

Plate 235

## POLYGALACEAE

Herbs, shrubs, vines or trees. Leaves simple, usually alternate, stipules absent. Flowers superficially resembling pea flowers, bisexual, zygomorphic, each subtended by a bract; calyx zygomorphic, sepals typically 5, the two inner large and petaloid; corolla of 3 or 5 distinct petals; stamens usually 8, joined in a split sheath; ovary superior, 2-to 5-locular. Fruit a capsule, drupe, berry or samara.

Key to the species.

1. Scandent shrub or vine; leaves more than 5 cm wide. . . . . *Monnina denticulata*
1. Erect herb; leaves less than 1 cm wide. . . . . *Polygala paniculata*

***Monnina denticulata* Chod.**

Plate 235-B

Scrambling, vine-like shrub. Leaves alternate, simple, entire, elliptic, glabrous, to 12 × 6 cm. Inflorescence terminal, paniculate. Flowers zygomorphic with blue "wings" and yellow "keel". Fruits green, ovoid. Infrequent, at the forest edge. Endemic to Pacific Ecuador but hardly distinct from forms of Central American *M. sylvatica* Cham. & Schlecht.

***Polygala paniculata* L.**

Plate 235-C

Herb to 1 m tall. Leaves alternate, simple, entire, narrowly elliptic, to 5 × 0.5 cm. Inflorescences lateral, racemose, to 5 cm long. Flowers small, zygomorphic, "wings" pink, "keel" white, or rarely entirely white. Infrequent, in disturbed areas. Pantropical weed.  
Common name: "Cancha Lagna"

## POLYGONACEAE

Herbs, shrubs or trees, stems often with swollen nodes. Leaves alternate, simple, usually with a sheathing stipular growth (ochrea) at the petiole base. Flowers unisexual or bisexual, regular; perianth undifferentiated, 3-to 6-parted, continuing to grow and becoming an enlarged wing in the fruit of some genera; stamens 6-9; ovary superior, 1-loculed. Fruit an achene, sometimes winged.

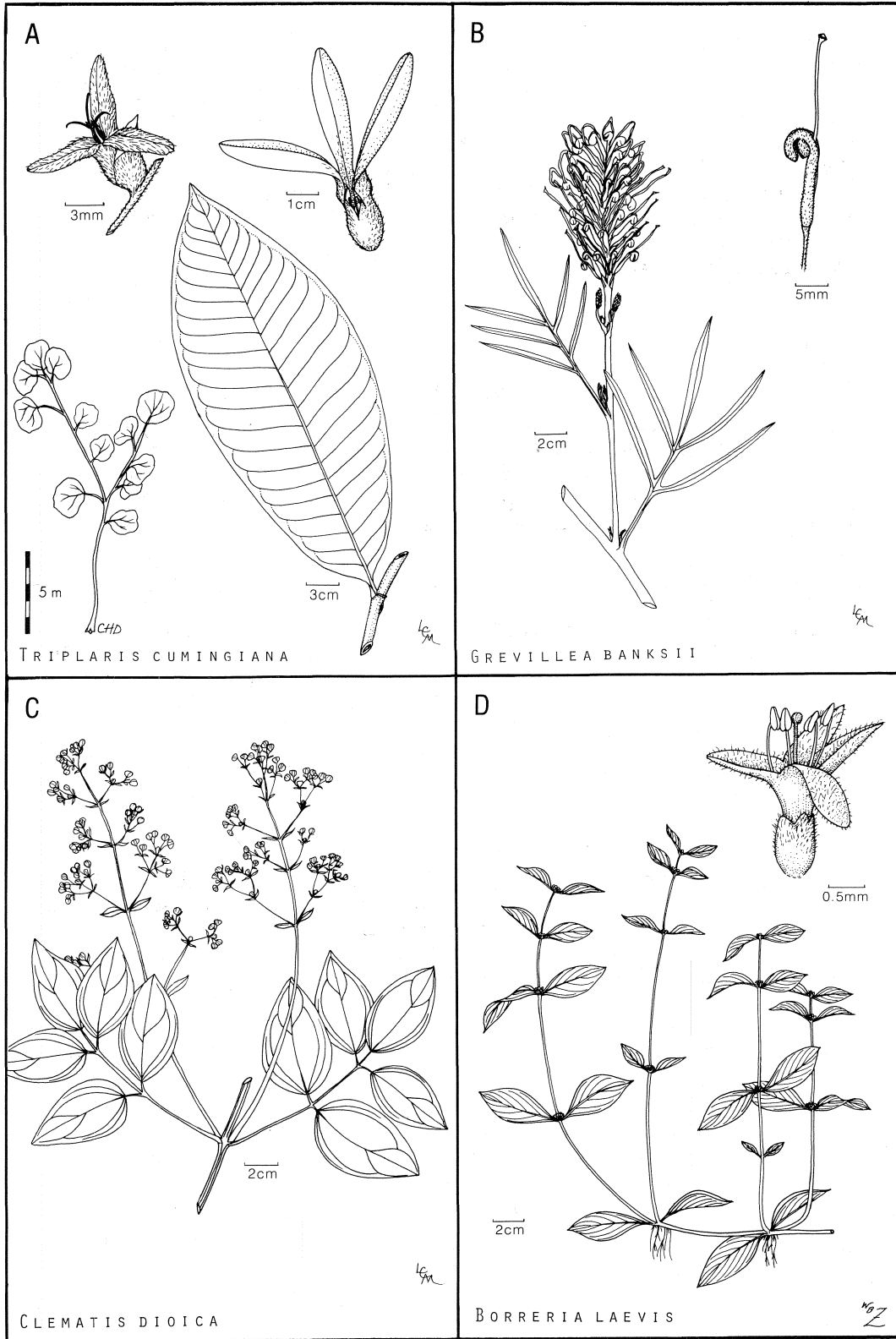
Key to the species.

1. Herb to 1 m; fruits unwinged . . . . . *Polygonum hydropiperoides*
1. Tree 10-30 m; fruits 3-winged . . . . . *Triplaris cumingiana*

***Polygonum hydropiperoides* Michx.**

Plate 235-D

Herb to 1 m tall. Leaves lanceolate, to 15 × 3 cm, the base with a conspicuous papery ochrea surrounding the stem. Inflorescence spicate, the bracts ca. 2 mm long, the tiny flowers white. Fruits small, 3-sided. Common, on rocky beaches along the river and in the esteros. Through most of North and South America.



TRIPLARIS CUMINGIANA

GREVILLEA BANKSII

CLEMATIS DIOICA

BORRERIA LAEVIS

**Triplaris cumingiana** Fish. & Mey.

Plate 236-A

*T. guayaquilensis* Wedd.

Tree 10-30 m tall. Twigs hollow. Leaves elliptic to oblong-elliptic, acute to acuminate, rounded at the base, to 37 × 15 cm, base of the petiole with a conspicuous annular ochrea surrounding the branchlet. Inflorescence densely spicate, the spike ca. 7 mm in diameter, the flowers tiny, cream. Fruits 3-winged, turning bright red, to 7 cm long including the wings. Infrequent, in mature forest. Costa Rica to Ecuador; the larger fruited Ecuadorian plant is usually segregated as *T. guayaquilensis* but fruit size overlaps with that in Panamanian material.

Common name: "Fernánsanchez"+

#### PROTEACEAE

Trees or shrubs. Leaves usually alternate, simple or pinnately compound, estipulate. Inflorescence a bracteate spike, raceme, or head. Flowers perfect or unisexual, regular or bilabiate; tepals 4, petaloid; stamens 4, adnate to the perianth; ovary superior, 1-carpellate, placentation parietal or the ovules pendulous. Fruit a follicle, achene, samara, or drupe.

\***Grevillea banksii** R. Br.

Plate 236-B

Tree to 6 m tall. Leaves pinnatifid to essentially pinnately compound, the ca. 7 segments linear, less than 1 cm wide, densely whitish sericeous beneath. Inflorescence a terminal raceme. Flowers bright red, rusty pubescent, ca. 1.5 cm long excluding the long-exserted style. Cultivated around homesites. Native to Australia, sporadically cultivated in the neotropics.

#### RANUNCULACEAE

Herbs or vines. Leaves opposite, usually compound and without stipules. Flowers perfect, monoecious or dioecious, regular; sepals 3-15; separate; petals as many as sepals or absent and the inner sepals petal-like; stamens numerous, spirally arranged; carpels 1-to-many, separate, 1-locular, superior. Fruit an achene, follicle, or rarely a berry.

**Clematis dioica** L.

Plate 236-C

Usually dioecious, subwoody vine. Leaves pinnately compound, 5-foliolate, opposite, the leaflets ovate, acute to acuminate, rounded at the base, palmately 3-to 5-veined, glabrescent, to 9 × 6 cm. Inflorescence cymose-paniculate. Sepals 4, petaloid, ca. 1 cm long; petals absent; carpels of female flowers numerous, pubescent, the plumose styles to 1 cm long. Achenes 2.5-4 mm long, each with a conspicuous elongate plumose style. Infrequent, at forest edge. Mexico and the West Indies to temperate South America.

Common name: "Barba de Viejo"

## RUBIACEAE

Herbs, vines, shrubs or trees. Leaves opposite or whorled, simple, usually entire; stipules well-developed or reduced to a ridge. Flowers bisexual, usually regular; calyx 4-to 5-lobed; corolla tubular, 4-to 5-lobed; stamens as many as corolla lobes and alternate with them, borne on the corolla tube; ovary inferior, usually 2-loculed with axile placentation, usually multiovulate. Fruit a capsule or berry.

Key to the species.

1. Low herbs; leaves less than 7 cm long.
  2. Leaves acute at the base; flowers solitary or in sessile axillary clusters.
    3. Flowers one or two per node, the pedicel 1-1.5 cm long; leaves linear. . . . . *Oldenlandia lancifolia*
    3. Flowers in sessile axillary clusters; leaves oblanceolate to elliptic.
      4. Leaves to 1 cm wide, mostly sessile . . . . . *Borreria ocymoides*
      4. Leaves to 3 cm wide, distinctly petiolate. . . . . *Borreria laevis*
  2. Leaves deeply cordate; flowers few on a pedunculate inflorescence . . . . . *Geophila herbacea*
1. Trees, vines or shrubs (sometimes only suffrutescent); most leaves more than 7 cm long.
  5. Vines; stems pilose; flowers in sessile axillary clusters. . . . . *Sabicea villosa*
  5. Trees or shrubs (rarely scandent); stems mostly glabrous to puberulous (pilose in *Psychotria santa-rosae*).
    6. Flowers white, in sessile axillary clusters; cultivated . . . . . *Coffea arabica*
    6. Inflorescence pedunculate or the flowers pedicellate or both; native or the flowers red.
      7. Calyx lobes narrow and foliaceous, 1-2 cm long; plant scandent and with scattered spines . . . . . *Randia carlosiana*
      7. Calyx lobes not foliaceous, less than 1 cm long; plant erect, without spines.
        8. Corolla bright red, corolla tube very narrow, 1 mm wide and 3.5-4 cm long; leaves sessile and ovate, mostly less than 8 cm long; cultivated. . . . . *Ixora coccinea*
        8. Corolla color various but not bright red (sometimes dark red), much shorter or the tube much wider; leaves not as above; native.
          9. Leaves more than 15 cm wide; corolla 3-7 cm long.
            10. Inflorescence terminal; calyx (including ovary) ca. 1 cm long . . . . . *Ladenbergia pavonii*
            10. Inflorescence axillary; calyx (including ovary) 2-4 cm long.
              11. Leaves glabrous beneath; calyx 4 cm long; unbranched tree . . . . . *Pentagonia grandiflora*
              11. Leaves puberulous beneath; calyx 2 cm long; spreading tree . . . . . *Pentagonia macrophylla*
      9. Leaves less than 15 cm wide; corolla less than 4 cm long.

12. Inflorescence axillary and subfasciculate or cauliflorous; subshrubs less than 2 m tall.
13. Inflorescences in the axils of existing leaves, congested, the flowers more or less fasciculate; leaves elliptic, less than 5 cm wide. . . . .  
 . . . . . *Hoffmannia woodsonii*
13. Inflorescences borne below leaves, open, long-pedunculate; leaves obovate, more than 5 cm wide.
14. Leaf sessile, the base auriculate. . . . . *Hoffmannia subauriculata*
14. Leaf long-petiolate; petiole winged only in the upper third. . . . .  
 . . . . . *Hoffmannia tenuis*
12. Inflorescence a panicle or elongate raceme, nearly always terminal, if axillary with an elongate peduncle; shrubs or trees.
15. Corolla yellow or yellowish-orange; inflorescence axis red-orange or yellow.
16. Corolla 2.5-4 cm long.
17. Corolla tubular, the lobes narrow, ca. 2 mm wide. . . . .  
 . . . . . *Palicourea chimboracensis*
17. Corolla tubular-campanulate above a narrow base, the lobes round, ca. 4-5 mm wide. . . . . *Hamelia macrantha*
16. Corolla less than 2 cm long.
18. Fruits cylindrical, surmounted by the 1 mm long calyx lobes; calyx (in flower, including ovary) 2 mm long with 5 narrow conspicuous lobes. . . . . *Hamelia axillaris*
18. Fruits subglobose, without calyx lobes; calyx (including ovary) ca. 1 mm long, obtusely and shallowly 5-dentate.
19. Inflorescence congested, wider than long; petioles 0.5 cm long. . . . . *Palicourea lugubris*
19. Inflorescence open, broadly paniculate; petioles more than 1 cm long. . . . . *Palicourea guianensis*
15. Flowers white or light purple; inflorescence axis greenish or greenish-purple.
20. Flowers usually light purple, the corolla lobes 10 mm long and 4 mm wide; fruits more than 0.5 cm in diameter. . . . .  
 . . . . . *Cephaelis gentryi*
20. Flowers white, the corolla lobes less than 4 mm long and 2.5 mm wide; fruits less than 0.5 cm in diameter.
21. Inflorescence narrow and elongate, many times longer than broad, spicate or subracemose and less than 3 cm wide (1 cm wide excluding the corollas).
22. Inflorescence an almost spicate raceme 10-40 cm long; corolla white, the tube more than 1 cm long.
23. Leaves ovate, subsessile; inflorescence to 40 cm long. . . . . *Gonzalagunia sessilifolia*
23. Leaves elliptic, the petiole 1 cm long; inflorescence to 30 cm long. . . . . *Gonzalagunia dodsonii*
22. Inflorescence a racemose panicle less than 12 cm long; flowers greenish, less than 3 mm long. . . . .  
 . . . . . *Psychotria stenostachya*
21. Inflorescence openly paniculate or congested, not elongate.
24. Inflorescence subtended by reddish linear-lanceolate bracts ca. 1 cm long. . . . . *Psychotria officinalis*
24. Inflorescence bracts lacking or ovate and less than 5 mm long.

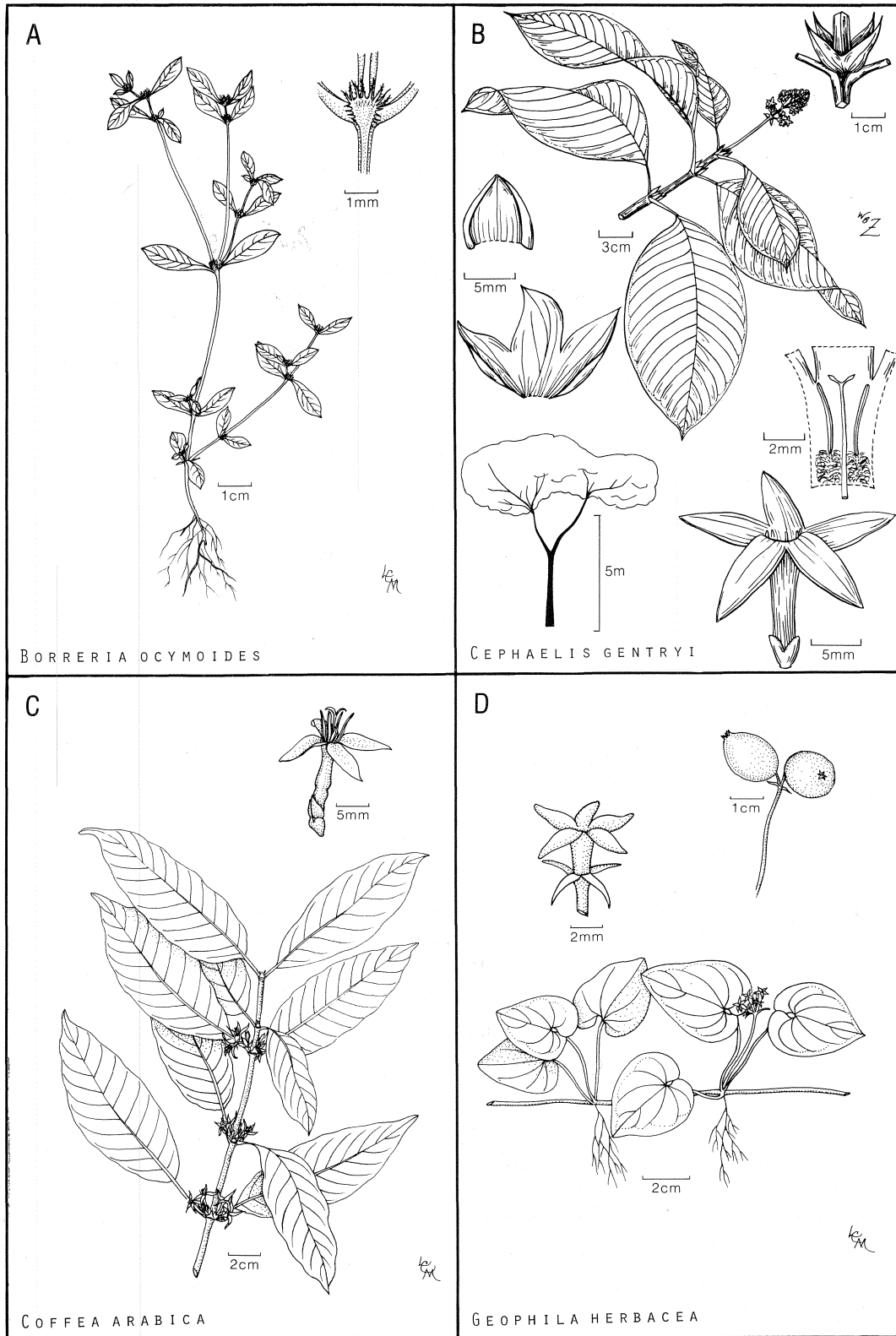


Plate 237

25. Inflorescence very dense and congested, with numerous clustered foliaceous bracts; leaves purple beneath; stem pilose . . . . . *Psychotria santa-rosae*
25. Inflorescence openly paniculate; leaves green; stem glabrous or puberulous.
26. Stipules mostly more than 2 cm long; leaves strongly puberulous . . . . . *Psychotria micrantha*
26. Stipules less than 1 cm long; leaves glabrous or slightly puberulous beneath.
27. Leaves more than 15 cm long and 6 cm wide; fruits white . . . . . *Psychotria macrophylla*
27. Leaves less than 17 cm long and 6 cm wide; fruits not white.
28. Flowers sessile in bracteate clusters at the ends of the inflorescence branches . . . . . *Psychotria caerulea*
28. Flowers pedicellate, not in bracteate clusters . . . . . *Psychotria alba*

***Borreria laevis* (Lam.) Griseb.**

Plate 236-D

Low, sprawling herb. Leaves ovate-elliptic, acute at the base and the apex, to 7 × 3 cm. Inflorescence a sessile axillary fascicle. Flowers minute, ca. 1 mm long; corolla white. Common, in disturbed areas. Most of tropical America.

