore it is recognized in the current treatment.

**SALPICHROA** Miers, London J. Bot. 4: 321. 1845.

Unarmed, shrubs or scrambling vines 2–5 m long. Stems angular or winged in some



*Salpichroa didierana*, photo from S. Knapp.

species, reaching 2 cm in diam. Leaves simple, opposite or alternate, ovate or ovate-cordate; petioles short. Flowers solitary, rarely in pairs, axillary, hanging, bisexual, actinomorphic, 5-merous, with valvate aestivation; calyx of 5, nearly free, linear or lanceolate sepals; corolla sympetalous, long tubular or narrowly funnel shaped, greenish, yellow or brownish yellow, lobes short spreading; stamens 5, filaments free, included or exerted, inserted on upper half of corolla, anthers narrow, dorsifixed, ellipsoid, dehiscent by longitudinal slits; disc prominent, not fused to the ovary; ovary superior, bilocular, with numerous

ovules, the style filiform, included or exerted, stigma subcapitate. Fruit fleshy, scarlet, red, purple or blackish, ellipsoid berries. Seeds numerous, flattened, rugulose.

**Distinctive features:** Scrambling vines, 2–5 m long, flowers solitary, axillary, hanging, corolla greenish yellow or yellowish, tubular to narrowly funnel-shaped, berries ellipsoid, purplish red or black.

**Distribution:** A neotropical genus of 16 species distributed from Venezuela to north-western Argentina and Chile, four species reported as leaning or scrambling vines, these occurring in Venezuela, Colombia, Ecuador and Peru; moist forests; 450–3,950 m.

**SCHULTESIANTHUS** Hunziker, Kurtziana 10: 35. 1977.



Epiphytic shrubs or small trees, sometimes growing as root-climbing lianas, with long,



*Schultesianthus coriaceus*, photo by Ana M. Benavides.

hanging branches.

Leaves

subopposite,

alternate and

congested at the

end of branches,

thick coriaceous,

entire, abaxially

with prominent

venation and

gland-like hairs.

Inflorescence terminal, few-flowered, congested cymes; peduncles short. Flowers erect or spreading with imbricate or cochlear aestivation; calyx tubular-campanulate, coriaceous, lobes free  $\frac{1}{2}$  way, subcircular or deltoid, strongly overlapping, accrescent and woody in fruit; corolla wide funnel-shaped with tubular base, 4–15 cm long, pale green, cream or light yellow, lobes rounded, fimbriate; stamens included or slightly exserted (not beyond the lobes), straight or declinate, filaments inserted on upper part of tube, densely pubescent on lower  $\frac{1}{2}$ , anthers basifixed; ovary superior, 2-locular, style declinate, stigma capitate, bilobed. Fruit green or purplish green, ovoid berry with thick pericarp. Seeds numerous, flattened.

**Distinctive features:** Root-climbing lianas, inflorescences short, congested, corolla greenish to light yellow with fimbriate lobes, berries covered by accrescent woody calyx.

**Distribution:** A neotropical genus of eight species distributed from southern Mexico to northwestern South America, six species reported as climbers or lianas, these found in Mexico, Guatemala, Colombia, Venezuela, Ecuador and Peru; moist evergreen and rainforests; 500–2,500 m.

**SCHWENCKIA** Linnaeus, Gen. Pl. ed. 6, 577 ['567']. 1764.

Erect herbs, shrubs or twining vines 4–5 m long. Leaves alternate, simple, entire, and



*Schwenckia americana*, photo by S. Knapp.

sessile to  
petiolate.  
Inflorescences  
axillary or  
terminal, few-  
flowered racemes  
or panicles.  
Flowers hanging,  
bisexual; calyx 5-  
lobed, these partly

fused to nearly free,

linear or lanceolate; corolla light yellow, light green, sometimes pink tinged, gamopetalous, tubular to narrowly urceolate, actinomorphic or zygomorphic, with valvate-conduplicate aestivation, the lobes 5, tri-lobulate or trifid; androecium of 2 fertile stamens and 3 staminodes, or of 4 fertile stamens, included; nectary invaginate; ovary bilocular, sessile, style filiform, stigma clavate. Fruit a thin-walled capsule, commonly globose. Seeds minute, numerous.

**Distinctive features:** Twining herbaceous vines 4–5 m long, corolla light yellow or yellow with pinkish hue, tubular with 5 lobes that are tri-lobulate or trifid, fruit a small, thin-walled capsule.

**Distribution:** A neotropical genus of ~21 species, distributed from southern Mexico to northeastern Argentina and Cuba, only three species (*S. alvaroana* Benitez, *S. grandiflora* Benth, & *S. volubilis* Benth.) reported as twining vines; lowland evergreen moist forest on terra firme or seasonally flooded; 100–600 m.

**SOLANDRA** Swartz, Kongl. Vetensk. Acad. Nya Handl. 8: 300. 1787 (nom. cons.).

Unarmed, scrambling shrubs or root-climbing lianas, reaching 8–12 m in length; glabrous



*Solandra* sp., photo by P. Acevedo.

or pubescent with simple or branched hairs. Stems cylindrical, with numerous short lateral branches; bark gray, smooth, slightly lenticellate; cross section with regular anatomy with inconspicuous vessels. Leaves alternate or congested at the end of branches,

simple, entire, chartaceous to coriaceous, with entire margins and pinnate venation, blade often discolorous; petioles glabrous, slender, 2–5.5 cm long. Flowers 5-merous, bisexual, solitary at the end of short lateral branches, pedicels glabrous, stout. Calyx cylindrical-tubular, angular and sometimes inflated, irregularly cleft into 3–5 short, equal lobes; corolla infundibuliform or campanulate, 14–23 cm long, greenish white or yellow, with several marron lines inside, with 5

fimbriate or laciniate lobes, more or less revolute, the tubular portion shorter than or as long as the dilated portion; stamens 5, declinate, as long as the corolla, the filaments inserted on the tube, the anthers basifixed, dehiscent by longitudinal slits; ovary partially inferior, 2-carpellate, 4-locular, with numerous ovules, the style filiform, the stigma capitate. Fruit a coriaceous berry, depressed-ovoid, enclosed by the accrescent calyx, split and persistent at the base. Seeds numerous, reniform.

