

Plate 142

CONVOLVULACEAE

Vines or shrubs, without tendrils, sap milky. Leaves alternate, simple, without stipules. Flowers bisexual; corolla tubular, showy, pink, white, blue or yellow, 5-lobed or entire, plaited or twisted in the bud; stamens 5, mounted on the corolla at the base, alternate with the lobes; ovary superior. Fruit a capsule.

Key to the species.

1. Flowers yellow; inflorescence umbelliform *Merremia umbellata*
1. Flowers white, blue, purple, or pink; inflorescence corymbose or 1-flowered.
 2. Flowers white, with a long, narrow tube below the abruptly expanded apex, 9-10 cm long; stem subspiny *Ipomoea alba*
 2. Flowers blue, purple or pink; tube gradually expanding from the base to the apex, less than 8 cm long; stem smooth.
 3. Leaves purple on the underside *Ipomoea batatas*
 3. Leaves green on the underside.
 4. Flower blue, rarely pink, solitary; stem pilose
 *Ipomoea ophiodes*
 4. Flowers purple or pink, in a corymbose inflorescence; stem glabrous or finely puberulous *Ipomoea trifida*

***Ipomoea alba* L.**

Plate 141-D

Vine. Stems with sub-spiny tubercles. Leaves ovate, entire or irregularly shallowly 3-to 7-lobed, acuminate, deeply cordate basally, glabrous. Inflorescence a few-flowered cyme. Flowers pure white, 9-10 cm long. Rare, in disturbed areas. Pantropical.

***Ipomoea batatas* (L.) Lam.**

Plate 142-A

Vine. Stem glabrous, red. Leaves ovate, 3-lobed toward the base, shallowly cordate at the base, glabrous, red on the underside. Inflorescence several-flowered. Corolla pink. Planted on leaf-cutter ant mounds to drive ants away, with some success. Cultivated and occasionally escaped. Perhaps native to tropical America. now pantropical.

Common name: "Camote"+

***Ipomoea ophiodes* Standl. & Steyerl.**

Plate 142-B

Vine. Stem pilose. Leaves ovate, acute or acuminate, deeply cordate at the base, glabrous. Inflorescence a single, blue (rarely pink) flower. Common, at forest edge and in disturbed areas. Previously known only from El Salvador and Guatemala, a suspect distribution.

***Ipomoea trifida* (HBK) G. Don**

Plate 142-C

Vine. Leaves ovate, acute, deeply cordate, glabrous. Inflorescence cymose. Flowers salverform, pink or lavender. Infrequent, in disturbed areas. Circum-Caribbean in distribution; introduced in Malaysia.

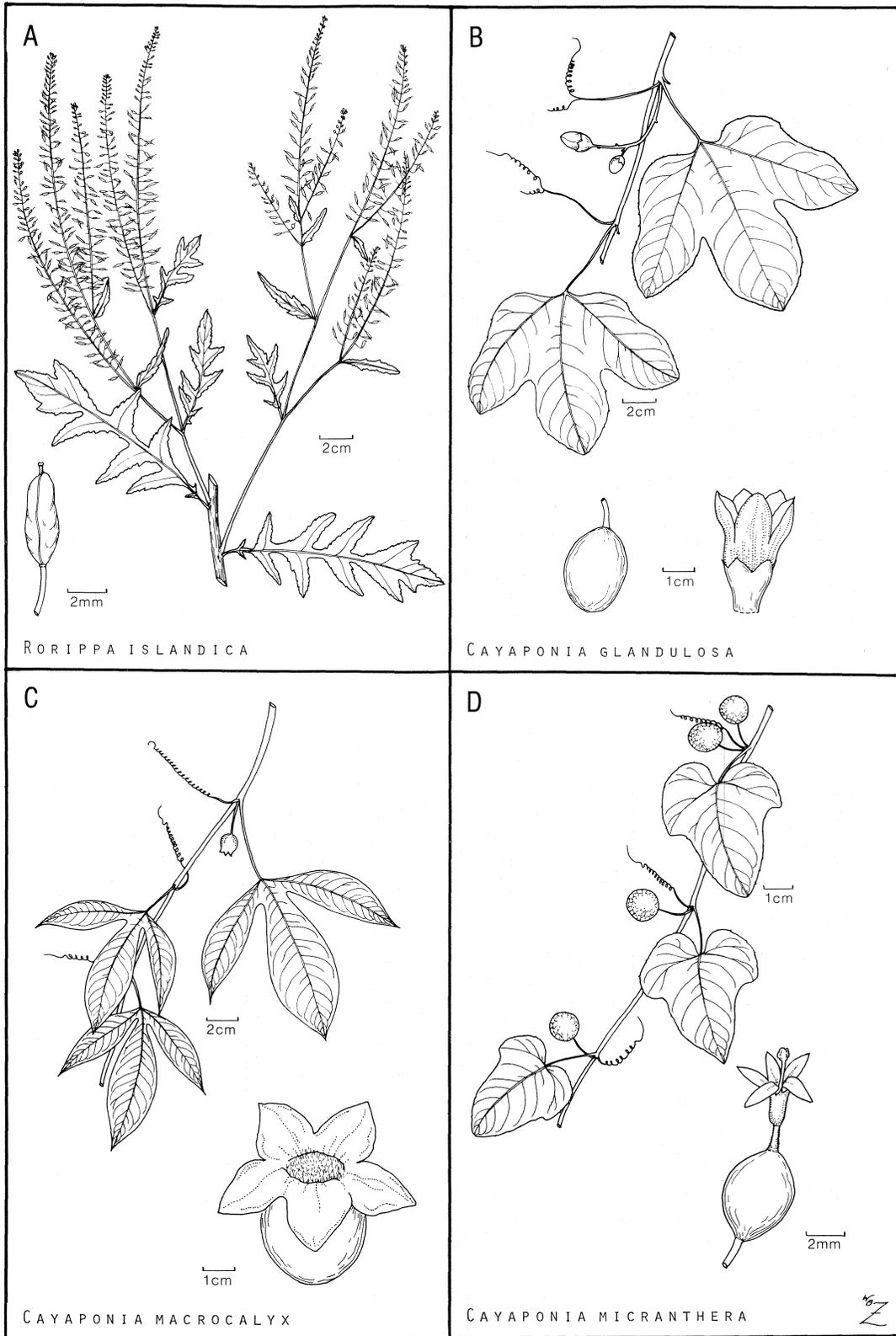


Plate 143

Merremia umbellata (L.) Hallier f.