***Borreria ocymoides* (Burm.) DC.**

Plate 237-A

Low, sprawling herb. Leaves narrowly elliptic, acute to obtuse at the base and the apex, to 2.5 × 1.1 cm. Inflorescence a sessile axillary fascicle. Flowers minute; corolla white. Common, in mowed lawn and on rocky beaches along the river. Pantropical weed.

***Cephaelis gentryi* Dwyer**

Plate 237-B

Understory tree to 8 m tall. Leaves broadly elliptic, obtuse to abruptly short-acuminate, rounded at the base, to 28 × 15 cm. Stipules ca. 1.5 cm long, narrowly ovate, rather irregular-margined. Inflorescence a terminal panicle, the lateral branches with bracteate terminal clusters of several flowers. Flowers with the calyx cupular, 5-dentate, ca. 2 mm long; corolla light purple or white with a yellow center, the tube 1 cm long, the narrow lobes ca. 1 cm long. Infrequent, in mature forest. Known only from Western Ecuador.

**\**Coffea arabica* L.**

Plate 237-C

Tree to 3 m tall. Leaves elliptic, acute to acuminate, acute at the base, to 11 × 5.5 cm. Inflorescence axillary, fasciculate, the flowers sessile. Flowers white, ca. 1.2 cm long. Fruit a berry, ca. 1 cm long, turning red. Cultivated around homesites. Native to tropical Africa; widely cultivated.  
Common name: "Café"+



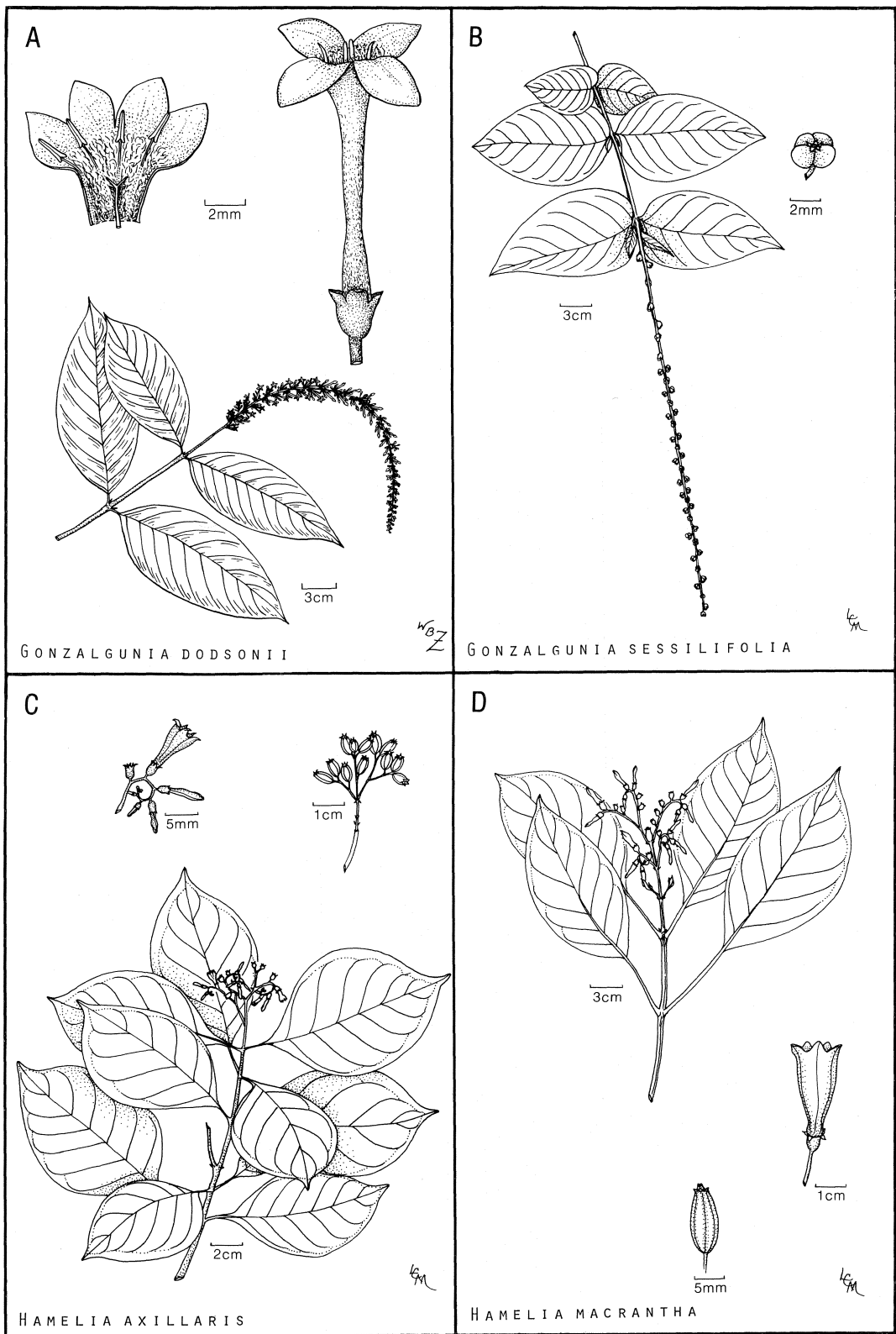


Plate 238

***Geophila herbacea* (Jacq.) K. Schum.**

Plate 237-D

Tiny, short-stemmed, rosulate herb. Leaves broadly ovate to subrotund, rounded at the apex, deeply cordate at the base, to 6 × 5 cm. Inflorescence on a peduncle to 10 cm long, few-flowered. Flowers tubular, white. Fruit a globose berry, turning black, to 1.5 cm in diameter. Uncommon, in mature forest. Widespread in tropical America from southern Mexico to Amazonia.

***Gonzalagunia dodsonii* Dwyer**

Plate 238-A

Tree to 5 m tall. Leaves elliptic, acuminate, cuneate at the base, to 15 × 6 cm; petiole ca. 1 cm long. Inflorescence a spike-like raceme to 30 cm long. Flowers with tubular 4-lobed white corollas ca. 12 mm long. Fruits globose, white. Uncommon, in mature forest. Known only from Río Palenque and from just across the river.

***Gonzalagunia sessilifolia* Standl.**

Plate 238-B

Shrub to 1.5 m tall. Leaves ovate, subsessile, acute, rounded to truncate at the base, to 13 × 7.5 cm. Inflorescence a spike-like raceme to 40 or more cm long. Flowers with tubular 5-lobed white corollas. Fruits tetragonal-globose, white. Local and uncommon, on steep slopes in mature forest. Endemic to Pacific Ecuador and adjacent Colombia.

***Hamelia axillaris* Sw.**

Plate 238-C

Understory shrub or subshrub ca. 1 m tall. Leaves elliptic to ovate, acuminate at the apex, attenuate at the base, to 12 × 6 cm. Inflorescence a corymbose terminal panicle. Flowers with the calyx 1-2 mm long, with 5 narrow 0.5 mm long lobes; corolla 5-lobed, yellow, ca. 3 mm long. Fruit cylindrical 5-7 mm long, surmounted by the 5 persistent calyx teeth. Infrequent, in mature forest. Southern Mexico and the West Indies south to Bolivia.

***Hamelia macrantha* Little**

Plate 238-D

Shrubby tree to 5 m tall. Leaves elliptic to ovate-elliptic, acuminate, acute at the base, to 30 × 12 cm. Inflorescence a terminal panicle. Flowers with the calyx ca. 3 mm long, the apex patelliform with individual lobes hardly evident; corolla yellow, tubular-campanulate, ca. 3-3.5 cm long, the lobes broad. Fruit cylindrical, 8-10 mm long, the calyx forming a subapical annulus. Common, in mature forest. Costa Rica to Pacific Ecuador.

***Hoffmannia subauriculata* Standl.**

Plate 239-A

Subshrub 0.5-1 m tall. Leaves obovate, acuminate, long-tapered to the base, subsessile, to 25 × 9 cm. Inflorescences along the stem below the leaves, fascicles of 2-5 cm long racemes at each node, the few flowers clustered toward the tips. Fruit a red berry. Uncommon, in mature forest. Previously known only from Panama and Costa Rica.

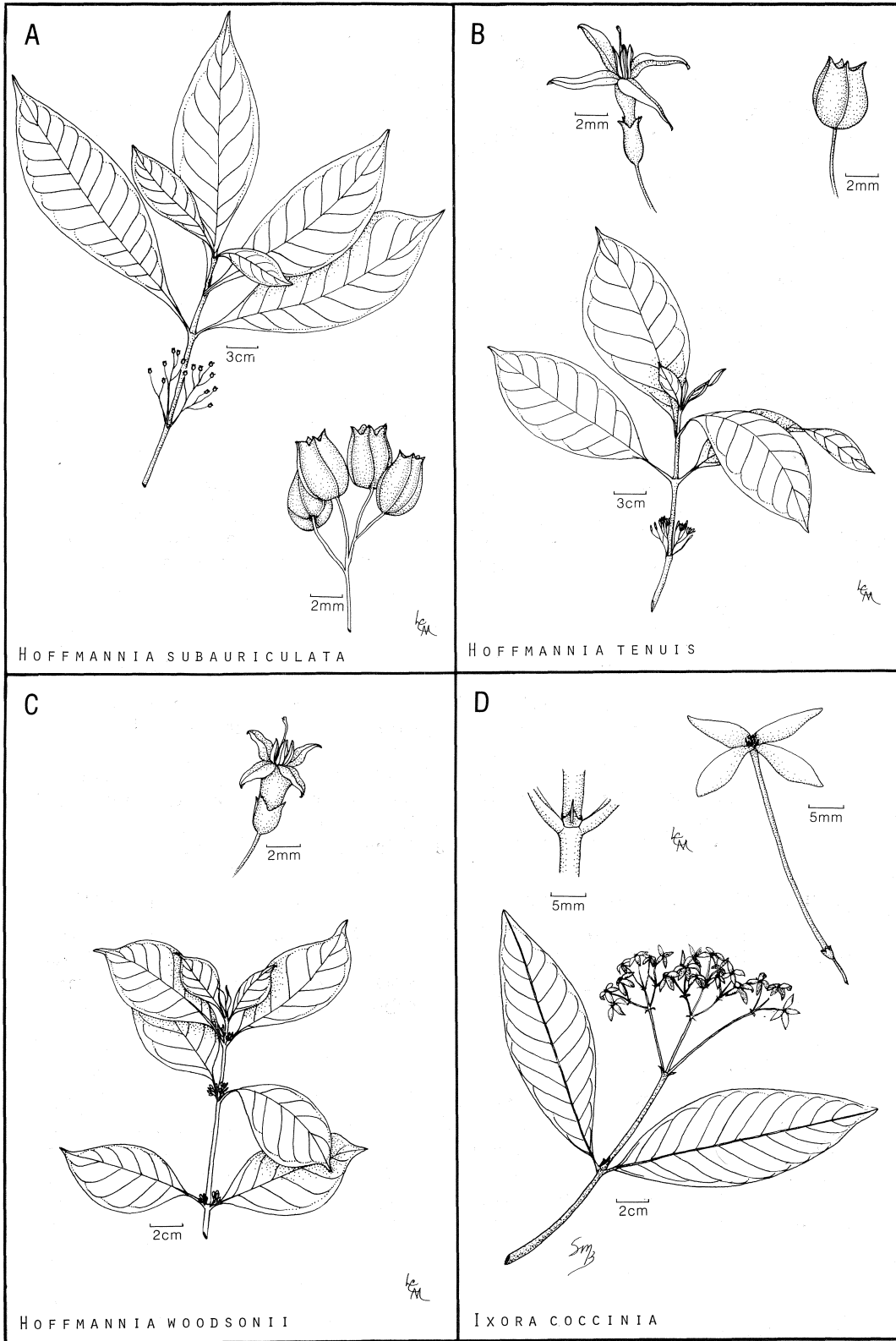


Plate 239

**Hoffmannia tenuis** Standl.

Plate 239-B

Shrub to 1.5 m tall. Leaves narrowly obovate, acuminate, attenuate to the base, to 25 × 8 cm. Inflorescence a cluster of few-flowered long-pedunculate racemes, borne along the stem below the leaves. Flowers 4-parted; calyx ca. 2 mm long, dentate; corolla dark red, 6-7 mm long, narrowly lobed to the middle. Fruit red. Infrequent, in mature forest. Costa Rica to Pacific Ecuador.

**Hoffmannia woodsonii** Standl.

Plate 239-C

Subshrub to 2 m tall. Leaves elliptic to obovate, acuminate, attenuate to the base, to 15 × 6 cm. Inflorescence short, axillary, almost fasciculate. Flowers 4-parted; calyx ca. 2 mm long, 4-dentate with reflexed teeth; corolla yellow with a red center, ca. 3 mm long, narrowly lobed to well below the middle. Fruit ovoid, cylindrical, ca. 3 mm long, surmounted by the persistent calyx lobes. Uncommon, in mature forest. Previously known only from Panama and Costa Rica.

**\*Ixora coccinea** L.

Plate 239-D

Shrub 1-2 m tall. Leaves ovate, acute, truncate to cordate at the base, mostly ca. 8 × 4 cm, sessile. Inflorescence terminal, rather congested, corymbose. Flowers bright red; corolla tube less than 1 mm wide and ca. 4 cm long, limb to 2 cm in diameter. Fruit a berry. Cultivated around homesites. Native to tropical Asia.

Common name: "Jazmín"

**Ladenbergia pavonii** (Lamb.) Standl.

Plate 240-A

Canopy tree. Leaves large, elliptic, rounded at the apex, truncate at the base, 30-45 × 20-30 cm, pubescent below. Inflorescence a terminal panicle. Flowers showy; calyx 3 mm long, scarcely lobed; corolla white, tubular, 5-6 cm long without the narrow 1-1.5 cm long lobes; ovary 8 mm long. Fruit elongate, dehiscent. Rare, in mature forest along perimeter road at the end of trail 5. Endemic to Ecuador, mostly at higher altitudes.

Common name: "Cascarillón", "Cascarilla Macho", "Palo Cuchara"

**Oldenlandia lancifolia** (Schumach.) DC.

Plate 240-B

Herb to 40 cm tall. Leaves linear, tapering to the base and the apex, sessile, to 4 × 0.2 cm. Inflorescence of one or two axillary flowers, the pedicels 1-1.5 cm long. Flowers minute, white. Fruits subglobose, 2 mm long, 3 mm in diameter. Rare, on gravel bars in the riverbed. Pantropical weed.

**Palicourea chimboracensis** Standl.

Plate 240-C

Tree to 5 m tall. Leaves obovate-elliptic, obtuse to abruptly short-acuminate, cuneate at the base, to 22 × 8 cm; stipules blunt, irregularly bifid in the middle, ca. 5 mm long. Inflorescence an open terminal panicle, its branches red. Flowers with the calyx 5-6 mm long, 5-lobed; corolla yellow, tubular, 3-4 cm long, the narrow lobes ca. 5 mm long. Infrequent, in mature forest. Endemic to western Ecuador, mostly over 1000 m altitude.

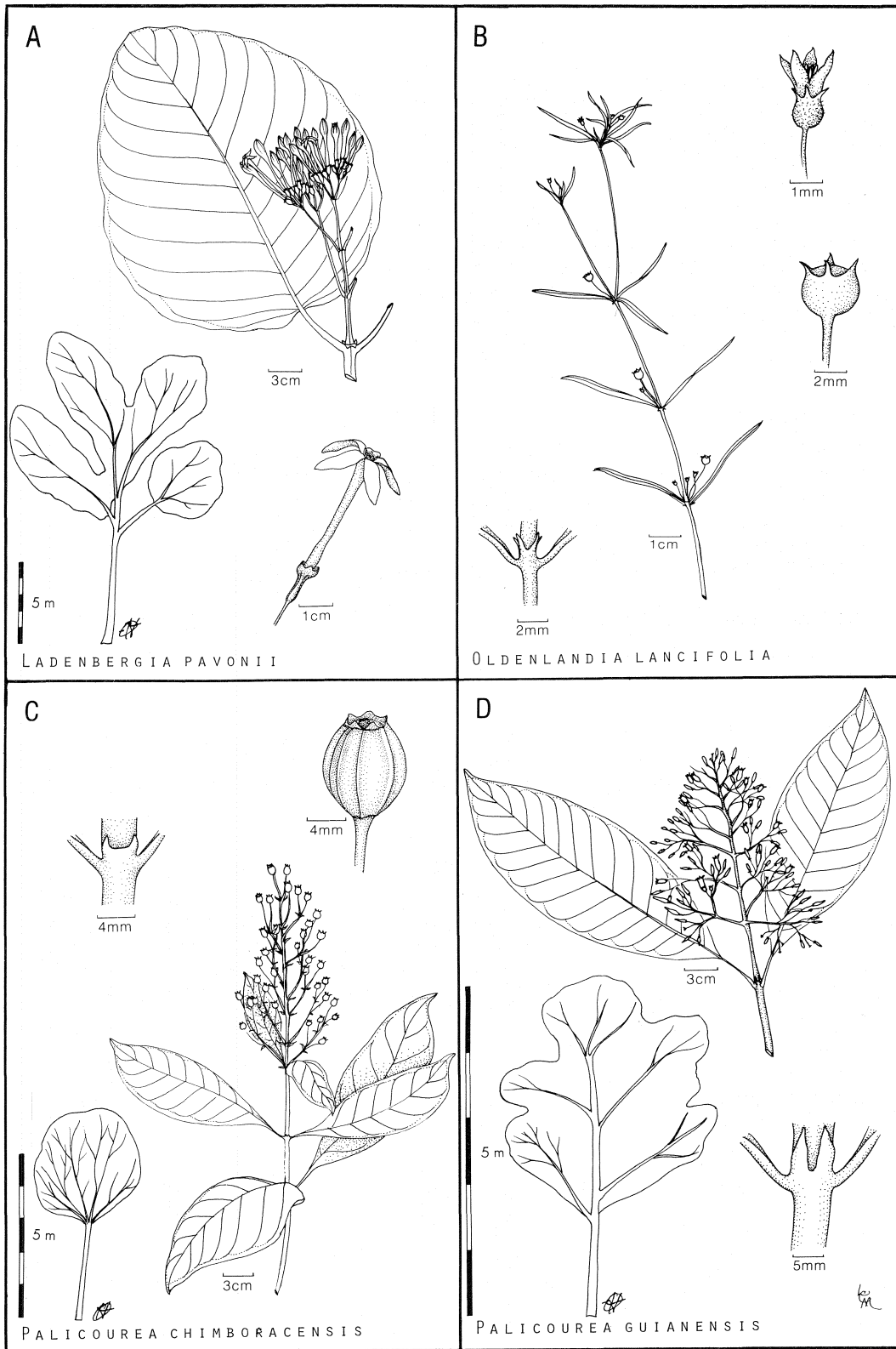


Plate 240

**Palicourea guianensis** Aubl.

Plate 240-D

Tree to 4 m tall. Leaves elliptic, acuminate, acute at the base, to  $34 \times 16$  cm; stipules acute to blunt, ovate, 0.7-1 cm long. Inflorescence terminal, paniculate, many-branched, the branches orange. Flowers with the calyx ca. 1 mm long, patelliform at the apex; corolla yellow, tubular, 1.2-1.3 cm long, the small lobes 1 mm long. Fruit a berry. Uncommon, in mature forest. Mexico to Bolivia.

