

POLYGONACEAE

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A nearly cosmopolitan family of 55 genera and ~1,115 species of herbs, shrubs, trees, and lianas. The 36 species of climbing Polygonaceae in the Neotropics are endemic to this region, representing six genera which are also endemic or predominantly represented in the Neotropics. For the most part, they are found in moist to wet lowland forest with few species occurring in dry forest or open savanna-like formations

Diagnostics: Predominantly scrambling lianas, sometimes with twining branches, some species with tendrils that are derived from secondary axes of the inflorescence; the family in general easily recognized by the presence of an ochrea at the leaf base.

General Characters

1. **STEMS.** Woody with substantial secondary growth, developing cylindrical initially, but in many species becoming flat, bilobed (Figure 206C, D), or asymmetrical (Figure 206E), known to attain up to 20 m in length and up to 12 cm in diam.; cross sections in *Podopterus* have regular vascular anatomy with inconspicuous rays (Figure 206B); *Antigonon* has successive cambia that produce discontinuous concentric rings of xylem and phloem (Figure 206A).
2. **EXUDATES.** No visible exudate in *Coccoloba* and *Muehlenbeckia*, with mucilaginous secretion in *Antigonon* (Figure 206A).
3. **CLIMBING MECHANISMS.** Most genera are scramblers, as is *Coccoloba* in early stages (Figure 207B), but in some species older branches become twiners (Figure 207A). *Antigonon* has axillary tendrils that are bifid at the apex (Figure 208A) or tendrils that correspond to secondary axis of the inflorescence (Figure 208B).

4. LEAVES. Alternate, with a conspicuous ochrea, coriaceous to membranaceous in species of *Muehlenbeckia*, commonly short- to medium-petioled, with gland-less blades and entire or undulate margins.