Plate 142-D

Vine. Leaves ovate, acute or acuminate, broadly and shallowly cordate, somewhat puberulous. Inflorescence many-flowered, umbelliform. Flowers yellow; corolla deeply 5-lobed in the Río Palenque population. Flowers mostly in October. Infrequent, in disturbed areas. Mexico and southern Florida south through the West Indies throughout South America; also in the Old World tropics.

CRUCIFERAE

Herbs, often annual. Leaves alternate, simple, or compound, commonly lobed or dentate, without stipules. Inflorescence racemose. Flowers perfect, regular; sepals and petals 4; stamens 6 (the outer 2 shorter than the inner 4); ovary superior, usually 2-celled. Fruit a silique, usually dehiscent into two halves.

Rorippa islandica (Oed. ex Murray) Borb.

Plate 143-A

Annual herb, to 60 cm tall, stem glabrous. Leaves narrowly obovate, irregularly serrate, except the uppermost, pinnately divided to or almost to the midvein. Inflorescence racemose. Flowers yellow. Fruit an oblong silique, ca. 5 × 2 mm long on a 3-4 mm long pedicel. Rare, on gravel bars in the riverbed. Native to North America and Europe, a sporadic weed in the neotropics.

CUCURBITACEAE

Vines. Leaves alternate, entire to palmately or pinnately lobed; tendrils at the leaf base; without stipules. Flowers unisexual, the male inflorescence often differing from the female; calyx-lobes 5, corolla-lobes 5; stamens 1-5, variously arranged, often united and with twisted anthers; ovary inferior. Fruit a 1-to many-seeded berry, often with a hard outer shell.

Key to the species.

1. Leaves palmately compound.
 2. Flowers white or greenish-white.
 3. Primary leaflets 3, the lateral leaflets subdivided; fruits 2-3 cm long, covered with numerous spines . . . *Cyclanthera multifoliola*
 3. Primary leaflets 5, the lateral leaflets usually subdivided; fruits 5-16 cm long, smooth or with only a few spines near the base
 *Cyclanthera pedata*
 2. Flowers red or yellow.
 4. Calyx and corolla yellow *Gurania eggersii*
 4. Calyx green; corolla orange-red *Psiguria warscewiczii*
1. Leaves simple.
 5. Fruits with spines or tubercles (sometimes with only a few toward the base).