**Palicourea lugubris** K. Schum. & Krause

Plate 241-A

Shrub to 1.5 m tall. Leaves ovate, acute to acuminate, obtuse to cuneate at the base, to  $19 \times 7$  cm; stipules asymmetrically ovate, 4 per node, acute, to 8 mm long. Inflorescence a contracted, flat-topped panicle, wider than long, its branches red. Flowers with the calyx lobed. Fruit a black berry ca. 5 mm in diameter. Uncommon, along the river bank. Pacific Ecuador and adjacent Colombia.

**Pentagonia grandiflora** Standl.

Plate 241-B

Slender unbranched tree to 10 m tall. Leaves ovate, over 1 m long, more than half as wide, obtuse, truncate at the base, glabrous. Inflorescence a red-bracteate axillary fascicle, the peduncle very short, the bracts ca. 4 cm long. Flowers with tubular, obtusely 5-lobed red calyces to 5 cm long (including the ovary); corolla yellowish white, ca. 3 cm long. Uncommon, in mature forest. Endemic to Pacific Ecuador. Pollinated by hummingbirds.

**Pentagonia macrophylla** Benth.

Plate 241-C

*P. sprucei* Standl.

Tree to 10 m tall, normally branched. Leaves ovate, ca. 1 m long and 30 cm wide, densely pubescent beneath. Inflorescence contracted, axillary, the caducous bracts not evident. Flowers with the green calyx 1.5 cm long; corolla greenish white, tubular, 7 cm long. Uncommon, in mature forest. Previously known from Panama and the Choco. Pollinated by euglossine bees.

**Psychotria alba** R. & P.

Plate 241-D

Shrub ca. 1.5 m tall. Leaves elliptic to obovate, acute, cuneate at the base, to  $16 \times 6$  cm; stipules triangular, acute to acuminate, to 1 cm long, caducous, leaving a prominent interpetiolar ridge. Inflorescence an open terminal panicle. Flowers with the calyx less than 1 mm long; corolla white, ca. 2 mm long but the 1 mm long lobes reflexed. Fruit an ellipsoid berry, prominently 6-10 striate with impressed lines, 4 mm long. Infrequent, in mature forest. Panama to Uruguay.

**Psychotria caerulea** R. & P.

Plate 242-A

Shrub to 3.5 m tall. Leaves narrowly elliptic, acute at the base and the apex, to  $16 \times 5$  cm; stipules truncate; ca. 4 mm long. Inflorescence a terminal panicle, the floriferous portions of the lateral branches congested at the tips, the flower clusters subtended by 2 mm long ovate bracts. Flowers with the calyx ca. 1 mm long; corolla white, ca. 4 mm long. Fruit a berry. Infrequent, in mature forest. Most of tropical America.

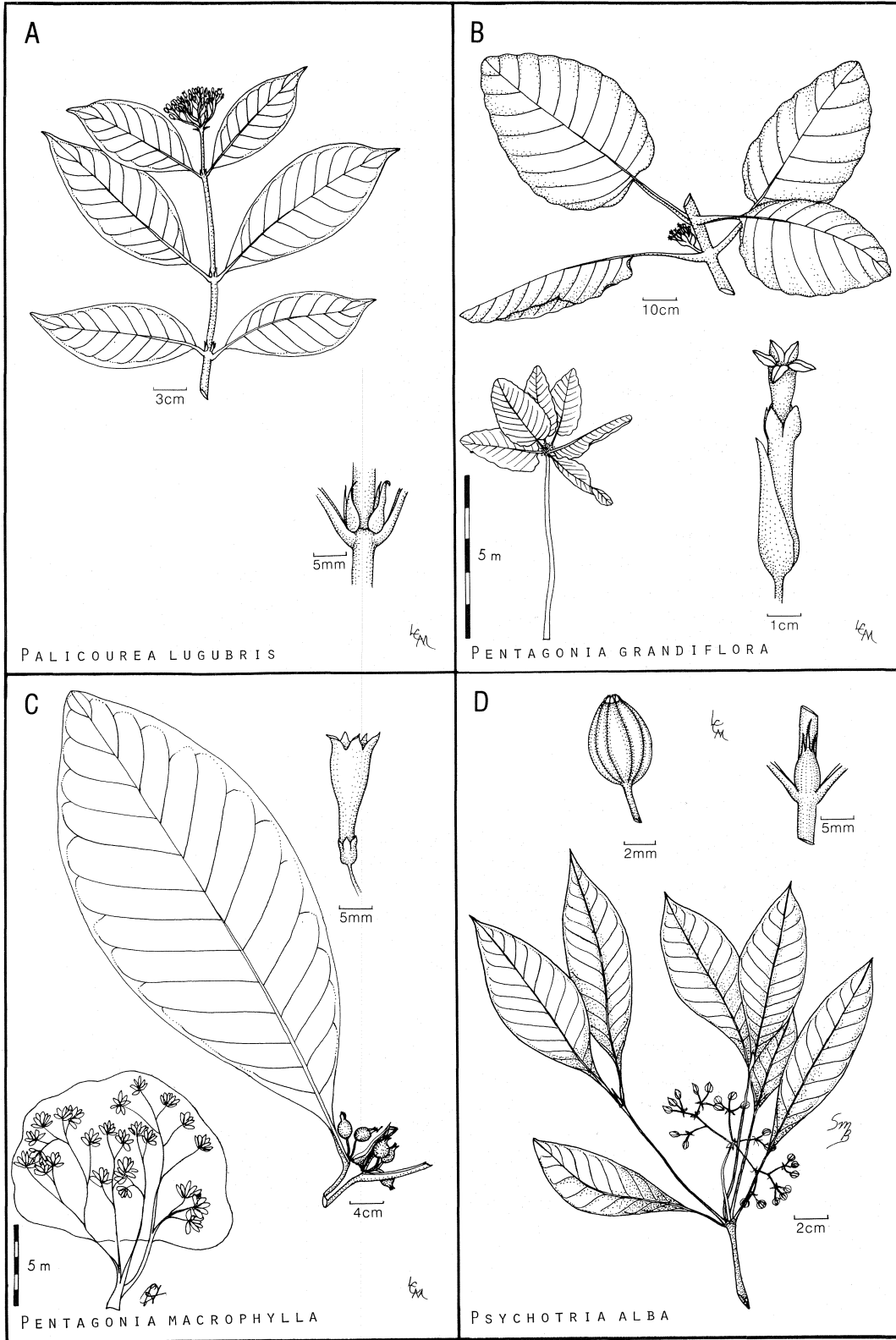


Plate 241

***Psychotria macrophylla* R. & P.**

Plate 242-B

Shrub 1-2 m tall. Leaves obovate to elliptic, acute at the base and the apex, to 30 × 10 cm; stipules triangular, obtuse, less than 5 mm long, early caducous, leaving an interpetiolar line. Inflorescence an axillary panicle, the lateral branches horizontal from the central rachis, the flowers sessile. Flowers with the calyx less than 1 mm long; corolla white, ca. 3 mm long. Fruit a subglobose berry to 6 mm long, white at maturity. Common, in mature forest. Mexico to Bolivia.

***Psychotria micrantha* HBK.**

Plate 242-C

Understory shrub to 2 m tall. Leaves elliptic, acute at the base and the apex, to 32 × 13 cm, rufescent puberulous especially along the main nerves beneath; stipules narrowly triangular, acute to acuminate, usually more than 2 cm long. Inflorescence a terminal panicle. Flowers with the calyx less than 1 mm long; corolla white (yellowish outside), less than 2 mm long. Fruit a berry. Uncommon, in mature forest, mostly along streams. Panama to Venezuela and Peru.

***Psychotria officinalis* L.**

Plate 242-D

Understory shrub to 2 m tall. Leaves ovate, acuminate, acute at the base, to 16 × 7 cm; stipules small, obtuse, very early caducous, leaving a scar. Inflorescence a congested almost capitate terminal panicle subtended by 1-2 cm long, linear red bracts. Flowers tiny, white. Fruit a globose berry, ca. 5 mm in diameter. Uncommon, in mature forest. Mexico to Brazil. The Río Palenque plant has a more reduced inflorescence than most other material of the species.

***Psychotria santa-rosae* Standl.**

Plate 243-A

Shrub 1-2 m tall. Branchlets pilose. Leaves elliptic, acuminate, acute at the base, to 25 × 11 cm, purple beneath, pilose, especially along the main veins; stipules lanceolate, irregularly ended, to 2 cm long. Inflorescence a congested terminal panicle with numerous overlapping foliaceous bracts subtending the flower clusters. Flowers with tiny white corollas. Fruits blue. Infrequent, in mature forest. Panama to Pacific Ecuador.

***Psychotria stenostachya* Standl.**

Plate 243-B

Shrub or small tree 2-3 m tall. Leaves elliptic, acuminate, acute at the base, to 18 × 8 cm; stipules subulate, to 8 mm long. Inflorescence terminal, very narrowly paniculate, almost racemose. Flowers with the calyx ca. 1 mm long, barely 5-denticulate; corolla tubular, white, ca. 4 mm long, the narrow lobes ca. 1 mm long. Fruit a subglobose berry ca. 4 mm in diameter. Infrequent, in mature forest. Amazonian Peru to Colombia, our population represents a transAndean disjunction.



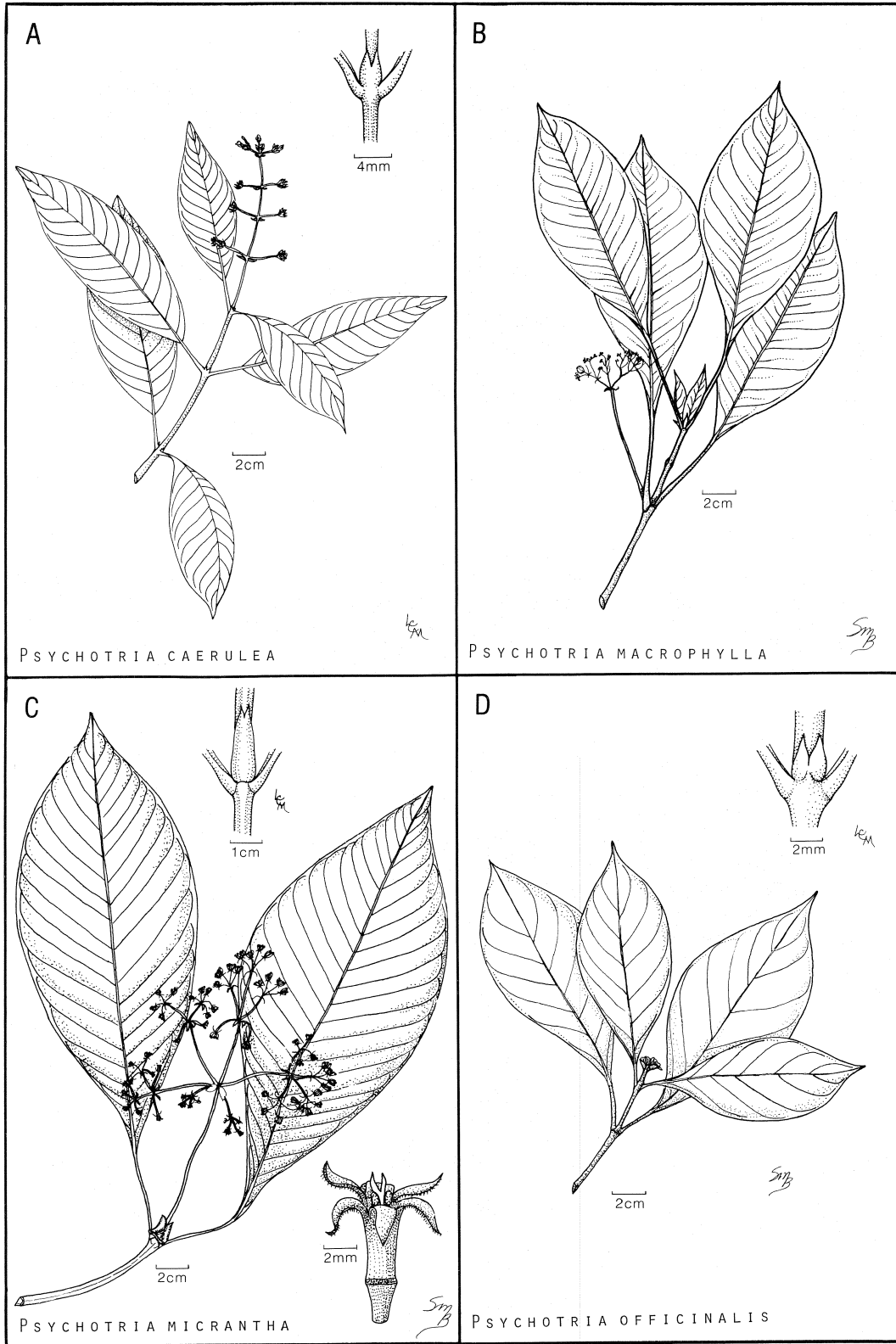


Plate 242

**Randia carlosiana** Krause

Plate 243-C

Scandent shrub, each short lateral branch armed with a single spine. Leaves ovate-elliptic, acuminate, cuneate at the base, Inflorescence of a few flowers, borne at the end of a lateral branch. Flowers with the calyx foliaceous, 5-lobed to near the base, the linear lobes ca. 2 cm long; corolla white with a green center, tubular, 3-3.5 cm long, 5-lobed. Fruit unknown. Rare, in mature forest near the end of trail 2. Endemic to western Ecuador.

**Sabicea villosa** R. & S.

Plate 243-D

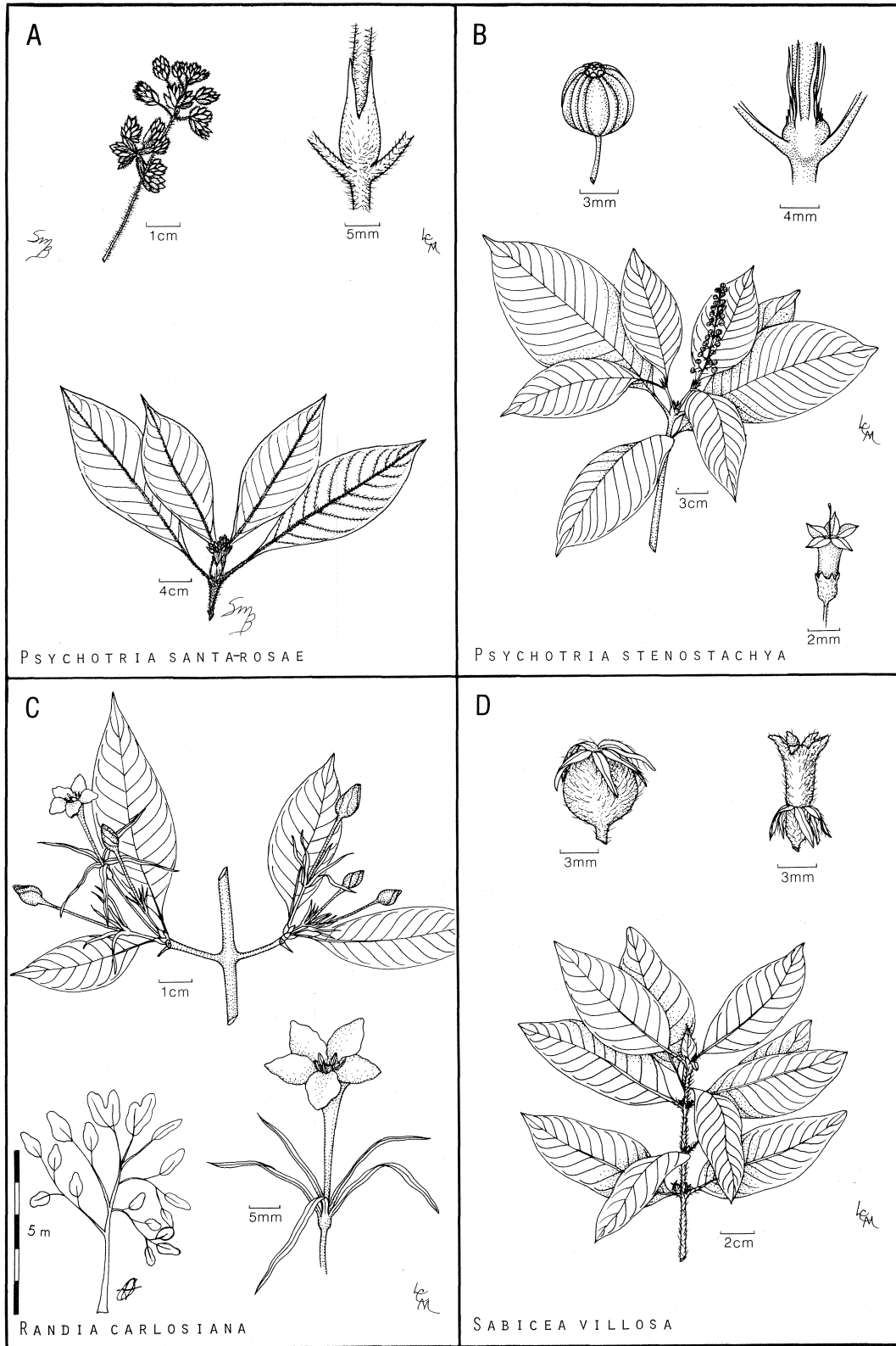
Vine. Branchlets pilose. Leaves elliptic, acute to acuminate, the base cuneate to attenuate, to 13 × 5 cm, pilose beneath with long trichomes. Inflorescence an axillary fascicle of sessile flowers. Flowers with the calyx pilose, dentate, the 5 membranaceous lobes 2-3 mm long; corolla white, tubular with 5 reflexed lobes. Fruit a pilose berry surmounted by the persistent calyx teeth. Uncommon, in disturbed areas. Southern Mexico to Brazil and Peru.

## RUTACEAE

Herbs, shrubs and trees, glandular and strong smelling. Leaves alternate or opposite, with pellucid dots, simple or pinnately or palmately compound, without stipules. Flowers usually bisexual, usually regular; sepals 3-5; petals 3-5, rarely none, usually distinct; disc present between stamens and ovary; stamens 3-10, attached at the base or rim of the disc; ovary superior, 4-to 5-loculed with axile placentation. Fruit usually a capsule or a berry.

Key to the species.

1. Leaves pinnately compound.
  2. Tree to 20 m tall with a spiny trunk; leaves to 75 cm long, leaflets to 15 cm long; native. . . . . *Zanthoxylum tachuelo*
  2. Large shrub to 3 m tall with smooth stems; leaves to 15 cm long, leaflets to 3 cm long; cultivated. . . . . *Murraya paniculata*
1. Leaves simple (by reduction).
  3. Native treelets, the stem normally unbranched; leaves more than 60 cm long; flowers large, the petals more than 6 cm long; fruit dehiscent, dry . . . . . *Erythrochiton giganteus*
  3. Cultivated trees, the trunks much branched; leaves less than 20 cm long; flowers medium, the petals less than 2 cm long; fruit indehiscent, fleshy.
    4. Fruit green to greenish yellow when ripe, 4 to 6 cm long, rind tight, (Lime) . . . . . *Citrus aurantifolia*
    4. Fruit yellow to orange when ripe, 6 to 18 cm long, rind appressed to very loose.
      5. Branches drooping; rind loose (Rangpur Lime) . . . . .
      5. Branches erect, rind appressed or very loose. . . . . *Citrus × limon*



6. Fruit 12-18 cm in diameter, yellow, rind appressed (Grapefruit). . . . .  
 . . . . . *Citrus × paradisi*
6. Fruit 6-10 cm in diameter, orange, rind appressed or very loose.
7. Fruit broader than long, dark orange, rind very loose; leaves dark green, apex acuminate (Tangerine) . . . . . *Citrus reticulata*
7. Fruit round or longer than broad, yellow-orange, rind appressed; leaves green, apex acute (Orange) . . . . . *Citrus sinensis*

**\**Citrus aurantifolia* (Christm. & Pönzner) Swingle**

Plate 244-A

Small tree or shrub, spiny. Petiole very narrowly winged; leaf blade elliptic, the apex acute, 8 × 3.5 cm. Flowers white. Fruit yellow-green when ripe, elliptic, 4-6 × 3-4 cm, the rind tightly appressed, the flesh white. Cultivated around homesites. The lime is cultivated throughout the tropics, native to S. E. Asia.