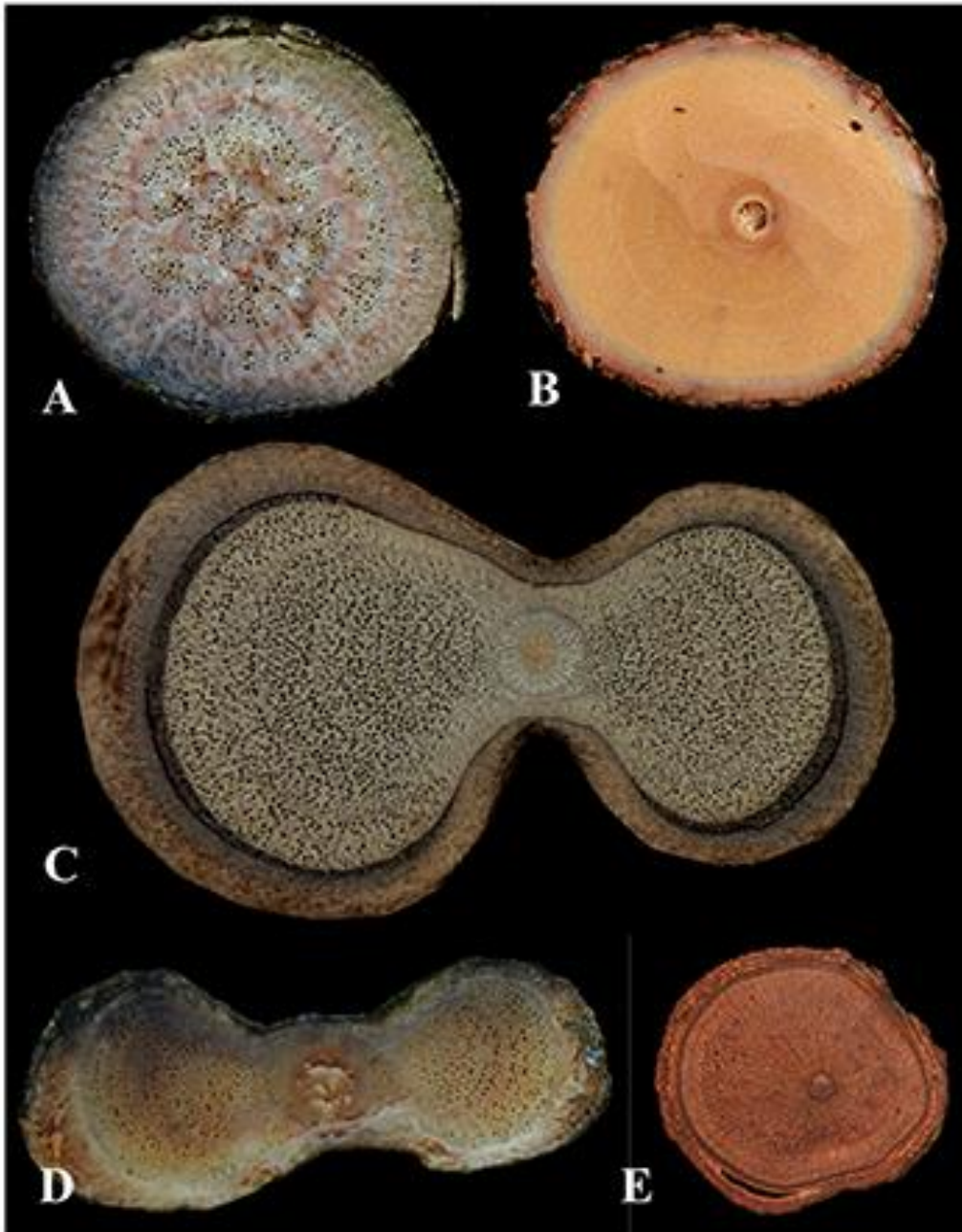


Figure 206. Cross sections of stems in Polygonaceae. **A.** *Antigonon cinerascens*, with successive cambia. **B.** Symmetrical stem in *Podopterus cordifolius*. **C.** Bilateral symmetrical, bilobed stem in *Coccoloba* sp.

D. Bilateral symmetrical, bilobed stem in *Coccoloba* sp. E. Sub-symmetrical stems with regular anatomy and narrow rays. Photos by P. Acevedo.



Figure 207. Climbing mechanisms in *Coccoloba*. **A.** Mature stems twining. **B.** Early stages with erect, scrambling stems. **C.** Mature, bilobed, scrambling stem. Photos by P. Acevedo.

5. INFLORESCENCE. Axillary or terminal, erect to pendent racemes or panicles with flowers in ochreolate fascicles.
6. PEDICELS. Usually short.
7. FLOWERS. Bisexual or unisexual, actinomorphic, not differentiated into calyx and corolla; perianth of 3–6 basally connate tepals; stamens (6–)8(–9) usually in two series, the filaments free or connate at base, the anthers opening along longitudinal slits; ovary superior, 1-locular, of (2–)3(–4) carpels with basal ovule, the styles distinct or basally connate.
8. FRUIT. An achene, usually enclosed by accrescent, fleshy or dry tepals, sometimes winged.

USES

There are a few reports on the utility of Polygonaceae lianas. These are restricted to the use of various species of *Antigonon* as ornamental plants, planted around the tropics for their attractive red or pink flowers.

Key to the genera of climbing Polygonaceae

1. Plants climbing by axillary tendrils, or tendrils part of inflorescence*Antigonon*
1. Plants twiners or scramblers2
2. Outer 3 perianth segments with a dorsal wing that tapers from the apex down onto the pedicel, accrescent, later enclosing the achene that seemingly is in a central position in relation to these wings.*Podopterus*
2. Perianth segments without dorsal wings.....3

3. Perianth 3-merous; fruits covered by accrescent elongated sepals that are connate at the base and project upward as wings*Magoniella*
3. Perianth 5-merous; fruit partially to totally enclosed by a fleshy perianth.....4
4. Plant woody; stems asymmetrical, often flattened and bilobed in cross section; branches lenticellate; flowers functionally unisexual..... *Coccoloba*
4. Plants woody with cylindrical stems, if herbaceous the stems green, flattened like a ribbon; branches not lenticellate; flowers unisexual or bisexual*Muehlenbeckia*

ANTIGONON Endlicher, Gen. 310. 1837.

Herbaceous or woody vines, that climb by means of tendrils which are either axillary or modified secondary inflorescence axes (Figure 208A–C); stems cylindrical up to 15 m long and ~2.5 cm in diam., sometimes producing a mucilaginous exudate (Figure 206A); cross section with successive cambia that produce discontinuous concentric rings of xylem and phloem (Figure 206A). Leaves alternate, simple, entire; petioles elongate; stipules connate around the stem to form a tubular ochrea. Flowers bisexual, actinomorphic, produced in ochreolate fascicles along axillary or terminal racemes or panicles; perianth of 5 free petaloid tepals; stamens 8, the filaments connate at the base, the anthers dehiscent longitudinally; ovary superior, unilocular, with a single ovule, the styles 3, free, the stigmas peltate. Fruit an achene with a single seed, covered by the accrescent tepals.