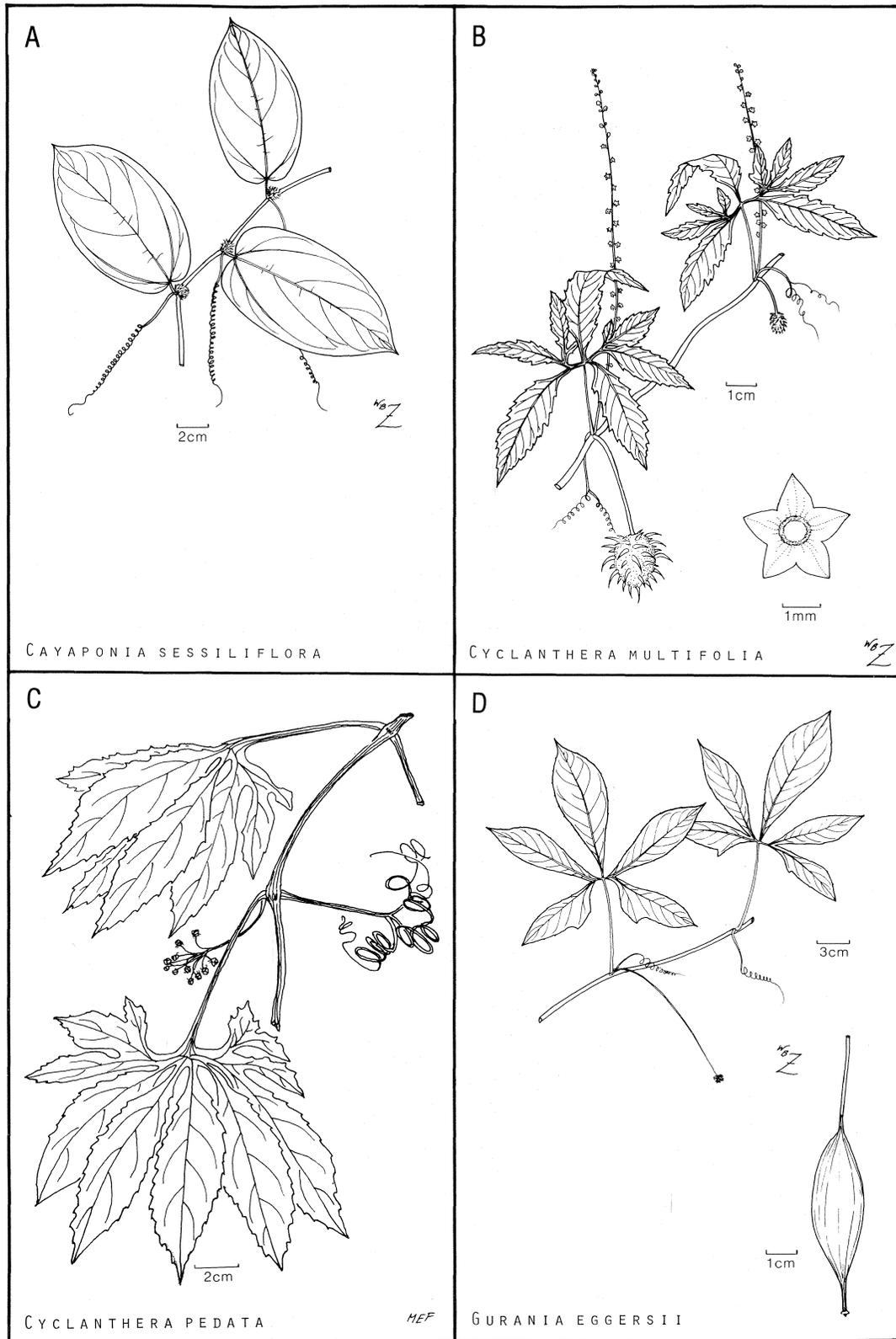


Plate 144

- 6. Leaves deeply 5-to 7-lobed; fruits with tubercles, bright orange, pulp bright red *Momordica charantia*
- 6. Leaves shallowly 3-to 5-lobed; fruits with spines, green, pulp whitish.
 - 7. Corolla-tube long; fruit covered with numerous spines; leaves glabrous above. *Rytidostylis carthagenensis*
 - 7. Corolla-tube short; fruit with a few hooked spines; leaves rough above. *Sicyos montanus*
- 5. Fruits without spines or tubercles.
 - 8. Sepals orange-red, longer than the yellow petals.
 - 9. Inflorescence produced from a woody stem near the ground *Gurania megistantha*
 - 9. Inflorescence produced from herbaceous growth near the apex of the stem *Gurania spinulosa*
 - 8. Flowers not as above.
 - 10. Fruit 1-seeded; inflorescence a subcapitate cluster or a few-flowered panicle. *Sicydium diffusum*
 - 10. Fruit few-to many-seeded; inflorescence a subcapitate cluster or a few-flowered raceme.
 - 11. Petals orange-red. *Psiguria warscewiczii*
 - 11. Petals yellow, white, or greenish.
 - 12. Fruit cylindrical, elongate, to 40 × 10 cm, interior filled with a coarse fibrous mass. *Luffa aegyptiaca*
 - 12. Fruit round or elliptical to 6 × 7 cm (usually much smaller), not filled with a fibrous mass.
 - 13. Leaves deeply 3-lobed; fruits purplish to blackish.
 - 14. Calyx-tube about 4 cm in diameter; inside of the corolla-lobes glabrous; leaves glabrous on the upper surface. *Cayaponia macrocalyx*
 - 14. Calyx-tube up to 1.5 cm in diameter; inside of the corolla-lobes densely pubescent; leaves rough on the upper surface. *Cayaponia glandulosa*
- 13. Leaves shallowly 3-lobed or nearly entire, if deeply lobed, then fruits orange-red.
 - 15. Fruit orange-red, 3-4 cm in diameter; leaves in part deeply 3-lobed. *Selysia prunifera*
 - 15. Fruit (where known) black, less than 1.5 cm in diameter; leaves almost entire to very slightly 3-lobed.
 - 16. Flowers bright yellow, glabrous; inflorescence with an elongate peduncle, usually over 2 cm long. *Melothria pendula*
 - 16. Flowers green or white, pubescent; inflorescence contracted or sessile, the peduncle less than 1 cm long.
 - 17. Flowers green, densely long hairy, sessile *Cayaponia sessiliflora*
 - 17. Flowers white, puberulous, on 5-10 mm long pedicels *Cayaponia micrantha*

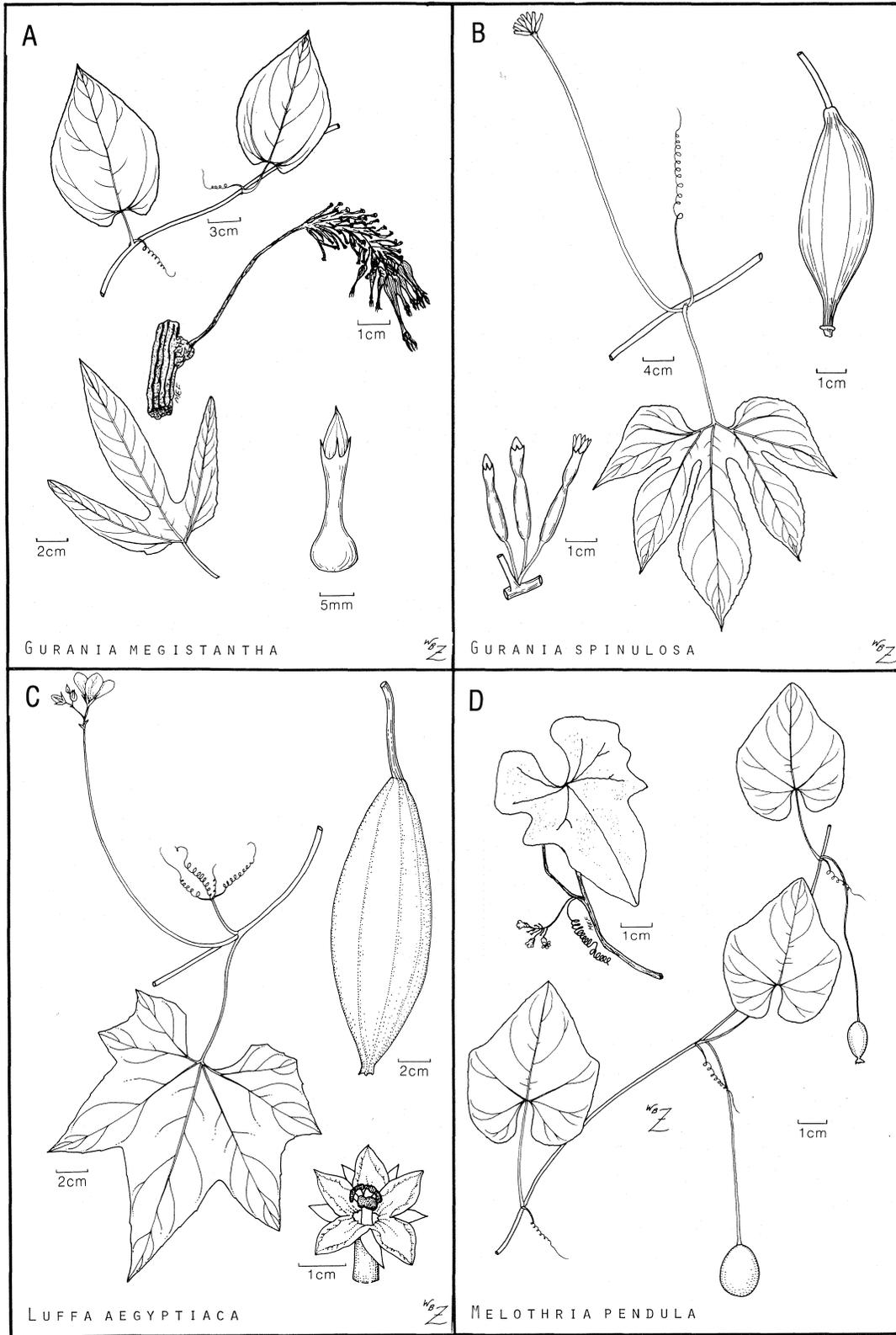


Plate 145

Cayaponia glandulosa (P. & E.) Cogn.

Plate 143-B

Robust vine. Leaves 3-lobed, to 20 cm long, lateral lobes nearly as long as the mid-lobe, the surface rough; tendrils simple. Flowers in short racemes, panicles, or solitary; calyx-tube up to 1.5 cm long and wide, lobes triangular, 5 mm long, green; corolla yellow-green, to 4 cm in diameter, the inside of the lobes densely pubescent. Fruit ellipsoid, ca. 2 cm long, 1.5 cm in diameter, purplish-black. Infrequent, in disturbed areas and in mature forest. Panama to Bolivia.