Common name: "Limón"+

**\**Citrus × limon* (L.) Burmann f.**

Plate 244-B

Small spreading tree with drooping branches, spiny. Petiole very narrowly winged; leaf blade elliptic, the apex retuse, to 8 × 5 cm. Flowers white. Fruit orange when ripe, broadly elliptic, 7-10 × 6-8 cm, the rind loose to appressed, the flesh orange. Cultivated around homesites. The rangpur-lime is probably of hybrid origin. *Citrus reticulata* var. *austera* according to Swingle. Common name: "Limón-Mandarina"+

**\**Citrus × paradisi* Macf.**

Plate 244-C

Small tree with erect branches, spiny. Petiole broadly, triangularly winged; leaf blade ovate to elliptic, the apex acute, to 8 × 5 cm. Flowers white. Fruit yellow-white when ripe, round to broader than long, 10-12 × 12-18 cm; the rind appressed, the flesh white (at Río Palenque). Cultivated around homesites. The grapefruit, apparently of hybrid origin, is now widely cultivated. Common name: "Toronja"+

**\**Citrus reticulata* Blanco**

Plate 244-D

Small tree with stiffly erect branching. Petiole narrowly winged; leaf blade elliptic, the apex acuminate, to 8 × 3.2 cm, dark black-green on the upper surface. Flowers white. Fruit orange when ripe, much broader than long, 5-7 × 3-4 cm, the rind very loose, the flesh orange. Cultivated around homesites. Widely cultivated, the tangerine is native to Indochina. Common name: "Mandarina"+

**\**Citrus sinensis* (L.) Osbeck**

Plate 245-A

Small tree with erect branches, spiny. Petiole narrowly to broadly winged; leaf blade ovate to elliptic, the apex acute to 9 × 5.5 cm. Flowers white. Fruit orange to greenish-orange when ripe, round to slightly longer than broad, 8 × 8-10 cm, the rind appressed, the flesh orange. Cultivated around homesites. The sweet orange is widely cultivated; native to southeast Asia. Common name: "Naranja"+

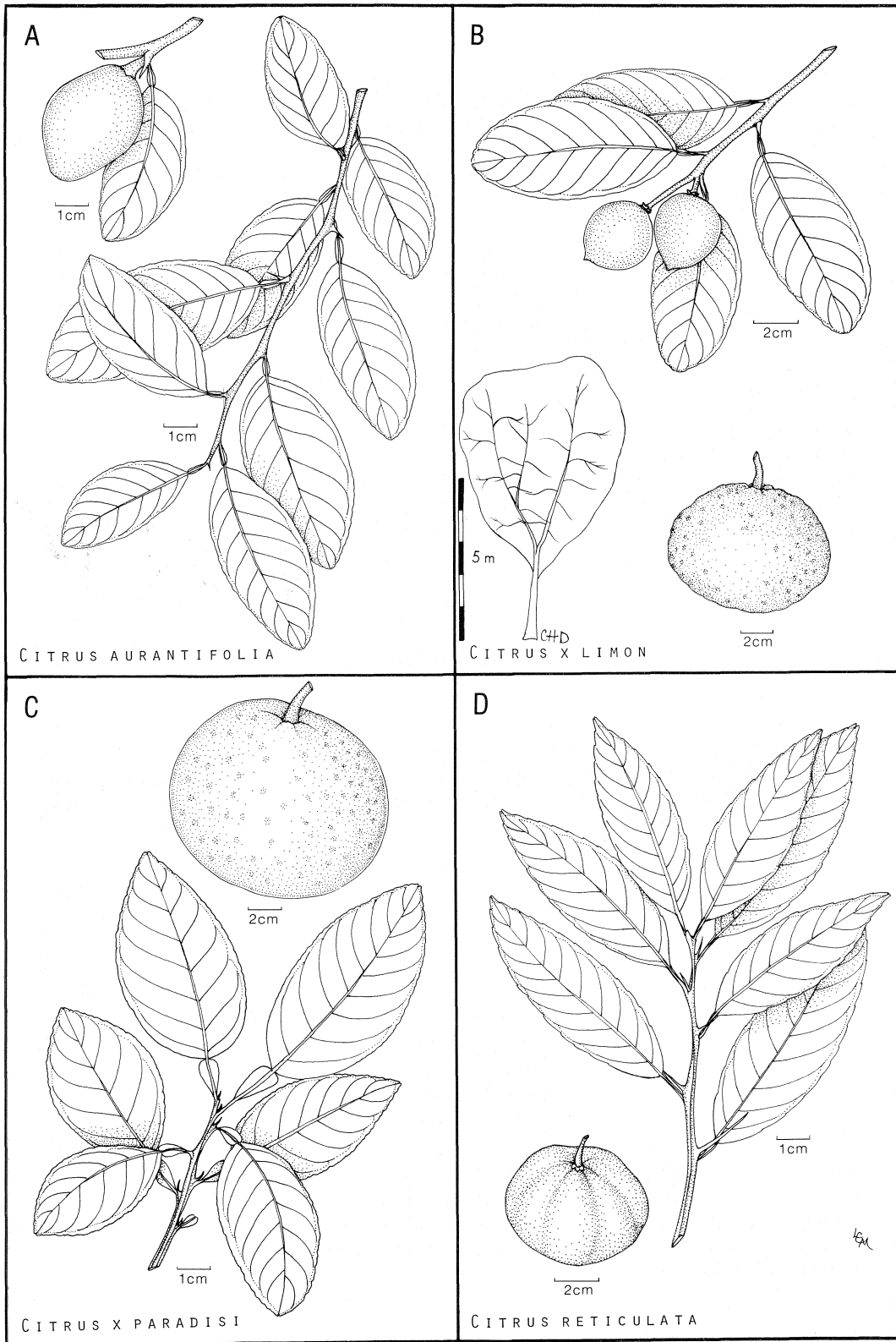


Plate 244

**Erythrochiton giganteus** Kaastra & A. Gentry

Plate 245-B

Unbranched tree to 4 m tall. Petiole terete, 20 cm long, with a swollen pulvinus at the junction of the blade; leaves elliptic to  $105 \times 25$  cm, acuminate at the apex, long tapered to the base. Inflorescence to 1 m. Calyx tube 3 cm long, white, apices blunt, persistent; corolla tube 4 cm long, lobes 7 cm across, white; anthers white. Fruit of 5 separate units, dry, each unit 2 cm long. Rare, in mature forest at Río Palenque. Common, on hills across the river. Known only from western Ecuador.

**\*Murraya paniculata** (L.) Jack

Plate 245-C

Shrub to 3 m tall. Stems smooth. Leaves pinnately compound, to 15 cm long; leaflets obovate, to  $3 \times 1.5$  cm. Flowers white. Fruit red, subglobose. Cultivated around homesites. Widely cultivated; native to southeast Asia. Common name: "Mirto"

**Zanthoxylum tachuelo** Little

Plate 245-D

Tree to 20 m tall with a spiny trunk. Leaves pinnately compound, to 75 cm long; leaflets elliptic, to  $15 \times 8$  cm, red when immature. Frequent, in mature forest. Western Ecuador. Our material is sterile and identification is tentative. Common name: "Tachuelo", "Lagarto"

## SABIACEAE

Trees, shrubs or vines. Leaves alternate, simple or pinnate; without stipules. Flowers bisexual, zygomorphic; sepals 3-5; petals 4-5, outer ones broad, overlapping, inner 2 much reduced; annular disc small; stamens 3-5, often only 2 fertile, opposite the petals; ovary superior, 2-loculed, the placentation axile. Fruit usually drupaceous, globose, 1-seeded, the endocarp very hard, sometimes dry.

Key to the species.

1. Leaves entire . . . . . *Meliosma panamensis*  
 1. Leaves serrate . . . . . *Meliosma* sp. (6583)

**Meliosma panamensis** Standl.

Plate 246-A

Midcanopy tree to 20 m tall. Leaves narrowly obovate, acuminate,  $\pm$  entire, to  $21 \times 11$  cm; petiole 2.5-4 cm long. Inflorescence from below the leaves, racemiform. Fruits obovoid, globose, ca. 2 cm in diameter. Uncommon, in mature forest. Panama to western Ecuador.

**Meliosma** sp. (6583)

Plate 246-B

Known only from a sterile treelet 3 m tall. Similar to *Meliosma panamensis* (of which it could be a juvenile form) except for slightly more pubescence and a conspicuously serrate margin. Rare, in mature forest. The taxonomy of neotropical Sabiaceae is chaotic and identification of sterile (or fruiting) material virtually impossible.

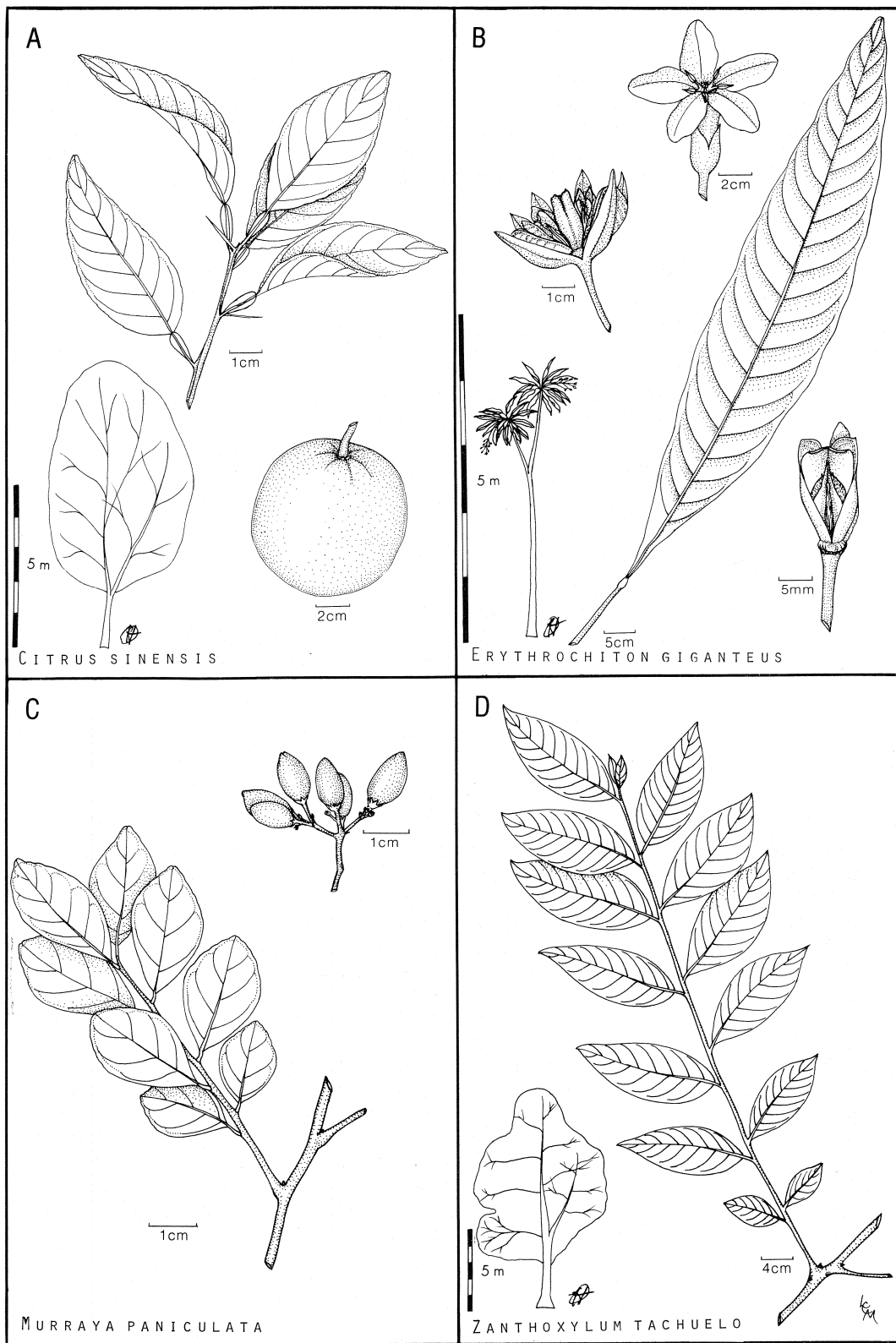


Plate 245

## SAPINDACEAE

Trees, shrubs or tendrils producing vines. Leaves usually alternate, simple or pinnately compound. Flowers bisexual or unisexual, regular or zygomorphic; sepals 4-5; petals 4-5 or absent, distinct, equal or unequal, often with scaly or hair-tufted nectaries on the inner side; disc outside the stamens, glandular; stamens 10 in 2 whorls of 5 each, often reduced to 8 or 5; ovary superior, usually 3-loculed. Fruit variable, usually 3-parted, often winged.

Key to the species.

1. Vines.
  2. Fruits with an inflated, thin outer cover (almost balloon-like) . . . . .  
 . . . . . *Cardiospermum grandiflorum*
  2. Fruits with a thick cover.
    3. Leaves ternate to simple-pinnate, 3-to 5-foliolate, margins entire or serrate.
      4. Leaves 3-foliolate; petiole unwinged . . . . *Paullinia turbacensis*
      4. Leaves pinnate, 5-foliolate; petiole winged . . . . .  
 . . . . . *Paullinia fasciculata*
    3. Leaves biternate, 9-foliolate, margins serrate. . . . .  
 . . . . . *Paullinia stipitata*
1. Trees.
  5. Leaves simple . . . . . *Allophyllus cf. amazonicus*
  5. Leaves compound.
    6. Leaves 3-foliolate . . . . . *Allophyllus nitidulus*
    6. Leaves pinnately 5-to many-foliolate.
      7. Small tree; trunk unbranched or few-branched; leaves 7-to many-foliolate, the leaflets conspicuously pilose along the main veins beneath . . . . . *Talisia setigera*
      7. Large tree; trunk branching; leaves mostly 5-foliolate, the leaflets puberulous or glabrate along the main vein beneath . . . . .  
 . . . . . *Cupania riopalenquensis*

***Allophyllus cf. amazonicus* (Mart.) Radlk.**

Plate 246-C

Midcanopy tree to 15 m. Petiole unwinged, ca. 2 cm, jointed or bent below the leaf blade. Leaves simple, elliptic, obtuse at the apex, cuneate at the base, to 23 × 10 cm, the margin subentire. Inflorescence an axillary or terminal panicle with several elongate, narrowly racemose branches. Flowers small, white. Rare, in mature forest. Otherwise known from Amazonian Brazil and Peru but the Río Palenque plant may be specifically distinct (Croat, pers. comm.).

***Allophyllus nitidulus* (Tr. & Pl.) Radlk.**

Plate 246-D

Tree to 5 m tall. Petiole unwinged, to 10 cm long. Leaves 3-foliolate, glabrous; middle leaflet elliptic, lateral leaflets obliquely elliptic, the margin serrate-undulate, the base acute, the apex acute to slightly acuminate, to 23 by 8 cm. Inflorescence racemiform, in the axils of the new leaves, to 10 cm long. Flowers small, white; sepals 4; petals 4. Fruit ovoid. Infrequent, in mature forest. Western Ecuador and Colombia but *A. psilosperma* Radlk. of Central America and the West Indies is hardly distinct.



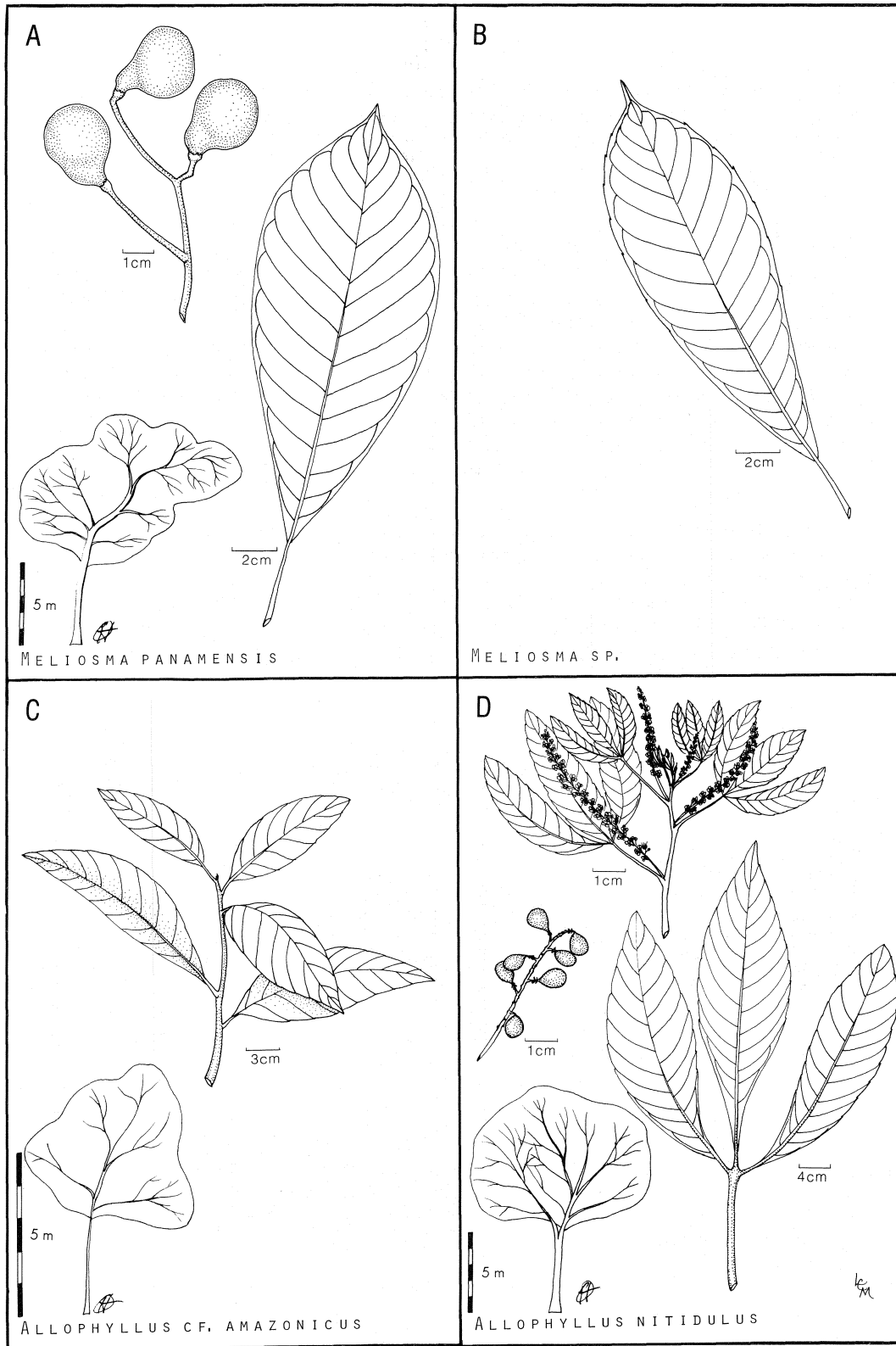


Plate 246

**Cardiospermum grandiflorum** Sw.

Plate 247-A

Robust vines. Petioles not winged. Leaves divided into 3 sets of 3-leaflets (biterminate); leaflets ovate, the edges toothed, 5-8 × 2-2.5 cm, subglabrous. Sepals 4; petals 4, white. Fruit an inflated, 3-lobed capsule. Infrequent, at the forest edge. Throughout tropical America and in West Africa.