Distinctive features: Short tubular ochreas; tendrils bifurcate, axillary or part of the inflorescence; flowers reddish bright pink or white; stem cross sections with successive cambia, producing a mucilaginous exudate.

Distribution: A genus of four species, native to Mexico and Central America, some species cultivated and naturalized throughout the Neotropics and Paleotropics. *Antigonon leptopus* Hook. & Arn. has become invasive in the West Indies, and parts of South America, often surviving fires and colonizing extensive areas.



Figure 208. *Antigonon*. **A.** Axillary bifid tendril in *A. leptopus*. **B.** Inflorescences of *A. leptopus*. **C.** Tendrils part of the inflorescence in *A. cinerascens*. Photos by P. Acevedo.

COCCOLOBA P. Browne, Civ. Nat. Hist. Jamaica 209. 1756 (nom. et orth. cons.).

Trees, shrubs or scrambling lianas, often with twining branches when older. Stems subcylindrical (Figure 206E), often flattened or flattened-bilobed (Figure 206C, D), attaining 15 m in length and ~10 cm in width; cross sections often with reddish xylem, dissected by narrow rays. Leaves alternate, simple, entire, obtuse or rounded at base (in lianas); petioles short to long; ocreas tubular, persistent or caducous. Flowers functionally unisexual, actinomorphic, produced in ochreolate fascicles (staminate flowers) and solitary (pistillate flowers) along axillary or terminal racemes or panicles; perianth of 5 free unequal petaloid tepals; stamens 8, the filaments connate at the base, the anthers dehiscent longitudinally; ovary superior, unilocular, with a single ovule, the styles 3, free, the stigmas peltate. Fruit an achene with a single seed, covered by the accrescent, often fleshy tepals.

Distinctive features: Vegetatively similar to *Muehlenbeckia* but distinguished by the characters mentioned in the key.

Distribution: A neotropical genus with 200–400 species (depending on the author) most of which are trees or shrubs, and only 20 species are lianas. The lianas are for the most part distributed in South America, with one or two species extending north into Panama and Costa Rica or some of the Lesser Antilles Islands; in moist to wet lowland forests.