**Distinctive features:** Root-climbing lianas, leaves congested at end of branches, calyx long tubular 3–5 lobed, persistent in fruit and splitting open as fruit ripens, corolla large > 14 cm long light yellow with marron lines and fimbriate lobes.

**Distribution:** A neotropical genus of eight species, five of which are reported as root-climbing lianas, naturally distributed from Mexico to southeastern Brazil, Jamaica, Cuba, and Hispaniola; Some species widely cultivated as garden plants in tropical areas; in lowland moist and seasonally flooded forests; 200–2,000 m.

**SOLANUM** Linnaeus, Sp. Pl. 184. 1753.

Herbs, shrubs, small trees or herbaceous to woody twining, scrambling, root-climbing vines, sometimes with prehensile petioles, often armed with prickles, glabrous or pubescent, the hairs simple or stellate. Leaves simple or compound, entire or lobed. Flowers actinomorphic, 5-merous, bisexual or rarely unisexual, produced in axillary or terminal racemes, or seldom solitary; calyx deeply lobed; corolla usually saucer-shaped, the limb apically 5-angled with



*Solanum rupincola*, photo by Alex Popovkin.

shallow sinuses or with 5 deeply parted lobes; stamens 5, the filaments shorter than the anthers, the anthers yellow, connivent, opening by a terminal pore; ovary of 2 connate carpels, the placentation axile with numerous ovules, the style filiform, deciduous, the stigma bifid. Fruit a fleshy, leathery or woody berry;

seeds numerous, flattened.

**Distinctive features:** Commonly armed, twining or scrambling lianas, stems angular to terete with regular anatomy, leaves alternate, simple or pinnatisect, calyx deeply lobed, corolla rotate, usually deeply lobed, anthers connivent, opening by a terminal pore.

**Distribution:** A cosmopolitan genus of ~1,230 species, with ~925 species in the Neotropics, 91 of which are reported as vines or lianas; found throughout the Neotropics in almost all kinds of environments; 0–4,000 m.

**TRIANAEA** Planchon & Linden in Linden, Cat. Pl. Exot. 717. 1853.

Epiphytic shrubs or root-climbing lianas, exceptionally small trees. Stems cylindrical, flexuose, dark purple when young; bark verrucose when old. Leaves coriaceous, 10–30 cm long, linear to broadly elliptic, entire, abaxially prominently veined; petioles stout. Inflorescence terminal or axillary, pendent, umbelliform cymes or flower sometimes solitary; peduncles and



*Trianaea nobilis*, photo by Adreas Kay.

pedicels long. Flowers pendent, large, 5-merous, with quincuncial or cochlear aestivation; calyx campanulate, somewhat inflated, strongly 5-angled, lobes coriaceous, deltoid, ~ $\frac{1}{2}$  way free; corolla green or greenish with purplish red markings on the throat, campanulate, 5–15 cm long, fleshy, tube short, lobes deltoid, strongly reflexed; stamens exserted, filaments inserted on lower  $\frac{1}{4}$  of tube, strongly geniculate at base, connivent around the straight style, anthers ventrifixed; nectary prominent; ovary 4- or 5-

carpellate, 8–10-locular, stigma capitate to clavate. Fruit a large berry surrounded by the accrescent calyx. Seeds numerous, reniform, elongated.

**Distinctive features:** Root-climbing lianas, distinguished from other climbing Solanaceae by the ventrifixed anthers and the 4- or 5-carpellate gynoeceium.

**Distribution:** A neotropical genus of ~ four species, all of which are reported as sometimes growing as root-climbing lianas, distributed in north-western South America (Colombia, Ecuador and N Peru); moist evergreen and montane forests; 1,300–2,800 m.

**WITHERINGIA** L'Héritier, Sertum Angl. 33. 1789.

Unarmed, erect herbs or shrubs, rarely small trees or scrambling vines; stem fistulose,



*Witheringia coccoloboides*, photo by Franz Xaver.

glabrous or with simple or branched trichomes. Leaves simple, geminate, unequal in size, entire or sinuate, membranaceous, petioles short or long.

Inflorescences axillary, many-flowered fascicles, peduncles commonly short.

Flowers 4–5(6)-merous, with valvate aestivation;

calyx cyathiform, commonly truncate; corolla tubular campanulate or rotate, lobes longer than the short tube, usually with an internal ring of hairs near stamen insertion; stamens equal or nearly so, inserted in upper half of corolla tube; anthers dorsifixed or dorsi-basifixed, dehiscent by longitudinal slits, yellow or purple, commonly with an apiculate connective; nectary annular; ovary 2-locular, with numerous ovules, stigma discoid or subglobose. Fruit a fleshy red or yellow berry, sometimes partly covered by the accrescent calyx. Seeds flattened, reniform or nearly so, numerous.

**Distinctive features:** Leaning or scrambling vines, leaves paired, unequal, inflorescence axillary fascicles, berries bright red or yellow.

**Distribution:** A neotropical genus of ~10 species distributed from southern Mexico to Bolivia, two species are reported as scrambling herbaceous vines, both distributed in the Pacific and Andean regions of Colombia; moist evergreen and montane forests; 0–3,000 m.