Common name: "Chimbolillo", "Balloon Vine"

**Cupania riopalenquensis** Dodson & A. Gentry

Plate 247-B

Tree to 30 m tall. Leaves pinnate with 6 to 8 leaflets; leaflets elliptic, the margin entire, the apex acuminate, the base acute. Inflorescence to 15 cm long. Flowers to 5 mm wide, white; petals with barbate scales on each side as large as the blade of the petal; filaments of the stamens barbate. Capsules mostly 2-parted, rarely 3-parted, pink outside, almost glabrescent, 2 cm long (including the 5 mm stipe), 2 cm wide. Uncommon, in mature forest. Known only from Río Palenque. Like *C. sylvatica* Seem. of Panama and Colombia on the basis of flowering and vegetative material but the glabrescent mostly 2-parted stipitate fruits are very different.

Common name: "Sabroso"+

**Paullinia fasciculata** Radlk.

Plate 247-C

Woody lianas with triangular young stems and older stems formed of 3 united bundles joined on the inside edges. Petiole narrowly winged. Leaves pinnate with 5 leaflets; leaflets elliptic, slightly dentate above the middle, to 16 × 7 cm. Inflorescences in fascicles on old stems. Petals white; stamens yellow. Fruits pear-shaped, red, to 3 cm long. Uncommon, in mature forest. Costa Rica to Guiana and Ecuador, this is the first Ecuadorian record.

**Paullinia stipitata** Cuatr.

Plate 247-D

Large vine. Petiole unwinged. Leaves divided into 3 sets of 3 leaflets; leaflets elliptic, strongly toothed on the margins, apical leaflet in each set larger, 8-15 × 5-9 cm. Rare, in tree tops in mature forest. Previously known from Panama and Pacific Colombia.

**Paullinia turbacensis** HBK

Plate 248-A

Woody vine with an irregular but not divided stem. Petiole not winged. Leaves trifoliolate; leaflets of the juvenile plants ovate, irregularly serrate, acuminate, truncate to cuneate at the base. Inflorescences (not seen at Río Palenque) narrow, racemose, cauliflorous from older branches. Flowers small, petals white. Fruits obovoid, red, 3-parted, each valve with a central ridge, ca. 2 cm long. Uncommon, in mature forest. Known only from sterile juvenile plants at Río Palenque and identification with this species, previously known from Panama to Colombia, is rather tentative.

**Talisia setigera** Radlk.

Plate 248-B

Unbranched trees to 5 m tall. Petiole unwinged, hirsute. Leaves pinnate; leaflets 17-23, narrowly obovate, oblique at the base, the margins entire, the veins on the underside hirsute. Inflorescence much branched, terminal on the stem, densely hirsute. Petals white; stamens yellow. Fruits yellow, to 3 × 1.5 cm. Infrequent, in the mature forest understory. Endemic to Pacific Ecuador.

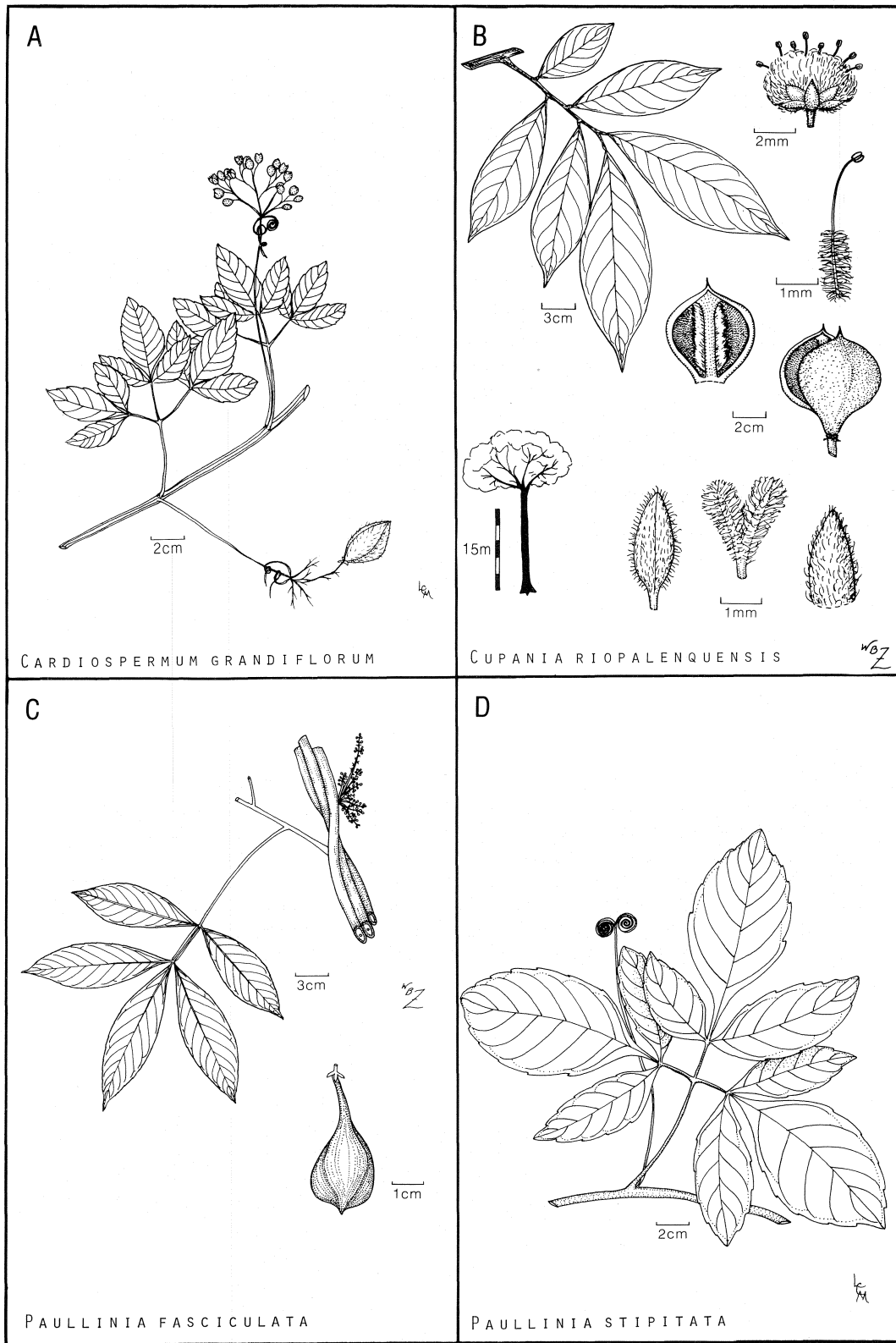


Plate 247

## SAPOTACEAE

Trees or shrubs, latex milky. Leaves alternate, simple, entire, when pubescent usually with T-shaped trichomes; stipules absent. Flowers bisexual, regular, solitary or fasciculate in the leaf axils or on old branchlets; sepals 4-12, usually joined basally; corolla forming a tube basally, with 4-8 lobes; stamens mounted on the corolla, in 2 or 3 whorls of 4-5 each; ovary superior, the locules usually 4-5, 1 ovule per locule. Fruit more or less globose, usually fleshy, 1-several seeded, the seeds with a hard shiny testa.

Key to the species.

1. Fruit spiny . . . . . *Pouteria neglecta*
1. Fruit smooth or rough, not spiny.
  2. Leaves 10-20 cm wide; petiole ca. 5 mm thick.
    3. Leaves oblong, the base rounded. . . . . *Pouteria gigantea*
    3. Leaves obovate, the base cuneate . . . . . *Pouteria capaciflora*
  2. Leaves to 10 cm wide; petiole 1-2 mm thick.
    4. Leaves elliptic, less than 14 cm long and 4 (-7) cm wide.
      5. Tree to 15 m tall; latex clear; cultivated . . . *Pouteria caimito*
      5. Tree to 50 m tall, latex white; native. . . *Ecclinusa* sp. (6732)
    4. Leaves narrowly obovate, more than 15 cm long and (4-) 5-10 cm wide.
      6. Fruits grey with lenticular surface; native . . . . .  
 . . . . . *Pouteria lucentifolia*
      6. Fruits brown with smooth outer surface; cultivated . . . . .  
 . . . . . *Pouteria sapota*

**Ecclinusa** sp. (6732)

Plate 248-C

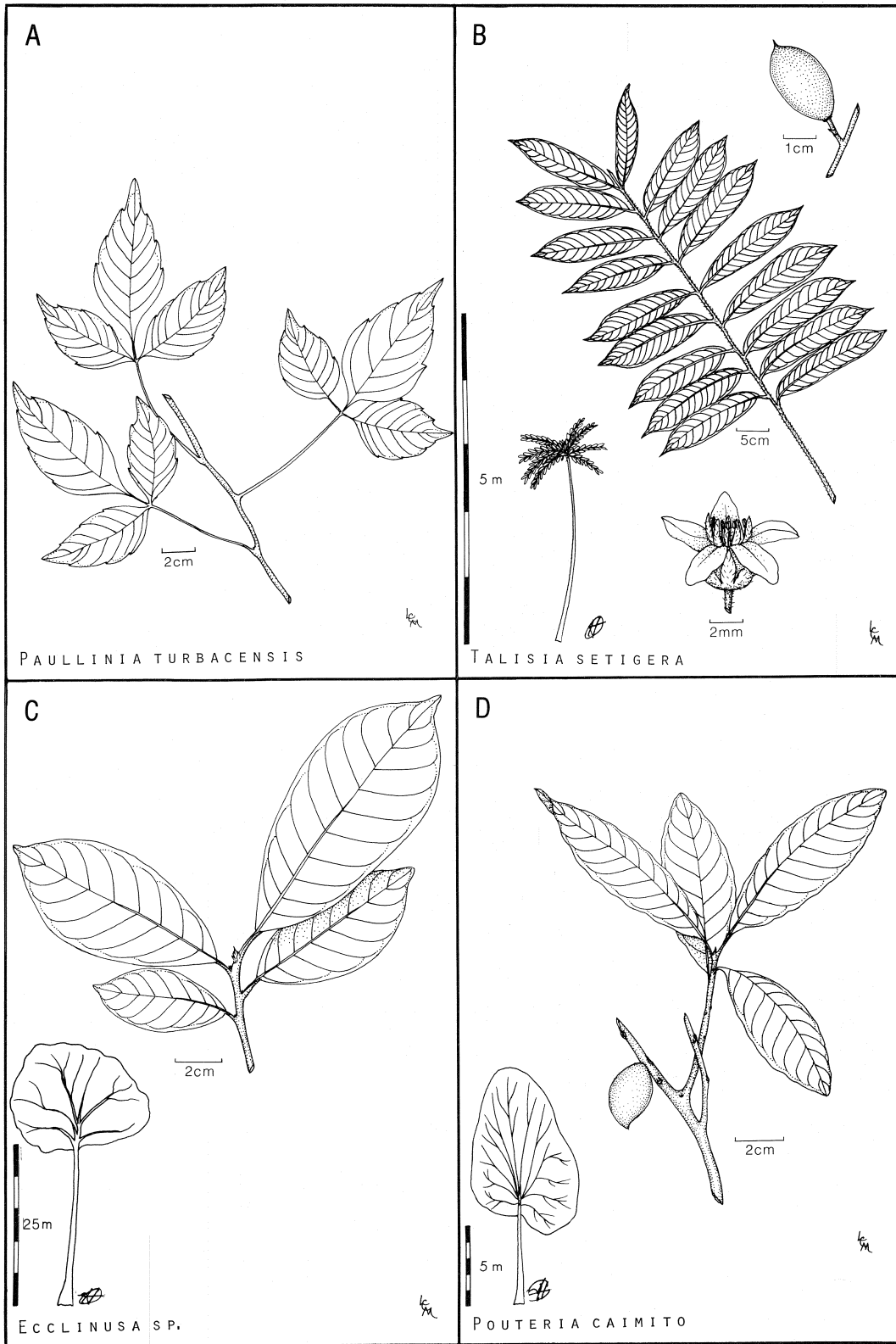
Canopy tree to 50 m tall, the trunk red-brown; buttresses small; latex white, milk-like, free-running. Leaves elliptic, apiculate or short-acuminate at the apex, rounded at the base, to 14 × 7 cm, more or less glabrescent, somewhat appressed-pubescent along the main vein beneath. Inflorescences, flowers, and fruits not seen. Rare, in mature forest 200 m west of termination of trail 2. This species is vaguely similar to Amazonian *E. ulei* (Krause) Gilly according to Henry Rodriguez (pers. comm.) but is probably undescribed.

**\*Pouteria caimito** (R. & P.) Radlk.

Plate 248-D

Tree to 15 m tall. Latex clear. Leaves to 14 × 4 cm, elliptic, more or less acute at the base and the apex. Flowers subsessile, borne singly or in pairs along the twigs. Fruits globose, to 3 cm in diameter, the surface smooth. Cultivated around homesites. Native from southern Panama to Trinidad and south to Brazil and Bolivia; often cultivated in South America.

Common name: "Cauje"+



***Pouteria capaciflora* Pilz**

Plate 249-A

Canopy tree 25-30 m tall, bark narrowly ridged. Latex clear. Base of trunk buttressed. Leaves obovate, rounded at the apex, cuneate at the base, to 45 × 10-20 cm, the numerous secondary nerves 1-2 cm apart. Flowers borne singly or in fascicles of 2 or 3 along the branches below the leaves; sepals more than 1 cm long; corolla ca. 1.5 cm long, cream white. Fruit globose, 8-12 cm in diameter, ca. 6-seeded. Uncommon, in mature forest. Endemic to Pacific Ecuador.

Common name: "Zapote Silvestre"+

***Pouteria gigantea* (Diels) Pilz**

Plate 249-B

Canopy tree to 30 m tall. Latex milky. Leaves oblong, rounded at the base and the apex, whitish when immature, to 45 × 15-20 cm; secondary nerves 1.5-3 cm apart. Flowers borne singly or in small fascicles along the branchlets below the leaves, ca. 5 mm long. Fruit subglobose, 6-8 cm in diameter. Common, in mature forest. Endemic to Pacific Ecuador.

Common name: "Guapapango"+

***Pouteria lucentifolia* (Standl.) Baehni**

Plate 249-C

Tree to 10 m tall. Latex milky. Leaves narrowly obovate, obtuse at the apex, tapering to the base, to 25 × 4-10 cm; petiole slender 2 mm thick ca. 2 cm long. Flowers ca. 3 mm long, borne singly or in pairs along the branchlets below the leaves. Fruits globose, ca. 4 cm in diameter, conspicuously whitish-lenticellate. Infrequent, in mature forest. Previously known from Honduras to Panama; this is the first Ecuadorian record.

Common name: "Zapote de Monte"+

***Pouteria neglecta* Cronq.**

Plate 249-D

Tree to 30 m. Latex milky. Leaf elliptic, veins and undersurface scurfy pubescent, acute at the base and apex, short-acuminate, 18 × 7-8 cm; petiole to 5 cm long, cinerous-scurfy pubescent. Fruit green, to 7 cm in diameter, with soft spines to 1 cm long. Not collected at Río Palenque; uncommon, on the other side of the river at 170 m elevation. Panama to Amazonian Peru.

**\**Pouteria sapota* (Jacq.) H. E. Moore & Stearn**

Plate 250-A

Tree to 25 m. Latex milky. Leaves obovate or narrowly obovate 15-30 × 8-10 cm, obtuse or acute at the apex, tapering to the base, nearly glabrous. Flowers sessile. Fruit ovoid, 8-20 cm long with a rough brown outer skin; flesh pink or reddish, 1-seeded; seed shiny. Cultivated around homesites. Native to Mexico and Central America, now widely cultivated in the Neotropics.

Common name: "Mamey Colorado"+



## SCROPHULARIACEAE

Herbs, shrubs or vines, very rarely trees. Leaves opposite (at Río Palenque), simple, usually serrate; estipulate. Inflorescences (at Río Palenque) a single axillary flower or a few flowers fasciculate in the leaf axils. Flowers perfect, usually zygomorphic; calyx 4-to 5-lobed; corolla 4-to 5-lobed; the petals fused basally; stamens 4 or 2; ovary superior, 2 carpellate. Fruit usually a capsule, rarely a berry.

Key to the species.

1. Flowers sessile or subsessile.
  2. Flowers white, two per node. . . . . *Lindernia diffusa*
  2. Flowers blue, several per node. . . . . *Stemodia verticellata*
1. Flowers pedicellate.
  3. Outer sepals ovate, foliaceous, 8-10 mm long; flowers yellow; plant drying blackish . . . . . *Mecardonia procumbens*
  3. Sepals smaller, narrow, not foliaceous, usually fused most of their length; flowers white to lavender or bluish; plant not drying conspicuously blackish.
    4. Calyx ca. 1 cm long. . . . . *Torenia thouarsii*
    4. Calyx less than 5 mm long.
      5. Erect herb ca. 50 cm tall; fruits globose, ca. 3 mm long; leaves oblanceolate; flowers white. . . . . *Scoparia dulcis*
      5. Herb less than 20 cm tall, usually more or less prostrate; fruits more or less ovoid; leaves narrowly ovate to elliptic or broadly ovate; flowers pinkish to bluish, at least near the base.
        6. Succulent aquatic; leaves entire with ca. 7 parallel veins . . . . . *Bacopa repens*
        6. Terrestrial plants; leaves serrate to subentire.
          7. Leaves broadly rhombic-ovate, almost as wide as long, conspicuously serrate.
            8. Stems villous; flowers white with yellow and rose near the base . . . . . *Stemodia angulata*
            8. Stems puberulous to glabrate; flower lavender or bluish with white lobes . . . . . *Lindernia crustacea*
          7. Leaves narrowly ovate, about twice as long as wide, inconspicuously serrate to subentire.
            9. Pedicel plus the flower longer than the subtending leaf; calyx 2 mm long . . . . . *Lindernia anagallidea*
            9. Pedicel plus the flower shorter than the subtending leaf; calyx 3 mm long . . . . . *Lindernia dubia*

**Bacopa repens** (Sw.) Wettst.

Plate 250-B

Succulent floating aquatic herb. Leaves elliptic, sessile, rounded at base and the apex, entire, with ca. 7 parallel veins, to 1.5 × 1 cm. Flowers single, pedicels much shorter than the leaves; sepals 3 mm long; corolla tiny, light pink. Rare, in temporary pools of water along the road. Mexico and the West Indies to Ecuador.