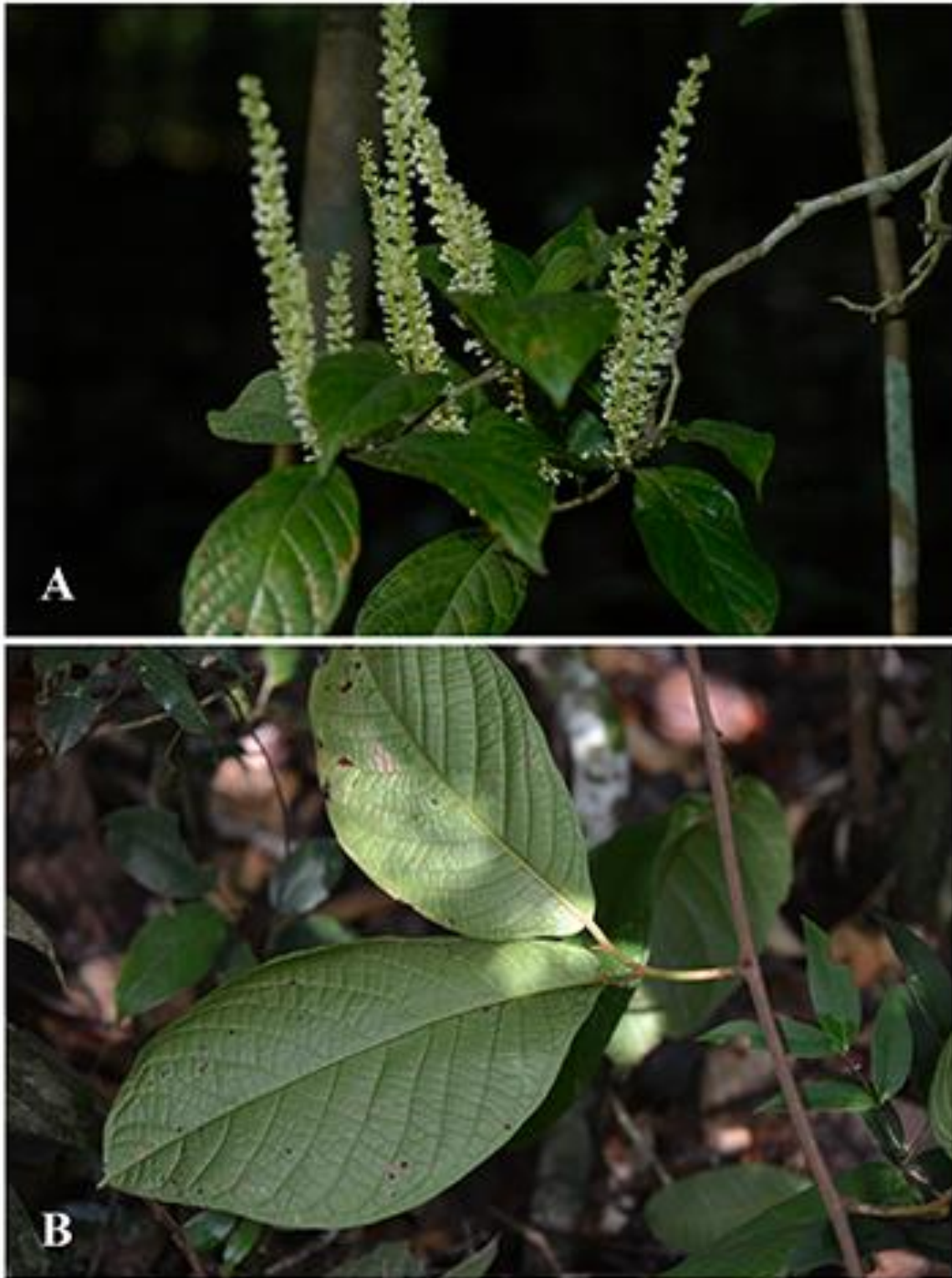
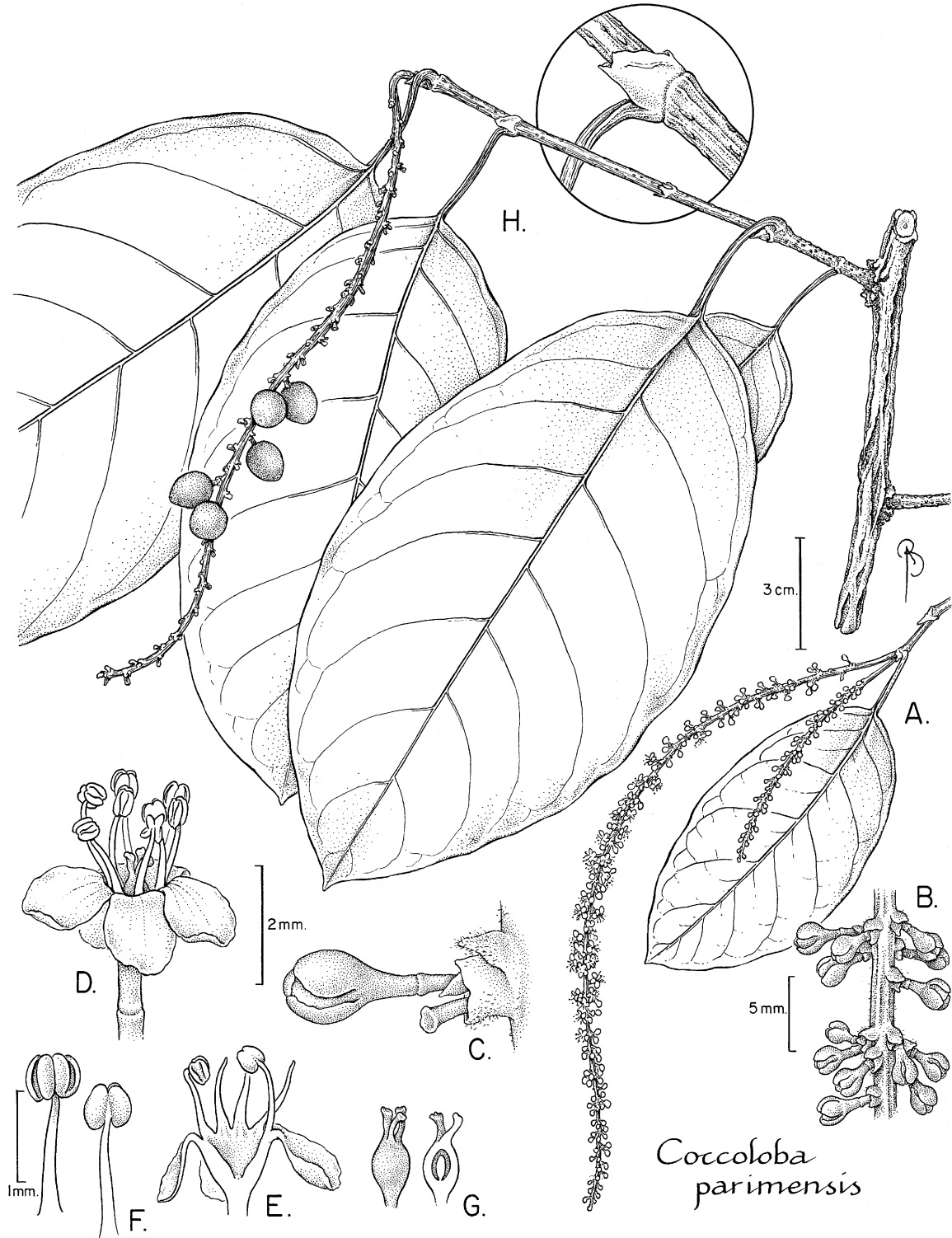