Common name: "Melon de Monte"+

Cayaponia macrocalyx Harms

Plate 143-C

Large vine. Leaves deeply 3-lobed, to 10 cm long, the surface smooth; tendrils simple. Flowers in short racemes, panicles, or solitary; calyx-tube greatly swollen, to 4 cm long and wide, the lobes triangular, small, green; corolla pale green with liver-brown spots, to 8 cm in diameter, softly pubescent outside, glabrous inside. Fruit round, 4-6 cm in diameter, purplish-green. Infrequent, in top of mature forest. Panama to Ecuador.

Cayaponia micrantha Cogn.

Plate 143-D

Herbaceous vine. Leaves narrowly ovate, slightly 3-lobed, ca. 6 cm long, acute at the apex, cordate at the base, the surface slightly rough; tendrils simple. Flowers few or solitary in the axils of the leaves; calyx-tube 2-3 cm long and wide, the lobes triangular-ovate, small; corolla white, ca. 1 cm in diameter, the outer surface pubescent. Fruit round, ca. 1 cm in diameter, black. Rare, in secondary growth, along Bates road. Panama to Ecuador.

Cayaponia sessiliflora Wunderlin

Plate 144-A

Slender vine. Leaves elliptic, to 10 cm long, acuminate, rounded to slightly cordate at the base, entire, remotely dentate, the veins red-pubescent on the underside of the blade; tendrils simple. Flowers in a tight cluster in the axils of the leaves; calyx-tube short, the lobes minute, green; corolla green, densely hairy, to 8 mm in diameter. Fruit unknown. Rare, in mature forest. Known from two collections, one from Río Palenque, the other (sterile) from Panama.

Cyclanthera multifoliola Cogn.

Plate 144-B

Slender vine. Leaves palmately compound; primary leaflets 3; lateral leaflets dissected 3-7 times, up to 15 cm long, glabrous or nearly so; tendrils 2-branched. Male flowers in an elongate, slender, axillary panicle; female flowers solitary, axillary; calyx-tube short, the lobes minute; corolla greenish-white, 2.0-3.5 mm in diameter. Fruits obliquely ovoid, 2-3 cm long, green, heavily armed with slightly curving spines to 7 mm long. Rare, in disturbed areas. Mexico to Ecuador.

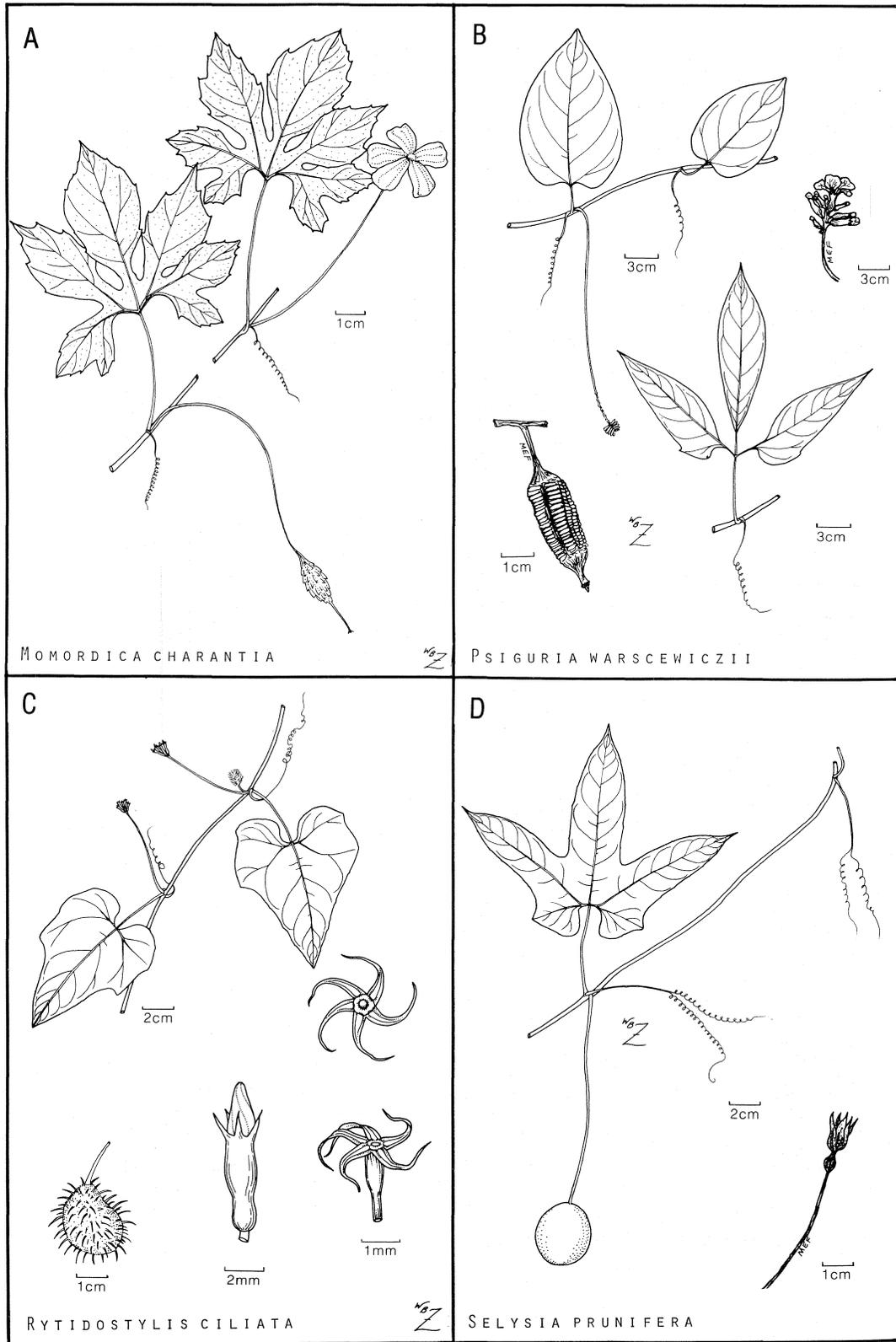


Plate 146

***Cyclanthera pedata** (L.) Schrad.

Plate 144-C

Slender vine. Leaves palmately compound; primary leaflets 5; lateral leaflets dissected 2-3 times, up to 20 cm long, glabrous or nearly so; tendrils 2-branched. Male flowers in short axillary panicles; female flowers axillary, solitary; calyx-tube short, the lobes minute; corolla whitish, 3-6 mm in diameter. Fruits obliquely ovoid, up to 16 cm long, greenish-white, smooth or with a few spines at the base. The fruits may be opened, cleaned, stuffed as with peppers, and baked or fried. The result is quite palatable. Cultivated around homesites. Mexico to Bolivia.