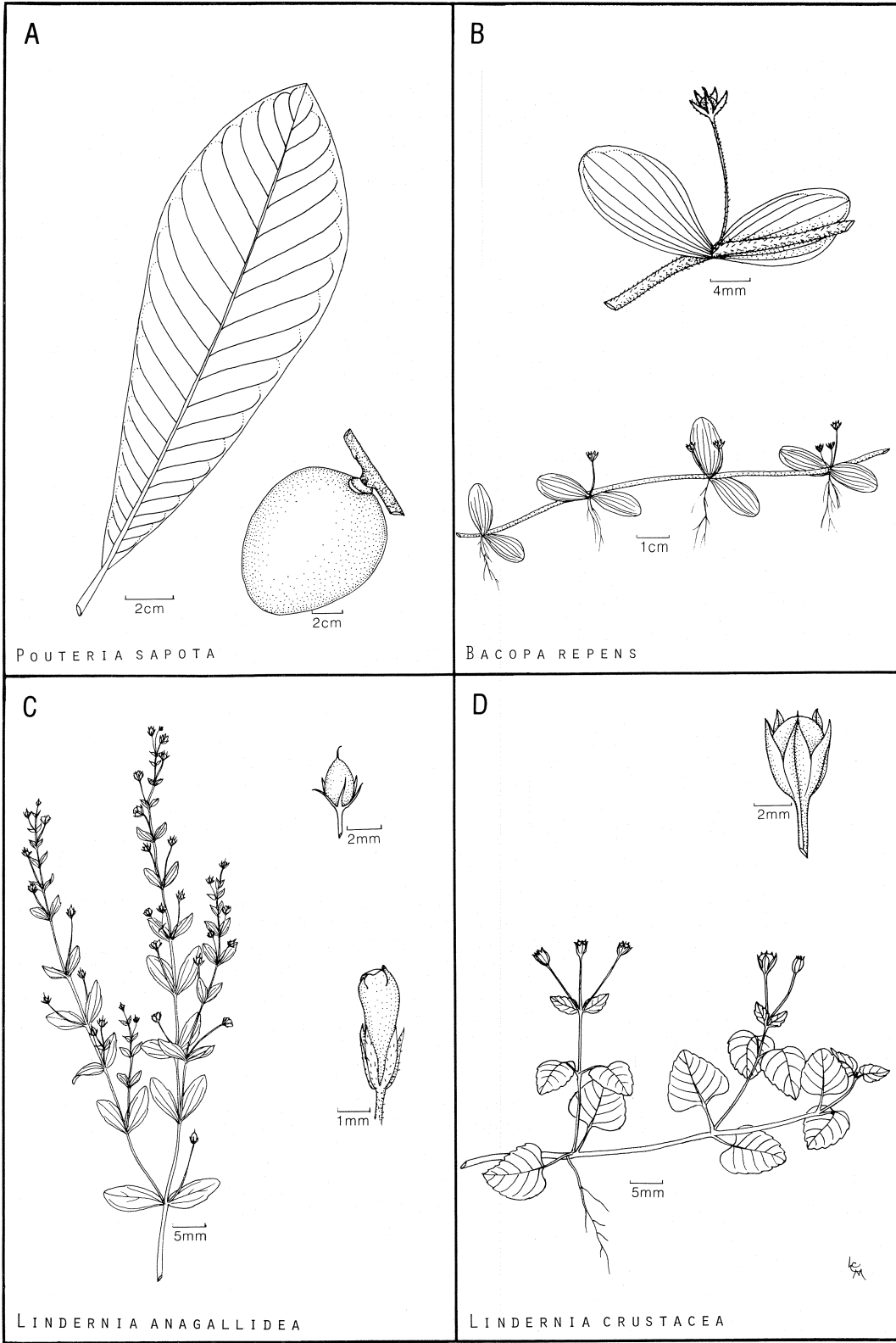


Plate 250

**Lindernia anagallidea** (Michx.) Pennell

Plate 250-C

Small prostrate herb. Leaves very narrowly ovate, sessile, 1-to 3-nerved, to 1 × 0.3 cm, acute at the apex, rounded at the base, obscurely and remotely serrate. Flowers single; pedicels much longer than the leaves; sepals 2 mm long; corolla bluish. Rare, on gravel banks in the river bed. Southern United States through the West Indies and Central America to northern South America.

**Lindernia crustacea** (L.) Muell.

Plate 250-D

Small prostrate herb; stems puberulous to glabrate. Leaves broadly ovate, subsessile to petiolate, pinnately veined, obtuse at the apex, truncate at the base, conspicuously serrate, to 1.5 × 1.4 cm. Flowers one or two per node; pedicels usually longer than the leaves; calyx 3 mm long; corolla lavender and white. Common, in mowed areas and gravel banks in the riverbed. Pan-tropical weed, native to the Old World tropics.

**Lindernia diffusa** (L.) Wettst. ex Durand & Jacks.

Plate 251-A

Small prostrate herb; stems puberulous. Leaves broadly ovate, sessile to shortly petiolate, pinnately veined, obtuse at the apex, truncate at the base, conspicuously serrate, to 2 × 1.8 cm. Flowers two per node, sessile; calyx 6-7 mm long; corolla white. Infrequent, on gravel banks in the riverbed. Pan-tropic weed, perhaps native to the Old World tropics.

**Lindernia dubia** (L.) Pennell

Plate 251-B

Small suberect herb; stems glabrous. Leaves narrowly ovate or narrowly elliptic, sessile, more or less pinnately few-nerved, to 1.7 × 0.8 cm, acute at the base and the apex, subentire to obscurely and remotely serrate. Flowers single; pedicel (including flower) shorter than the subtending leaf; sepals ca. 3 mm long; corolla lavender. Rare, on gravel bars along the river. South-eastern United States to Amazonian Peru and the Guianas; our plant is var. *riparia* (Raf.) Fern. to judge from its narrowed, non-clasping leaf bases.

**Mecardonia procumbens** (Mill.) Small

Plate 251-C

*Bacopa procumbens* (Mill.) Greenm.

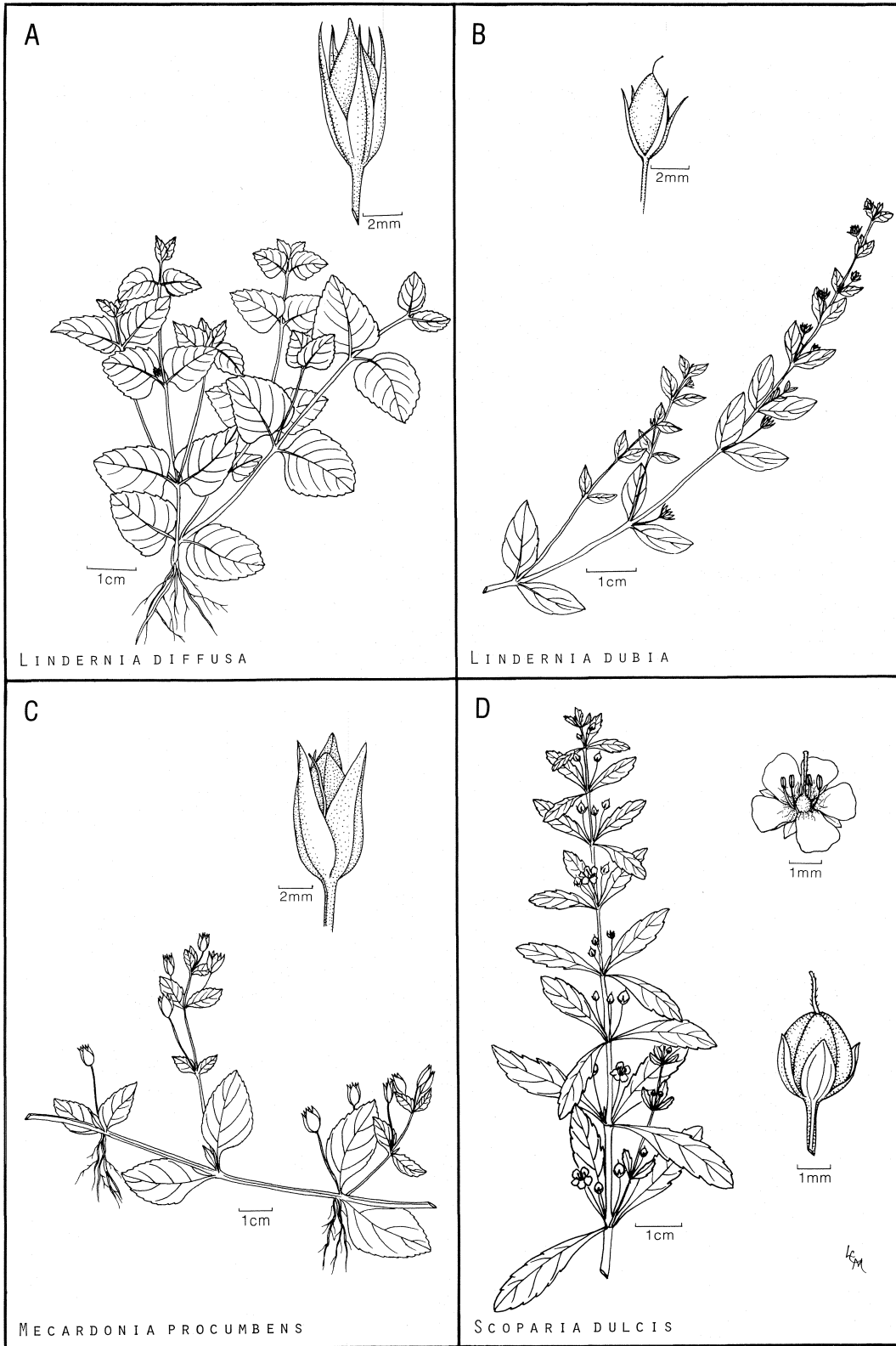
Small prostrate herb; stem glabrous, tetragonal. Leaves elliptic, subsessile or short-petiolate, acute at the apex, cuneate at the base, serrate, blackening when dry, to 2.5 × 1.4 cm. Flowers 1 to 3 per node; pedicels mostly longer than leaves; outer sepals bracteole-like, ovate, 8-10 mm long; corolla yellow. Uncommon, on gravel banks in the riverbed. Mexico and southern Florida south through the West Indies to Brazil and Paraguay.

**Scoparia dulcis** L.

Plate 251-D

Erect herb to 50 cm tall; stem glabrous. Leaves oblanceolate, petiolate, obtuse at the apex, cuneate at the base, pinnately few-veined, to 2.5 × 1 cm, serrate. Flowers 2-4 per node; pedicel shorter than the subtending leaves; sepals ca. 2 mm long; corolla white. Fruit globose, ca. 3 mm long. Very common, in disturbed areas, especially along the river. Pan-tropical weed.

Common name: "Tiatina"+



**Stemodia angulata** Oerst.

Plate 252-A

Small prostrate herb; stem pilose. Leaves broadly ovate, petiolate, conspicuously pubescent, to 1.5 × 1.2 cm, obtuse, truncate at the base, serrate. Flowers one or two per node; calyx ca. 5 mm long; pedicel 1-1.5 cm long; corolla white with yellow and rose near the base. Infrequent, lawn weed. Previously reported from Mexico to Panama.

**Stemodia verticellata** (Mill.) Hassl.

Plate 252-B

Small prostrate herb; stem puberulous. Leaves rhombic, subacute at the base and the apex, pinnately few-nerved, to 0.9 × 0.7 cm, serrate. Flowers several per node, subsessile; calyx 3 mm long; corolla blue. Rare, on gravel banks in the riverbed. Mexico to Argentina.

**Torenia thouarsii** (Cham. & Schlecht.) Kuntze

Plate 252-C

*Lindernia thouarsii* (Cham. & Schlecht.) Edwin

Suberect herb. Leaves ovate, petiolate, pinnately few-nerved, to 3 × 1.3 cm, acute, truncate at the base, serrate. Flowers several per node; calyx and pedicel each ca. 1 cm long; corolla light pink with magenta on the lower lobes. Uncommon, on gravel banks on the riverbed. Native to Old World tropics, becoming pantropical.

## SIMAROUBACEAE

Monoecious or dioecious trees or shrubs, all parts often bitter-tasting. Leaves alternate, usually pinnately compound, sometimes simple, usually without stipules. Inflorescence usually many-flowered. Flowers bisexual or unisexual by abortion, regular; sepals 3-5(-8); petals 3-5(-8), free; stamens 3-12, usually inserted at the base of the intrastaminal disc; 2-5(-8) carpelled, sometimes apocarpous, usually 1-2 ovules per locule. Fruit apocarpous and composed of 2-8 1-loculed drupes, berries or samaras or 2-4 carpelled and syncarpous.

Key to the species.

1. Leaves 7-to 9-foliolate; inflorescence long, pendent, narrowly racemose. . . . . *Picramnia cooperi*
1. Leaves more than 15-foliolate; inflorescence erect, paniculate . . . . . *Simarouba amara*

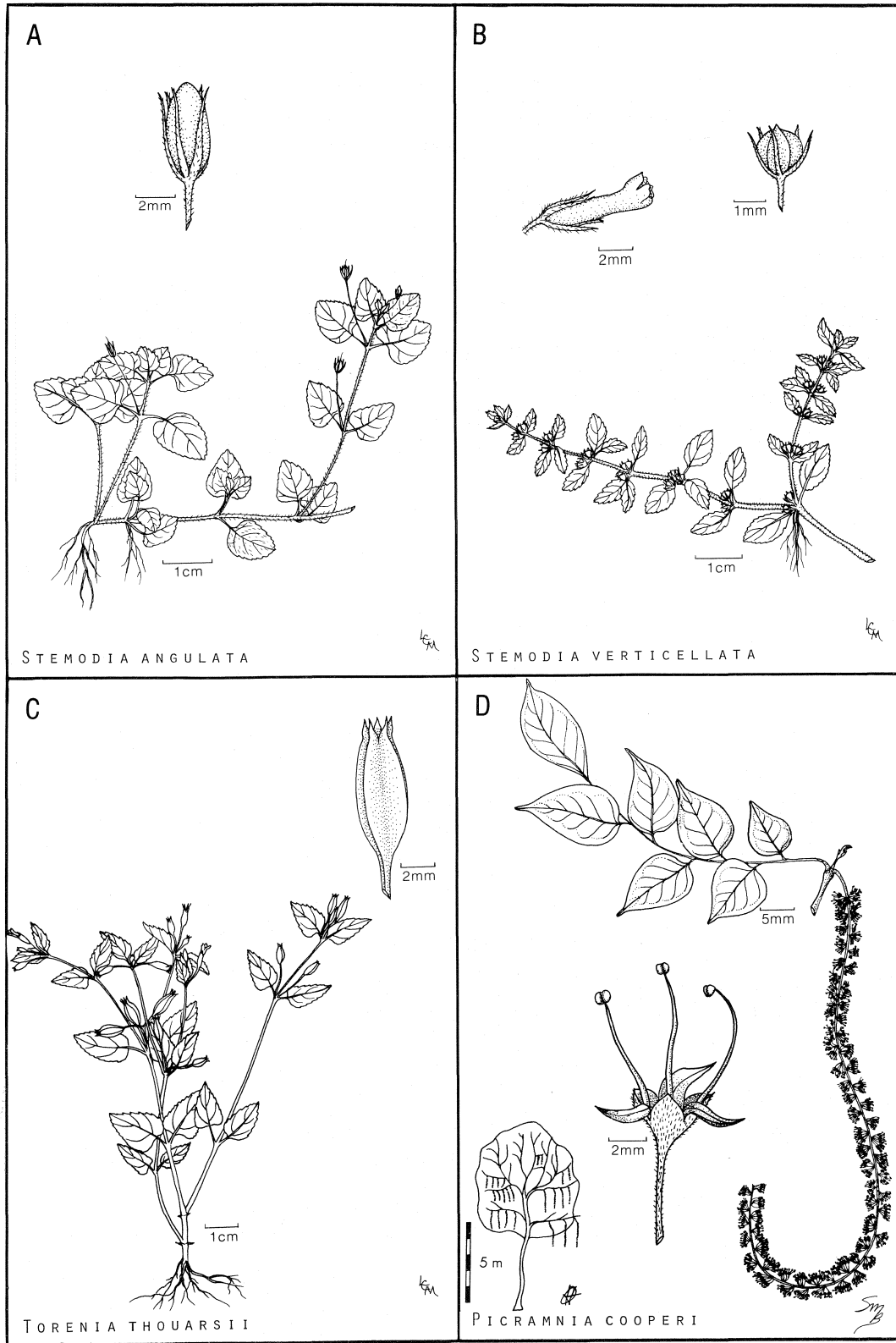


Plate 252

**Picramnia cooperi** D. Porter

Plate 252-D

Understory tree to 12 m tall. Leaves 7-to 9-foliolate, the leaflets not opposite each other, asymmetrically ovate or rhombic, acute at the apex, obtuse at the base, 4-9 × 2.5-4 cm, pubescent with a few appressed trichomes at the base of the midvein and the lower secondary nerves beneath. Inflorescence axillary, elongate, pendent, narrowly racemose, the flowers in fascicles along it. Flowers with 3 sepals; 3 petals; and 3 stamens. Fruit an ellipsoidal berry. Infrequent, in mature forest. Previously known only from Bocas del Toro Province, Panama.

**Simarouba amara** Aubl.

Plate 253-A

Usually dioecious canopy trees to 30 m tall. Leaves many-foliolate; leaflets not opposite each other, oblong, obtuse at the base and the apex, very shortly petiolulate, secondary veins very fine and indistinct, immersed. Inflorescence a terminal panicle, the tiny flowers greenish, 5-petaled. Fruit an ellipsoid drupe 10-15 mm long, often several from a flower. Infrequent, in mature forest. The Río Palenque material has much longer leaflets than any other collection of this variable species at MO but matches Little's illustration. Belize and Guatemala to Brazil.

Common name: "Guitarro"+, "Cedro Blanco"

## SOLANACEAE

Herbs, shrubs, small trees or vines. Leaves alternate or apparently opposite through concrescence of adjacent nodes, simple or compound; without stipules. Flowers bisexual, regular or slightly zygomorphic; calyx usually 5-lobed; corolla tubular, typically 5-lobed; stamens mounted on the corolla tube, alternating with the corolla lobes, 5 or 4 (rarely 2), the anthers sometimes joined and often opening by a terminal pore; ovary superior, of 2 carpels, the placentation axile. Fruit a berry or a capsule.

Key to the species.