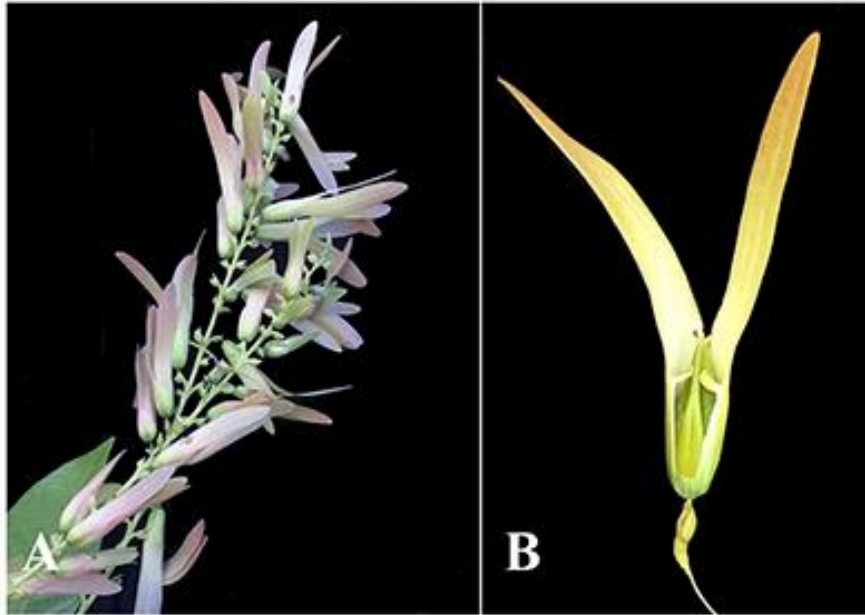
Figure 209. A. Flowering branch of *Cocoloba arborescens*. B. Short plagiotropic branch with few large leaves in *Cocoloba* sp. Photos by P. Acevedo.



Cocoloba parimensis. A. Flowering branch. B. Portion of inflorescence showing ochreate bracts & flower buds. C. Ochreate fascicle of flowers. D. Flower. E. Flower with removed gynoecium, longitudinal section. F. Stamens ventral and dorsal views. G. Gynoecium, lateral view & longitudinal section. H. Fruiting branch and detail of ochrea. Drawing courtesy of Bobbi Angell.

MAGONIELLA Adr. Sánchez, Syst. Bot. 36: 708. 2011.

Dioecious, scrambling liana; stems cylindrical, fistulose, often housing ants, reaching up to 12 m in length. Leaves chartaceous or membranaceous, with more or less undulate margins;



Magoniella obidensis. **A.** Flowering branch. **B.** Flower longitudinally dissected. Photo by L.O. Adão Teixeira.

ochrea tubular, persistent or caducous.