Common name: "Cochocho"+

Gurania eggersii Sprague & Hutch.

Plate 144-D

Slender vine. Leaves palmately compound with 3 leaflets, the lateral leaflets deeply 2-lobed, to 20 cm long, the surface slightly rough; tendrils simple. Male flowers subcapitate on an elongate peduncle; female flowers in a loose-branched raceme; calyx-tube yellow, ca. 5 mm in diameter. Fruit elliptic, slightly flattened, with a beak, to 8 cm long, green striped. Uncommon, in disturbed areas in mature forest. Western Ecuador.

Gurania megistantha J. D. Sm.

Plate 145-A

Large vine. Leaves entire or 3-to 5-lobed, to 25 cm long, lightly pubescent; tendrils simple. Male flowers in subsessile umbel-like racemes at the nodes of old stems near the ground; female flowers similarly produced on the upper part of the stem; calyx-tube 2-4 cm long, bulbous at the base, the lobes linear, ca. 5 mm long; corolla yellow, equalling or slightly exceeding the orange calyx-lobes. Fruit elliptic, with a short beak, 4-5 cm long, pale green with lighter spots. Rare, in top of mature forest. Costa Rica to Ecuador.

Gurania spinulosa (P. & E.) Cogn.

Plate 145-B

Stout vine. Leaves palmately 3-to 5-lobed, to 30 cm long, the surface rough; tendrils simple. Male flowers capitate on an elongate, erect peduncle to 60 cm long, in the axil of each leaf; female flowers from the apex of stem branches which hang from the tree tops to near ground level, the apical 3 meters without leaves; calyx-tube orange-red, 2-3 cm long, the lobes linear, ca. 1 cm long, with green tips; corolla yellow, the lobes 6-7 mm long. Fruit elliptic-rectangular, slightly flattened, 4-5 cm long, green. Infrequent, in top of mature forest. Colombia to Bolivia.

***Luffa aegyptiaca** Mill.

Plate 145-C

Herbaceous vine. Leaves broadly ovate, 3-to 5-angulate or -lobed, 5-10 cm long, acute at the apex, cordate at the base, roughened on both surfaces, especially the upper; tendrils 3-to 5-branched. Male flowers in elongate racemes; pistillate flowers in the same axils as the staminate and similarly disposed; calyx-tube short, the lobes triangular; corolla yellow, 4-6 cm in diameter. Fruits cylindrical, up to 40 cm long, dry when mature, opening by an apical operculum, interior filled with a coarse fibrous mass. Cultivated around homesites. Widely grown pantropically. Illustration adapted from drawing provided by R. Wunderlin.

Common name: "Estopa"

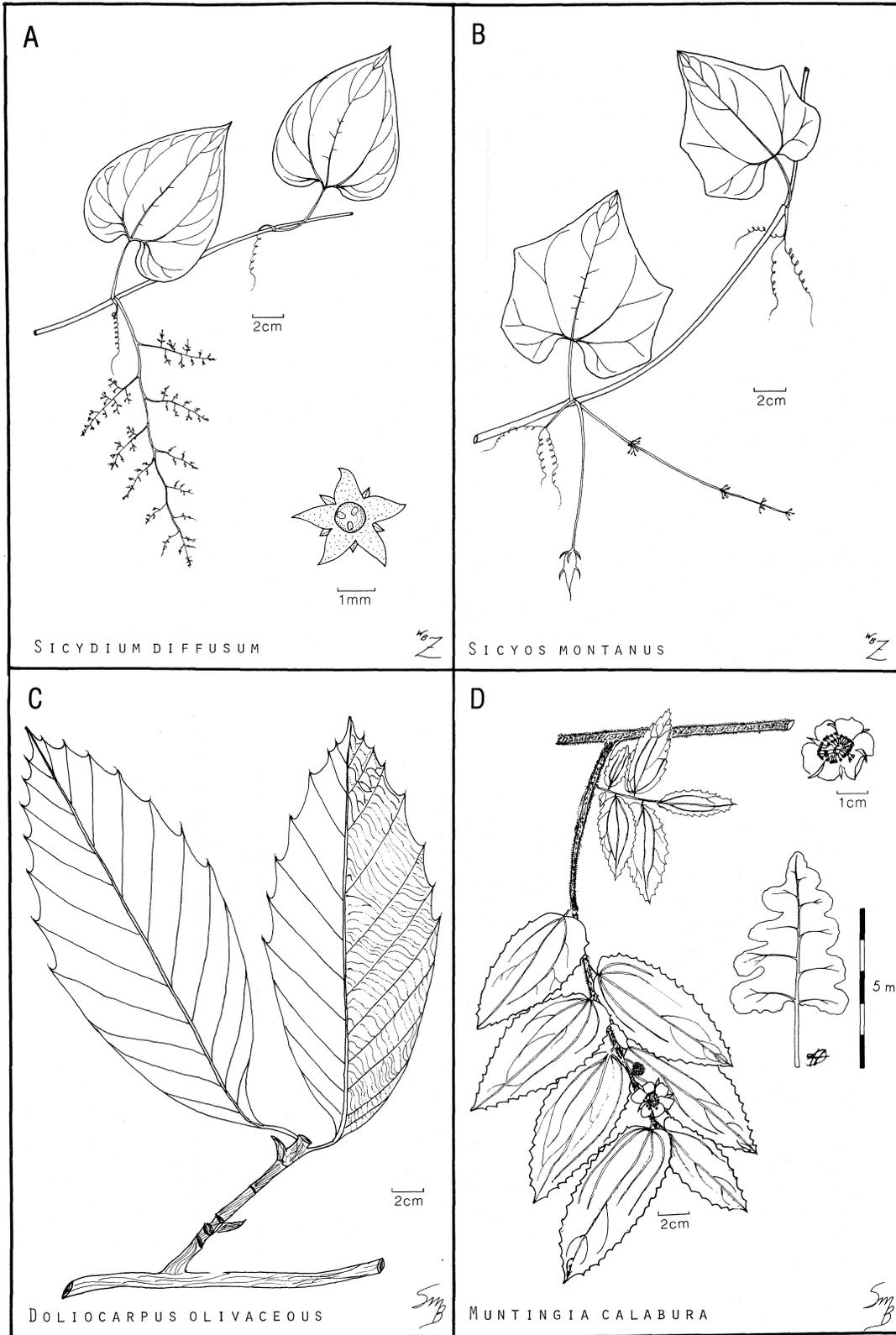


Plate 147

Melothria pendula L.