1. Corolla more than 3.5 cm long.
  2. Corolla white, more than 20 cm long . . . . . *Brugmansia versicolor*
  2. Corolla purple, 3.5-4 cm long (without the 1.5-2 cm long lobes). . . . .  
 . . . . . *Brunfelsia grandiflora*
1. Corolla less than 3.5 cm long.
  3. Corolla purple, the tube more than 1.5 cm long; stamens 4; herb . . . .  
 . . . . . *Browallia americana*
  3. Corolla usually white, greenish, cream or yellow (purple only if the tube is less than 0.5 cm long); stamens 5 (except *Witheringia solanacea* with yellow flowers 0.5 cm long); habit various but often shrubs or vines.
  4. Corolla narrowly tubular, the tube more than 1 cm long; scandent shrubs, erect shrubs or trees to 10 m tall.
    5. Inflorescence paniculate, elongate, the lower half without flowers, each lateral branch subtended by a leafy bract; scandent shrub. . . . . *Cestrum reflexum*

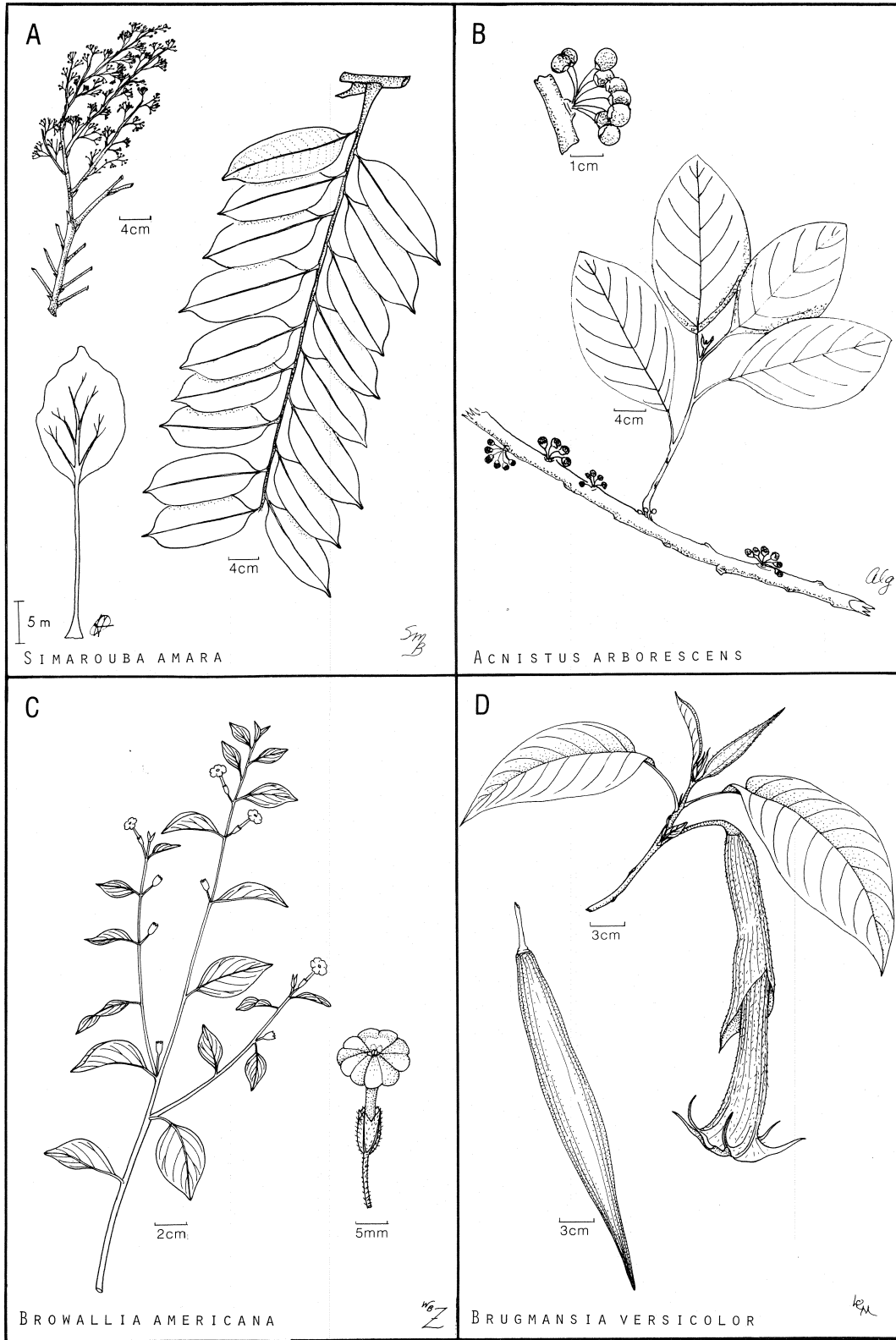


Plate 253

5. Inflorescence racemose with flowers to the base, bracteate or ebracteate; erect shrub or small tree.
  6. Calyx 3-4 mm long; corolla lobes 7-8 mm long; inflorescence with a few leaf-like bracts . . . . . *Cestrum* cf. *glabrum*
  6. Calyx 1-2 mm long; corolla lobes 3-4 mm long; inflorescence ebracteate or the bracts minute.
    7. Calyx glabrous outside, ca. 2 mm long . . . . .  
 . . . . . *Cestrum racemosum*
    7. Calyx puberulous outside, 1-1.5 mm long . . . . .  
 . . . . . *Cestrum megalophyllum*
4. Corolla campanulate, the tube less than 1 cm long; herbs, vines, shrubs (sometimes epiphytic), or small trees.
  8. Corolla without lobes; calyx completely enclosing the fruit.
    9. Stems pilose . . . . . *Physalis pubescens*
    9. Stems short-puberulous . . . . . *Physalis angulata*
  8. Corolla with lobes; calyx not enclosing the fruit.
    10. Leaves compound.
      11. Flowers yellow; calyx lobes to 7 mm long in the fruit. . . . .  
 . . . . . *Lycopersicon pimpinellifolium*
      11. Flowers white; calyx lobes less than 1 mm long in the fruit.
        12. Corolla lobes shorter than the tube . . . . .  
 . . . . . *Solanum suaveolens*
        12. Corolla lobes longer than the tube. . . . . *Solanum canense*
    10. Leaves simple.
      13. Calyx coriaceous, 5-dentate to or to below the middle, almost equalling the length of the corolla; hemiepiphytic shrub or vine.
        14. Leaves subcoriaceous, less than twice as long as wide; calyx split to the middle . . . . . *Markea pavonii*
        14. Leaves coriaceous, 2-3 times as long as wide; calyx split to near the base. . . . . *Markea ulei*
      13. Calyx not coriaceous, only inconspicuously or not at all dentate and shorter than the corolla; mostly terrestrial (hemiepiphytic in part only in *Lycianthus* with the calyx truncate or subulately 10-toothed).
        15. Petals yellow or greenish-yellow; anthers dehiscing longitudinally, without apical pores; calyx truncate or 5-dentate; leaves apparently opposite, the two leaves at each node unequal, the larger of each pair more than 5 cm long (some leaves may appear paired in *Lycianthus* with 10 subulate calyx teeth).
        16. Shrub or small tree; inflorescence an axillary fascicle; calyx almost truncate, 1-2 mm long.
          17. Inflorescence many-flowered; calyx ca. 1 mm long. . . . . *Witheringia solanacea*
          17. Inflorescence 2-to 3-flowered; calyx ca. 2 mm long. . . . . *Witheringia riparia*
    16. Herb; inflorescence an axillary or terminal conspicuously pedunculate 3-to 4-flowered umbel; calyx conspicuously 5-dentate, ca. 5 mm long . . . . .  
 . . . . . *Jaltomata procumbens*



15. Petals white, purple, or greenish cream; anthers dehiscent by terminal pores (except *Capsicum* and *Acnistus*); calyx various; leaves mostly alternate (sometimes paired in part).
18. Ramiflorous shrubby tree; inflorescences numerous, many-flowered, fasciculate, borne along the branches below the leaves . . . . .  
 . . . . . *Acnistus arborescens*
18. Inflorescences axillary at leaf-bearing nodes or terminal (except in the vine *S. evolulifolia*).
19. Leaves entire, mostly asymmetrical, conspicuously cordate on at least one side; flowers green; fruits large, more than 3 cm in diameter, pendent on an elongate axis; trees 4-12 m tall . . . . .  
 . . . . . *Cyphomandra hartwegii*
19. Leaves never cordate; sometimes with irregular margins; flowers white, greenish, or purplish; fruit usually  $\pm$  erect, never pendent on an elongate axis, less than 3 (-3.5) cm in diameter (except *S. coconilla* with irregularly toothed leaves); herbs, vines, or shrubby trees.
20. Calyx truncate or with 10 subulate submarginal teeth; inflorescence usually fasciculate or reduced to a single axillary flower (terminal and paniculate in *Solanum styracioides*); peduncles absent except in *S. styracioides* (if a minute peduncle is present, the calyx with 10 subulate teeth).
21. Calyx truncate.
22. Herb; flowers white. . . . . *Capsicum frutescens*
22. Vine or hemiepiphytic shrub; flowers purple.
23. Hemiepiphytic; inflorescences axillary, fasciculate . . . . .  
 . . . . . *Lycianthus synanthera*
23. Liana; inflorescence terminal, paniculate. . . . .  
 . . . . . *Solanum styracioides*
21. Calyx with 10 subulate submarginal teeth.
24. Vine; plant puberulous throughout . . . . .  
 . . . . . *Lycianthus porteriana*
24. Shrub; plant pilose throughout . . . . .  
 . . . . . *Lycianthus amatitlanensis*
20. Calyx 5-dentate, usually conspicuously so; inflorescence pedunculate.
25. Plant spiny on the leaf midvein (usually) and the stem.
26. Spines with recurved tips, very numerous; leaves not lobed; vines; petioles finely puberulous. . . . .  
 . . . . . *Solanum subinerme*
26. Spines straight, relatively few; leaf margins conspicuously shallowly lobed; upright or scandent shrub; petiole pilose or villous.
27. Fruits pubescent at maturity; calyx villous, ca. 7 mm long; inflorescence rachis contracted . . . . .  
 . . . . . *Solanum flavescens*
27. Fruits glabrous; calyx tomentose, 3 mm long; inflorescence with a prominent rachis . . . . .  
 . . . . . *Solanum ochraceo-ferruginea*
25. Plant completely without spines.

28. Vines.
29. Leaves canescent with more or less appressed stellate trichomes or scales beneath.
30. Flowers white, the corolla ca. 8 mm long; leaf margins entire . . . .  
 . . . . . *Solanum schlechtendalianum*
30. Flowers purple, the corolla 1.5 cm long; margins of older leaves sharply-serrate . . . . . *Solanum palenquense*
29. Leaves not whitish beneath, the trichomes scattered and simple.
31. Flowers blue or white; calyx splitting irregularly; inflorescence terminal on leafy branches . . . . . *Solanum dulcamaroides*
31. Flowers white; calyx regularly 5-lobed; inflorescence cauliflorous or terminal.
32. Inflorescence cauliflorous; leaves 4-6 cm long . . . . .  
 . . . . . *Solanum evolulifolium*
32. Inflorescence terminal; leaves mostly 7-15 cm long. . . . .  
 . . . . . *Solanum dolichorhachis*
28. Herbs, shrubs or small trees.
33. Annual herb or subshrub to 1 m tall; inflorescence a simple umbel.
34. Annual herb; calyx 1 mm long, puberulous; anthers 1-1.5 mm long. . . . . *Solanum americanum*
34. Subshrub, ca. 1 m tall; calyx 2 mm long, glabrous; anthers ca. 2.2 mm long . . . . . *Solanum macrotonum*
33. Woody shrubs or small trees; inflorescence not an umbel (sometimes umbelliform by apical contraction).
35. Leaves glabrous or glabrescent (except sometimes along the main vein) below.
36. Leaves completely glabrous beneath.
37. Inflorescence elongate, branched along most of length; corolla lobes ca. 5 mm long . . . . . *Solanum rovirosanum*
37. Inflorescence short, branches few, congested at the tip of the peduncle; corolla lobes ca. 3 mm long. . . . .  
 . . . . . *Solanum arboreum*
36. Leaves with tufts of trichomes in the nerve axils beneath . . . .  
 . . . . . *Solanum nudum*
35. Leaf surface below densely stellate pubescent.
38. Inflorescence terminal, branched; calyx less than 5 mm long .  
 . . . . . *Solanum umbellatum*
38. Inflorescence axillary, contracted, unbranched; calyx more than 6 mm long.
39. Fruit  $\pm$  glabrescent, with a light covering of scurfy hairs when young; petals green . . . . . *Solanum coconilla*
39. Fruit densely pubescent with stiff, several mm long trichomes; petals white . . . . . *Solanum flavescens*

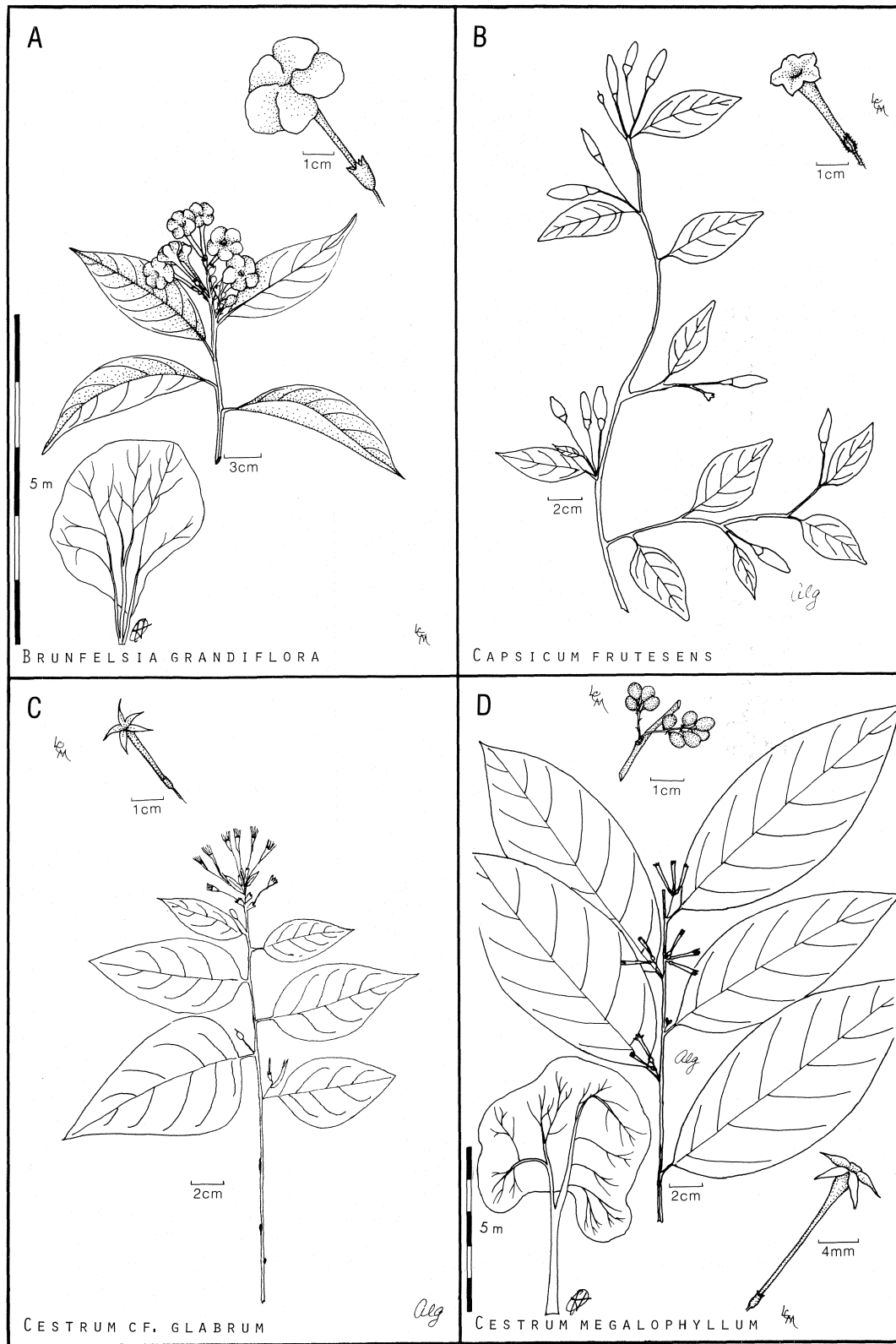


Plate 254

**Acnistus arborescens** (L.) Schlecht.

Plate 253-B

Shrub or small tree. Leaves elliptic, acute at the base and the apex, mostly 15-20 cm long. Flowers and fruits profuse, the fasciculate inflorescences borne along the branches below the leaves. Calyx shallowly and irregularly 5-lobed, ca. 2 mm long; corolla cream, each white lobe with a green spot, ca. 5 mm long. Fruit spherical, orange, 6-7 mm in diameter. Uncommon, in disturbed areas. Mexico and the West Indies to Brazil but apparently not in Panama.

Common name: "Cojojo"+, "Guitite"

**Browallia americana** L.

Plate 253-C

Herb. Leaves ovate, acute, more or less rounded at the base, mostly 3-4 cm long. Flowers showy, axillary, solitary; calyx 5-10 mm long, 5-lobed; corolla purple, salverform, the tube 12-15 mm long; stamens 4. Fruit a capsule. Common, in disturbed areas. Mexico to Argentina.

**Brugmansia versicolor** Lagerh.

Plate 253-D

Shrubby tree. Leaves ovate, acute, the base asymmetrical. Flowers pendent; calyx spathe-like, 10-12 cm long; corolla white, tubular, flaring at the apex, 25-30 cm long. Cultivated around homesites and wild along the river. Cultivated pantropically, native to the Guayaquil Basin. *Brugmansia suaveolens* (H. & B. ex Willd.) Bercht. & Presl. is also cultivated in the area.

Common name: "Campanilla"+

**\*Brunfelsia grandiflora** D. Don. ssp. *grandiflora*

Plate 254-A

Shrub. Leaves elliptic, acuminate, acute at the base, 12-16 cm long. Inflorescence terminal; calyx 5-dentate, 1 cm long; corolla purple, salverform, the tube 3.5-4 cm long, the lobes 1.5-2 cm long. Cultivated around homesites. Central and upper Amazonia, also widely cultivated.

**\*Capsicum frutescens** L.

Plate 254-B

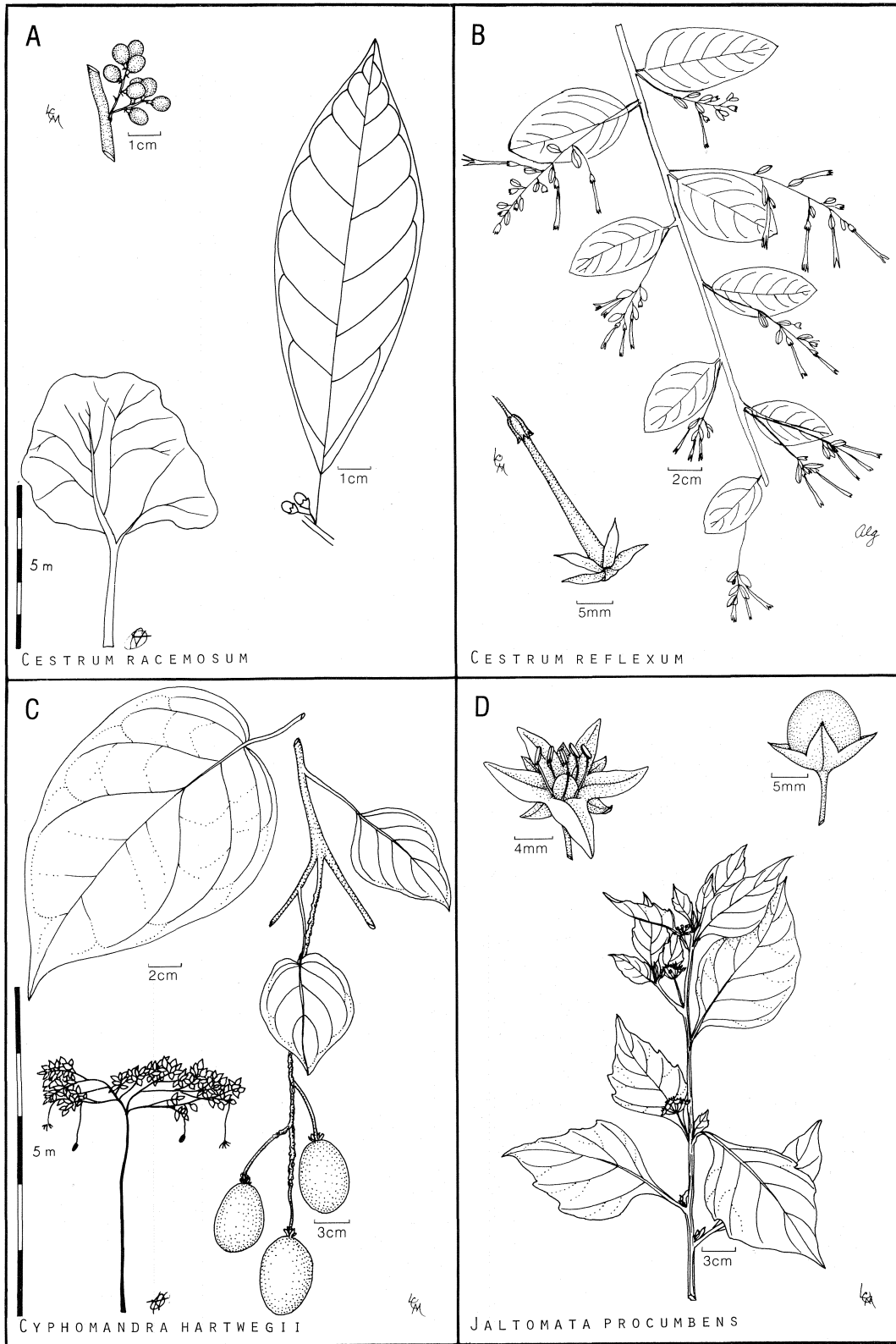
Herb or subshrub ca. 1 m tall. Leaves ovate, acute or acuminate, attenuate basally, the blade 3-8 cm long. Inflorescence an axillary fascicle of 2 or 3 flowers; calyx truncate, 1-2 mm long; corolla small, white; anthers usually blue. Fruits red, ellipsoid, berry-like. Cultivated around homesites. South-eastern United States to Argentina.