Inflorescences axillary or terminal, simple, racemose, longer than the subtending leaf, with 1–2-flowered monochasia.

Staminate flowers 3-merous; sepals free;

petals free similar to the sepals; stamens in two

whorls, 6 in the outer whorl, inserted on the disc and 3 in the inner whorl, the anthers longitudinally dehiscent; disc small, pubescent; gynoecium rudimentary. Pistillate flowers 3-merous, sepals connate at base into a short tube; petals much shorter than the sepals; staminodes present; disc small; gynoecium tricarpellate, unilocular, with a single basal ovule and 3 styles. Achenes trilobed, enclosed by an accrescent calyx with the 3 sepals projecting upward as wings, articulate at the junction with pedicel.

Distinctive features: Scrambling lianas, with ochreate leaves; fruits enclosed by an apically 3 winged calyx.

Distribution: A South American genus of a single species (*M. obidensis* (Huber) Adr.Sanchez), found in Venezuela, Brazil (Acre, Minas Gerais, Pará, Rio de Janeiro, Rondônia), and Bolivia (Beni); along forest margins, secondary growth, non-flooded forests, and in the moist Atlantic Forest; 100–900 m.

MUEHLENBECKIA Meisner, Pl. Vasc. Gen. 1: 316; 2: 227. 1841 (nom. cons.).

Scrambling or twining lianas up to 10 m long, *M. andina* Brandegee with adventitious



Muehlenbeckia tamnifolia, photo by J. Burke.

roots; branches flexuose in some species. Stems cylindrical, not lenticellate. Leaves alternate, coriaceous, simple, with wavy margins; petioles short; ochrea tubular, membranaceous, caducous, as long as the petiole. Inflorescences axillary or terminal, spicate, shorter than the subtending leaf. Flowers bisexual or unisexual, (plant polygamous monoecious), actinomorphic, pedicellate, produced in ochreolate fascicles; tepals 5, petaloid, connate at base, outer ones slightly larger than the inner ones, white or greenish white. Staminate flowers with 8 stamens, the

filaments distinct, adnate to base of perianth tube; ovary rudimentary. Pistillate flowers with accrescent perianth; stamens sterile; ovary superior, styles 3, connate at base, the stigmas fimbriate. Fruit an achene, completely or partly covered by the fleshy, black or dark brown perianth, unwinged, trigonous to globose.

Distinctive features: Scrambling or twining lianas with ochreate leaves; achenes covered by 5 fleshy, valvate tepals.

Distribution: A genus of 25 species with disjunct distribution, with most species native to Australasia. The genus is represented in the Neotropics by eight native species and one exotic species widely cultivated as ornamental (i.e., *M. platyclados* (F. Muell.) Meisn.); Mexico to Colombian and Venezuela south on the western side of South America to Chile; along forest margins, secondary growth.

PODOPTERUS Bonpland in Humboldt & Bonpland, Pl. Aequin. 2: 89. 1812 ['1809'].

Small trees or scrambling lianas up to 10 m long; branches flexuose. Stems cylindrical,



Podopterus cordifolius. A. Branch with leaves. B. Flowers. Photos: A by P. Acevedo; B by B. Sullender.

fistulose, up to 3 cm in diam.; cross section with regular anatomy, xylem with inconspicuous rays. Leaves alternate, chartaceous, simple, with wavy margins and cordiform base;

petioles short; ochrea tubular, persistent, shorter than the petiole. Inflorescences axillary or terminal on short lateral branches, racemose, usually longer than the subtending leaf. Flowers bisexual, actinomorphic, long-pedicellate, in 1–2-flowered monochasia; tepals 5, petaloid bright

to pale pink, the exterior 3 dorsally winged, the wing formed along the whole extension of tepals, attenuate at base into the pedicel, the 2 inner tepals not winged; stamens 8, the filaments distinct, unequal, ovary superior, styles 3, connate at base, the stigmas capitate. Fruit an achene, completely covered by the 3 outer membranaceous, accrescent, winged tepals.

Distinctive features: Scrambling lianas with fistulose stems and ochreate, leaves cordiform at base; pedicel elongated.

Distribution: A Central American genus of three species, of which *P. cordifolius* Rose & Standl. is the only one that grows as a liana; distributed in southwestern Mexico in deciduous and secondary forests, at low elevations.