Plate 145-D

Slender vine. Leaves entire or slightly 3-lobed, cordate, 3-7 cm long, the surface rough; tendrils simple. Male flowers in axillary, long-pedunculate, few-flowered racemes; female flowers solitary, axillary; calyx campanulate, short, the lobes subulate, minute; corolla yellow, ca. 1 cm in diameter. Fruit ovoid to elliptical, to 1.5 cm in diameter, black. Common, in disturbed areas. Southern U.S. to Argentina.

Momordica charantia L.

Plate 146-A

Slender vine. Leaves palmately 5-to 7-lobed, 3-8 cm long and wide, the surface glabrous; tendrils simple. Flowers solitary, axillary, the peduncle 4-10 cm long, shorter on the female flowers; peduncle of the male flowers bearing an ovate bract near the middle or below; calyx-campanulate, the lobes minute; corolla yellow, to 3 cm in diameter. Fruit ovoid to fusiform, long beaked, 4-8 cm long, orange, surface with obtuse to acute tubercles; seeds covered with a bright red pulp. Infrequent, in disturbed areas. Native to the Old World, now pantropical.

Common name: "Sorosí"; "Balsam-apple"

Psiguria warscewiczii (Hook. f.) Wunderlin

Plate 146-B

Slender vine. Leaves entire or palmately compound with 3 leaflets, lateral leaflets oblique at the base and with a smaller lateral lobe, or divided to the base into 2 segments, the surface glabrous; tendrils simple. Male flowers capitate on an elongate peduncle to 20 cm long; female flowers few, axillary; calyx-tube subcylindrical, 1-2 cm long, green, the lobes dark green, triangular, 2-3 mm long; corolla red, 1.0-1.5 cm in diameter. Fruit elliptical, slightly flattened, 5-7 cm long, dark green with lighter green or whitish longitudinal stripes. Uncommon, in mature forest. Mexico to Ecuador.

Rytidostylis carthagenensis (Jacq.) Kuntze

Plate 146-C

Slender vine. Leaves entire, cordate, slightly 3-to 5-angled, 6-10 cm long and wide, the surface nearly smooth; tendrils 2-to 3-branched. Male flowers axillary, subsessile to long pedunculate; female flowers solitary, subsessile or with a peduncle up to 1 cm long; calyx-tube elongate-cylindric, 2-3 cm long; corolla greenish-white or yellowish, long-tubular, the lobes spreading, to 1.5 cm in diameter, twisted in the bud as in some apocynaceous flowers. Fruit obliquely ovoid, slightly compressed, 2-4 cm long, green, covered with bristles up to 5 mm long. Infrequent, in disturbed areas. Mexico to Ecuador.

Selsia prunifera (P. & E.) Cogn.

Plate 146-D

Large vine. Leaves 3-to 5-lobed, the mid-lobe to 15 cm long, the lateral lobes nearly as long as the mid-lobe, acuminate, cordate, the surface densely pubescent, but sparsely pubescent on the veins; tendrils 2-branched. Male flowers few, axillary; female flowers solitary, axillary; calyx campanulate, lobes 2-4 cm long; corolla white, lobes to 1.5 cm long. Fruit round or ovoid, 3-4 cm in diameter, red, smooth, with a hard outer shell, on a peduncle to 12 cm long. Uncommon, in canopy of mature forest. Costa Rica to Ecuador.

Sicydium diffusum Cogn.

Plate 147-A

Vine. Leaves entire to barely 3-lobed, ovate, to 13 cm long, acute, deeply cordate, minutely puberulent below. Inflorescence an open panicle; calyx minute; corolla greenish-white, 2-3 mm in diameter. Fruit round, 5-7 mm in diameter, black, single-seeded. Rare, at the forest edge along the entrance road at the hairpin turn. Otherwise known from Amazonian Brazil and Peru.

Sicyos montanus P. & E.

Plate 147-B

Slender vine. Leaves shallowly 5-lobed, cordate at the base, the surface rough; tendrils 2-to 3-branched. Male flowers in narrow panicles to 25 cm long; female flowers few, on an elongate peduncle to 10 cm long; calyx-tube narrowly campanulate, 2-5 cm long; corolla green, to 3 mm in diameter. Fruit elongate, lumpy, 6-9 cm long, armed with a few hooked spines. Common, in disturbed areas. Mexico to Bolivia.

DILLENiaceae

Lianas, shrubs or trees. Leaves alternate, simple, usually serrate and coriaceous, often conspicuously scabrous. Flowers bisexual or unisexual, regular; sepals 3-7; petals 2-6, yellow or white, usually notched at the apex and caducous shortly after anthesis; stamens many; pistil of 1-5 free or fused carpels; the ovary(s) superior, the styles free. Fruit a dehiscent follicle or more or less indehiscent and berry-like; seeds arillate.

Doliocarpus olivaceous Sprague & Williams ex Standl.

Plate 147-C

Liana. Petiole very narrowly winged, 1.5-3 cm long; leaves elliptic, acute to acuminate, cuneate, to 23 × 10 cm, glabrous, non-punctate, remotely and inconspicuously serrulate in the upper half, entire at the base. Inflorescences borne below the leaves, fasciculate. Flowers 1 cm wide, with 4-6 ovate sepals 2-5 mm long; petals 4-5, obovate, 6 mm long; stamens numerous. Fruit globose, red, puberulous outside. Uncommon, in mature forest. The material from Río Palenque is sterile, but matches closely *D. olivaceous*, previously known only from Panama.

ELAEOCARPACEAE

Trees or shrubs. Leaves simple, alternate, stipulate, usually entire. Flowers regular, usually bisexual; sepals 4-5; petals 4-5, free, often absent; stamens many, arising from a disc; ovary superior, 2-to many-loculed. Fruit a capsule or a drupe.

Key to the species.

1. Fruit a spiny capsule; flowers apetalous; leaves pinnately veined.
 *Sloanea meianthera*
1. Fruit berry-like; flowers with white petals; leaves palmately veined from
 the base. *Muntingia calabura*

***Muntingia calabura* L.**

Plate 147-D

Small tree to 10 m tall. Leaves inaequilateral, narrowly oblong-ovate to oblong-elliptic, to 10 × 3 cm, densely glandular pubescent and rather sticky when fresh. Flowers usually borne singly in the leaf axils; petals white, ca. 8 mm long; stamens numerous. Fruit a berry, turning red, to 1 cm in diameter. Uncommon, scattered along highway on both sides of Río Palenque. Widely distributed through most of tropical America. Illustration of flower adapted from "Taxonomy of Vascular Plants."
 Common name: "Niguito", "Capulín"

***Sloanea meianthera* J. D. Sm.**

Plate 148-A

Small to medium-sized tree, ca. 10 m tall. Leaves obovate, more or less acute, the base cuneate, 12-18 × 5-9 cm; petiole 1-3 cm long, jointed at the apex. Fruit 5-carpellate, ellipsoid, dehiscent, ca. 1.5 × 1 cm, densely covered by 5 mm long spines, the seeds with red arils. Rare, along the entrance road near trail 1 and at the edge of the laboratory clearing. Previously known from Belize to Costa Rica, and has recently been collected in Panama; this is the first Ecuadorian record. The Ecuadorian plant has larger leaves than *S. meianthera* in northern Central America but quite like those of the Panamanian collection. This may be the species reported by Little as *S. petenensis* Standl. & Steyerl.