Common name: "Aji"+, "Chile"

**Cestrum cf. glabrum** Francey

Plate 254-C

Shrub to 2 m tall. Leaves ovate, acute, rounded to truncate at the base, 10-19 × 5-9 cm; petiole 4-25 mm long. Inflorescence racemose, usually axillary with a few leafy bracts near base; calyx 3-4 mm long; corolla greenish white, the tube ca. 2.5 cm long, 2-3 mm wide at mouth, the lobes 7-8 mm long. Uncommon, in mature forest along the creeks. Flowers in July. The Río Palenque plant keys to *C. glabrum* in Francey's monograph and is closer to that species than any other represented at MO. Its larger flowers and bracteate inflorescence indicate that it may be specifically distinct, however.



**Cestrum megalophyllum** Dun.

Plate 254-D

Tree 3-10 m tall. Leaves elliptic, acute at the base and the apex, 10-19 × 4-8 cm. Inflorescence racemose, axillary, bracts minute, subulate; calyx 1 mm long, puberulous outside; corolla greenish, the tube 1-1.7 cm long, 2 mm wide at mouth, the lobes 2 mm long. Fruit spherical, ca. 4 mm long. Infrequent, in mature forest. Guatemala and the West Indies to northern South America.

**Cestrum racemosum** R. & P.

Plate 255-A

Shrubby tree 3-5 m tall. Leaves elliptic, acuminate, acute at base, 7-14 × 2-4.5 cm. Inflorescence axillary, racemose, usually few-flowered, ebracteate, the calyx ca. 2 mm long, glabrous outside, the corolla greenish, the slender tube 1 cm long, the lobes 3-4 mm long. Fruit a purplish-black berry 6-7 mm long. Common, in mature and secondary forest. Belize to Brazil.

**Cestrum reflexum** Sendtn.

Plate 255-B

Scandent shrub. Leaves ovate, acute, truncate at the base, 5-9 × 2.5-5.5 cm. Inflorescence a long-stalked, many-flowered axillary panicle with the lateral branches subtended by foliaceous bracts; calyx 3-4 mm long; corolla yellowish green, the tube 2-2.5 cm long, the lobes 6-7 mm long. Fruit a blackish berry 9-12 mm long. Infrequent, at forest edge. Flowers in July. Costa Rica to Brazil and Ecuador.

**Cyphomandra hartwegii** (Miers) Dun.

Plate 255-C

Tree 5-12 m tall. Leaves asymmetrically ovate, acute to short acuminate, usually cordate at the base, chartaceous. Inflorescence terminal from branch forks, pendent; calyx 5-lobed, ca. 4-5 mm long; corolla deeply lobed, green with purple stripes inside, ca. 1 cm long. Fruit a berry to 5 cm or more in diameter. Infrequent, in mature forest. Honduras to Bolivia.  
Common name: "Tomate"+, "Tree Tomato"

**Jaltomata procumbens** (Cav.) J. Gentry

Plate 255-D

Herb to 2 m tall. Leaves rhombic-ovate, acuminate, attenuate, 4-11 × 2.5-6 cm, usually paired and appearing opposite. Inflorescence an axillary umbel; calyx 2-3 mm long, lobed to below the middle, to 1 cm long in fruit; corolla light yellow, 10-15 mm across, lobed halfway to the base. Fruit a black berry 8-10 mm across, subtended by enlarged, flaring calyx lobes. Infrequent, in disturbed areas and at the forest edge. Mexico to Peru.  
Common name: "Jaltomate"

**Lycianthes amatitlanensis** (Coult. & J. D. Sm.) Bitter

Plate 256-A

Shrub 1-2 m tall; pilose more or less throughout. Leaves obovate-elliptic, somewhat oblique, acuminate, attenuate at the base, to 23 × 10 cm, often paired and appearing opposite. Inflorescence an axillary fascicle of 1-5 flowers; calyx disciform with ten 4-5 mm long filiform submarginal teeth; corolla small, white. Fruit a red berry to 1 cm long. Infrequent, in mature forest. Guatemala to Peru and Amazonian Brazil.

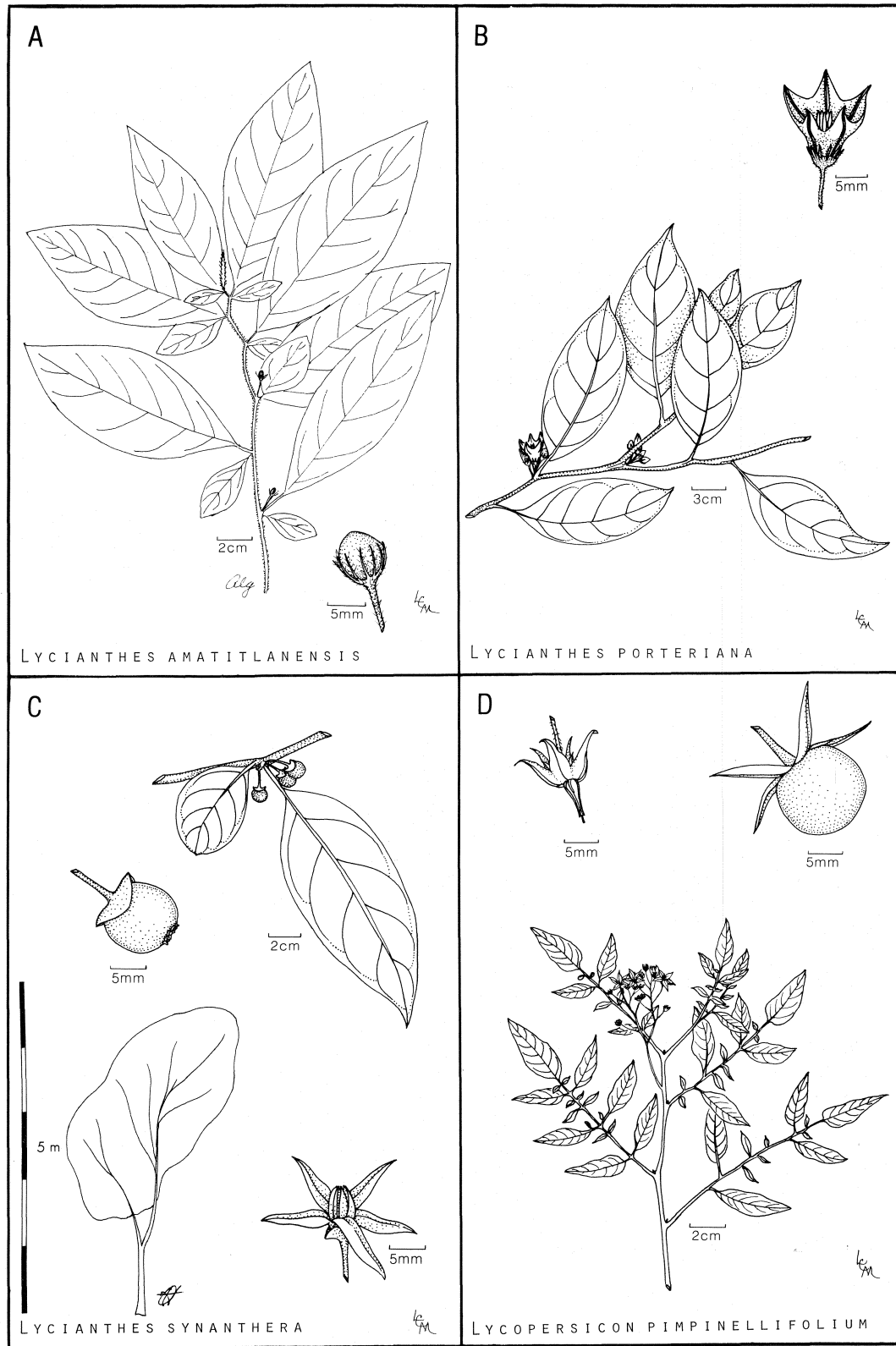


Plate 256

**Lycianthes porteriana** D'Arcy

Plate 256-B

Vine. Leaves elliptic, acute at the base and the apex, to 14 × 8 cm, pubescent with stalked stellate trichomes, densely below, sparsely above. Inflorescence a few-flowered, axillary fascicle or shortly pedunculate; calyx disciform with 10 subulate teeth 2-3 mm long; corolla white, 1.5 cm long in bud. Rare, in mature forest. Previously known only from Panama; the Río Palenque plant is a good match for the Panamanian material.

**Lycianthes synanthera** (Schlecht.) Bitter

Plate 256-C

Shrub or small tree, sometimes hemiepiphytic. Leaves elliptic to narrowly ovate, acuminate, asymmetric at the base, to 17 × 6 cm, often paired with a smaller elliptic leaf. Inflorescence an axillary fascicle; calyx disciform, truncate; corolla ca. 1.5 cm long in bud, deeply 5-lobed, the petals purple inside. Fruit an orange berry to 8 mm in diameter. Infrequent, in mature forest. Mexico to Ecuador, where this is apparently the first report.

**Lycopersicon pimpinellifolium** Mill.

Plate 256-D

Herb to 50 cm tall. Leaves pinnately compound with smaller interstitial leaflets between the 3-4 cm long primary leaflets. Inflorescence lateral, paniculate; calyx deeply 5-lobed, 1.5 mm long in flower, to 7 mm long in fruit; corolla yellow, 5-parted to about middle, 1 cm across. Fruit an orange-red berry ca. 1.5 cm in diameter. Uncommon, on rocky beaches along the river. Peru and Ecuador.

Common name: "Tomatillo"+, "Tomato"

**Markea pavonii** (Miers) D'Arcy

Plate 257-A

*Ectozoma pavonii* Miers

Hemiepiphytic shrub. Leaves elliptic to obovate, obtuse at base and apex, glabrous, less than twice as long as wide, to 10 × 6 cm. Inflorescence a rather congested cymose panicle, lateral, sparingly branched, the calyx 5-7 mm long, 5-dentate to near middle, the corolla campanulate, greenish white, ca. 8 cm long, hardly exceeding the calyx. Fruit unknown. Rare, in trees along river. Endemic to western Ecuador, previously known only from the type. Hunziker recognises *Ectozoma* as distinct from *Markea* and D'Arcy is now unsure of his suggested merger but we are maintaining the Flora of Panama nomenclature.

**Markea ulei** (Damm.) Cuatr.

Plate 257-B

*M. panamensis* Standl.

Epiphytic shrub with swollen basal tuber. Leaves narrowly elliptic to obovate, acute at base and apex, glabrous, 2-3 times as long as wide, to 17 × 7 cm; petiole 1-2 cm long. Inflorescence (not seen at Río Palenque) few-flowered, axillary, racemose or subpaniculate; the calyx 5-7 mm long, 5-dentate almost to base; corolla cream, campanulate, 10 mm long; the anthers sessile. Fruit (not known at Río Palenque) yellow, ovoid conical, to 10 mm long, nearly covered by the persistent calyx. Uncommon, in mature forest. Panama to Peru. Recently segregated from *Markea* as *Hawkesiophyton* by Hunziker but we have retained the Flora of Panama nomenclature.



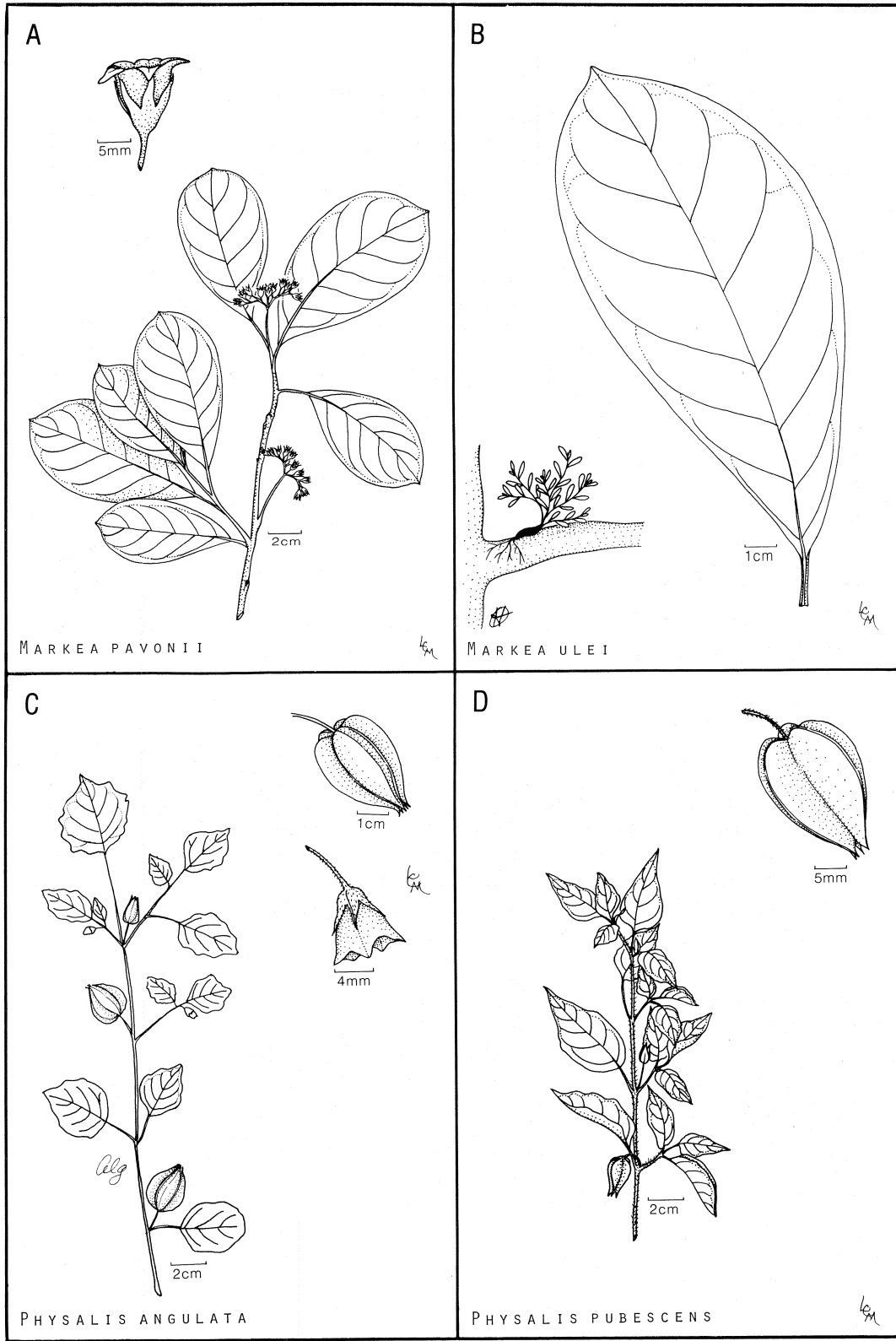


Plate 257

***Physalis angulata* L.**

Plate 257-C

Herb. Stems puberulous. Leaves broadly ovate, acute, the base truncate, to 7 × 7 cm, irregularly dentate; petioles puberulous. Inflorescence a single axillary flower; calyx 4 mm long, to 2.5 cm long in fruit; corolla yellow with a brownish center, ca. 1 cm in diameter, not lobed. Fruit a globose berry completely surrounded by the expanded calyx. Uncommon, on rocky beaches in the riverbed. Almost cosmopolitan.

***Physalis pubescens* L.**

Plate 257-D

Herb to 60 cm. Stems pilose. Leaves ovate, acute, the base truncate, to 5 × 3 cm; petioles with scattered long trichomes. Inflorescence a single axillary flower; calyx 4-6 mm long, to 2-4 cm long in fruit; corolla greenish, 6-12 mm long, not lobed; anthers blue. Fruits a globose berry completely surrounded by the expanded calyx. Infrequent, on rocky beaches in the riverbed. Massachusetts to Chile and Argentina; now also a weed throughout the palaeotropics.

Common name: "Miltomate"

***Solanum americanum* Mill.**

Plate 258-A

Herb. Leaves narrowly ovate, acute, attenuate at the base, 2-20 cm long. Inflorescence a lateral 4-to 6-flowered umbel; calyx 5-dentate; corolla small, white, the 2 mm long lobes reflexed; anthers 1-1.5 mm long. Fruit a spherical black berry ca. 5 mm in diameter. Common, in disturbed areas. Widespread in most tropical and warm temperate parts of the world.

***Solanum arboreum* H. & B. ex Dun.**

Plate 258-B

Tree 4-10 m tall and to 3 cm dbh. Leaves elliptic, acute or obtuse, rounded or somewhat tapered to the base, to 21 × 10 cm, more or less glabrous. Inflorescence axillary, paniculate but with the branches and flowers congested near tip thus appearing subumbellate; calyx 5-dentate, 2 mm long; corolla white, 4 mm long, lobed nearly to the base. Fruits spherical ca. 1.3 cm in diameter. Common, in mature and disturbed forest. Mexico to Venezuela and Peru. Our plant is much taller than normal for this species.

Common name: "Palo de Ajo"+

***Solanum canense* Rydb.**

Plate 258-C

Scrambling herb. Leaves pinnately compound with smaller interstitial leaflets between the 3-5 cm long asymmetrical primary leaflets. Inflorescence lateral, paniculate; calyx 5-dentate, ca. 1 mm long; corolla white, split more than halfway to the base. Fruit a globose green-striped berry 1.5-2 cm in diameter. Uncommon, mostly along the river. Guatemala to Ecuador and western Venezuela. This species is separated from *S. suaveolens* chiefly by the more deeply lobed corolla.