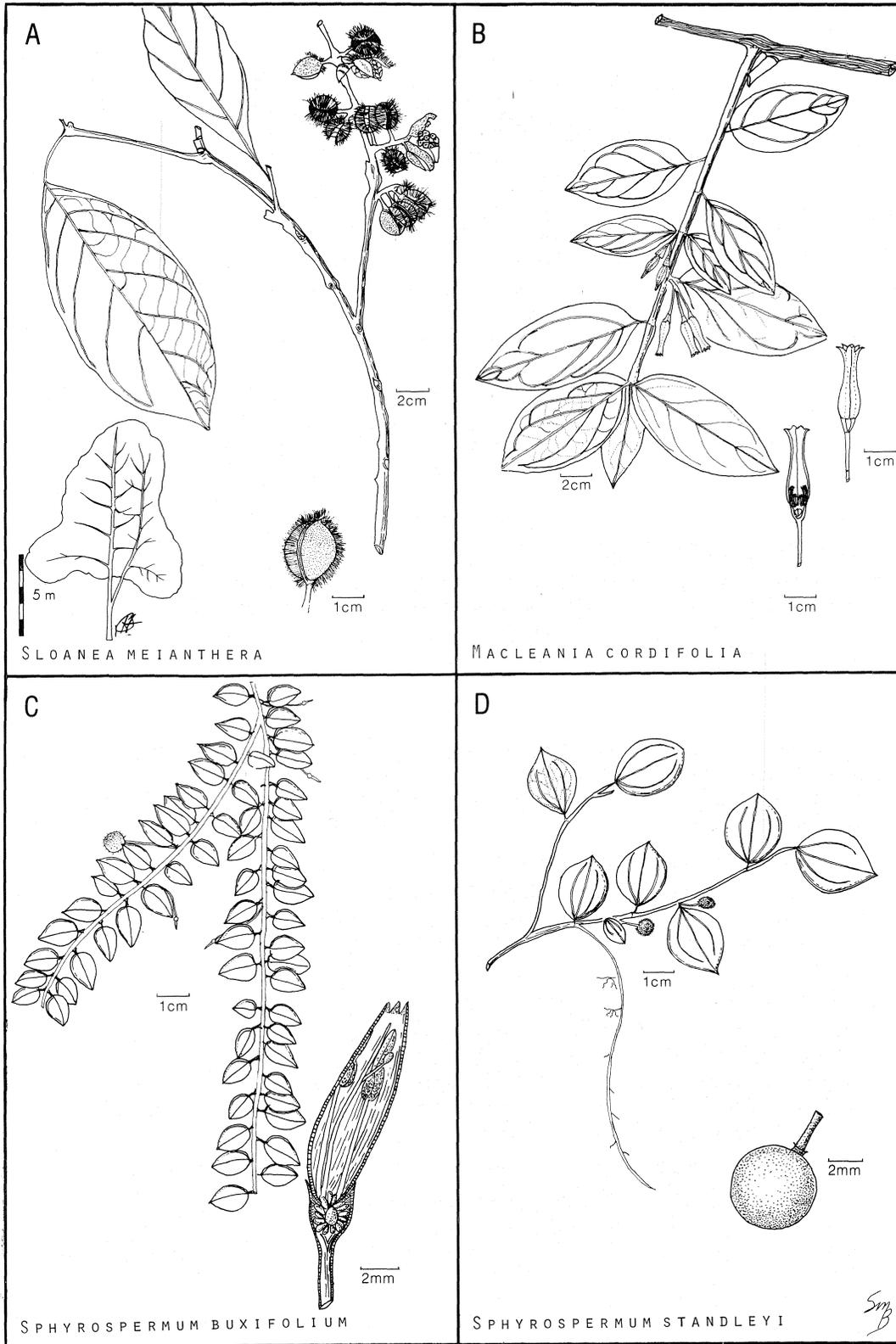


Plate 148

ERICACEAE

Shrubs or small trees (ours epiphytic). Leaves alternate, simple, entire or somewhat serrate, without stipules. Flowers bisexual, usually red or white; calyx (4-)5(-7) lobed; corolla tubular, (4-)5(-7) lobed, the lobes small; stamens as many as or twice as many as the petals, arising from the base of a disc; ovary inferior or superior. Fruit a berry.

Key to the species.

1. Leaves less than 5 cm long, 3-veined; flowers and fruits single on a long axillary pedicel; flowers white or pinkish.
 2. Leaves less than 2.5 cm long.
 3. Corolla white; stems stiff. *Sphyrospermum buxifolium*
 3. Corolla pink; stems lax *Sphyrospermum campii*
 2. Leaves 3-5 cm long *Sphyrospermum standleyi*
1. Leaves 4-10 cm long, pinnately veined; inflorescence racemose; flowers red-orange.
 4. Leaves elliptic-ovate; petiole to 2 mm long; base of leaf cordate but not clasping stem. *Macleania cordifolia*
 4. Leaves ovate; sessile; base of leaf cordate and clasping the stem *Macleania sleumeriana*

***Macleania cordifolia* Benth.**

Plate 148-B

Epiphytic shrub. Leaves elliptic-ovate, obtuse at the apex, slightly cordate at the base, 4-10 cm long. Inflorescence axillary, racemose; calyx 5 mm wide at anthesis; corolla red-orange, tubular, ca. 1.5 cm long. Infrequent, in mature forest. Pacific Ecuador.

***Macleania sleumeriana* A. C. Sm.**

Plate 277-D

Epiphytic shrub. Leaves ovate, acute at the apex, strongly cordately-lobed at the base, clasping the stem, 10-15 × 5-7 cm. Inflorescence axillary, racemose; calyx 1 cm wide at anthesis; corolla orange-red, tubular, ca. 3 cm long. Uncommon, in mature forest across the river. Not yet found at Río Palenque. Western Ecuador.

***Sphyrospermum buxifolium* P. & E.**

Plate 148-C

Epiphytic climber. Leaves coriaceous, ovate to subrotund, rounded at the base and the apex, 0.7-1.3 cm long. Calyx ca. 1 mm long and wide; corolla white, tubular, 5 mm long. Uncommon, in mature forest. Nicaragua to Bolivia.

***Sphyrospermum campii* A. C. Sm.**

Plate 278-A

Epiphytic vine. Leaves membranaceous, ovate, acute at the apex, rounded at the base, 2.5 × 1.3 cm. Corolla pink, campanulate, 1.2 cm long. Common, on hills across the river. Not yet found at Río Palenque. Western Ecuador. Luteyn (pers. comm.) suggests that this may be the same as *Vaccinium dissimile* Blake from Central America.

***Sphyrospermum standleyi* A. C. Sm.**

Plate 148-D

Small epiphytic shrub. Leaves membranaceous, elliptical, acute at the apex, cuneate at the base, 3-veined from the base, 3-5 × 1.5-3 cm. Fruit 0.8 cm in diameter. Rare, in mature forest. Previously known from Costa Rica and Panama.

EUPHORBIACEAE

Herbs, shrubs, vines or trees, often with milky juice. Leaves mostly alternate, simple or palmately compound, usually stipulate. Flowers usually borne in cymules or cyathia superficially resembling flowers. Flowers highly reduced, unisexual; staminate flower with stamens often reduced to 1, usually with a disc; pistillate flowers often pedicellate, the ovary superior, mostly 3-loculed. Fruits usually 3-parted; locules with 1 or 2 seeds.

Key to the species.

1. Leaves entire, not 3-veined from the base.
 2. Cultivated shrubs; leaves variegated or red, large (more than 4.5 cm wide).
 3. Leaves variegated, more than 8 cm wide and 15 cm long.
 *Codiaeum variegatum*
 3. Leaves red, less than 7 cm wide and 8 cm long
 *Euphorbia cotinifolia*
 2. Native or cultivated plants; leaves green, usually small [less than 3.2 (-4.5) cm wide].
 4. Canopy tree; flowers single or in pairs in the leaf axils
 *Drypetes standleyi*
 4. Herbs, shrubs or small trees; inflorescence a cyme or cymule.
 5. Inflorescence a terminal cyme composed of cyathia; leaves more than 3 × 1.5 cm
 *Euphorbia graminea*
 5. Inflorescence a single axillary cymule; leaves usually less than 3 × 1.5 cm.
 6. Small tree to 5 m tall; leaves more than 1.5 × 1 cm.
 7. Native; leaves less than 5 cm long; fruit 3 mm long, capsular.
 *Phyllanthus anisobolus*
 7. Cultivated; leaves more than 5 cm long; fruit fleshy, 1 cm in diameter
 *Phyllanthus acidus*
 6. Herb less than 1 m tall; leaves less than 1.5 × 0.7 cm.
 8. Leaves on the main stem persistent, larger than the leaves of the side branches.
 *Phyllanthus caroliniensis*
 8. Leaves on the main stem lacking (reduced to scales).
 9. Cymules ("flowers") pedicellate; leaves not apiculate.
 10. Leaf blades more or less oblique at the base; seeds minutely verrucose-surfaced.
 *Phyllanthus niruri*
 10. Leaf blades not oblique; seeds longitudinally striate
 *Phyllanthus stipulatus*
 9. Cymules ("flowers") sessile; leaves apiculate.
 *Phyllanthus urinaria*
 1. Leaves either 3-veined from the base or not entire (i.e. palmately-compound, lobed, serrulate, or serrate) or (usually) both.
 11. Herb; leaves less than 4.5 × 1.3 cm.
 12. Leaves narrowly elliptic; flower clusters not subtended by minute leaves; capsule pubescent.
 *Chamaesyce hirta*
 12. Leaves oblong elliptic; flower clusters subtended by minute leaves; capsule glabrous
 *Chamaesyce hyssopifolia*
 11. Trees, shrubs, or vines; leaves more than 4 cm long and 3 cm wide.
 13. Leaves palmately-compound
 *Hevea brasiliensis*

13. Leaves entire to deeply lobed.
14. Leaves peltate, palmately (7-)9-to 11-lobed. *Ricinus communis*
14. Leaves not peltate, unlobed or 3-to 7-lobed.
15. All or most leaves trifid or 5-to 7-parted to below the middle.
16. Inflorescence axillary, subtended by a pair of large trifid bracts resembling small leaves *Dalechampia scandens*
16. Inflorescence terminal, ebracteate.
17. Tree; only lower leaves shallowly 3-parted
 *Aleurites moluccana*
17. Vine or shrub; all leaves deeply 3-to 7-parted.
18. Native vine or scrambling shrub; leaves 3-parted
 *Manihot leptophylla*
18. Cultivated shrub; leaves mostly 5-to 7-parted
 *Manihot esculenta*
15. Leaves ovate, elliptic, or obovate, not lobed.
19. Woody vines; fruits large (more than 3 cm across); styles fused.
20. Fruits 4-parted, angular; leaves broadly ovate, serrate, the base truncate or shallowly cordate . . *Plukenetia volubilis*
20. Fruits 3-parted, globose, to 12 cm in diameter; leaves elliptic, entire, the base rounded *Omphalea diandra*
19. Shrubs or trees (sometimes subscandent in *Acalypha*); fruits less than 1.5 cm across; styles free for at least half their length.
21. Styles and carpels 2; fruit 2-parted; inflorescence few-branched. *Alchornea* aff. *leptogyna*
21. Styles and carpels 3; fruit 3-parted; inflorescence branched or unbranched.
22. Inflorescences terminal, spicate, monoecious with 8-15 female flowers at the base of an otherwise male spike *Sapium peruvianum*
22. Inflorescences axillary, with flowers of one sex only [except *Acalypha diversifolia* with one or two (-6) female flowers at the base of the spike]; inflorescence sometimes paniculate.
23. Dioecious tree; stamens 3; male inflorescence paniculate; female inflorescence racemose.
 *Tetrorchidium andinum*
23. Monoecious shrubs or small trees; stamens 4-8; male inflorescence spicate; female inflorescence spicate or paniculate (inflorescence sometimes monoecious).
24. Pistillate inflorescences branched, without foliaceous bracts. *Acalypha villosa*
24. All inflorescences unbranched, the female flowers subtended by small foliaceous bracts.
25. Leaf obovate, the base acute; male and female flowers on separate inflorescences *Acalypha obovata*
25. Leaf elliptic or ovate, the base more or less rounded; male and female flowers on the same inflorescence.
 *Acalypha diversifolia*

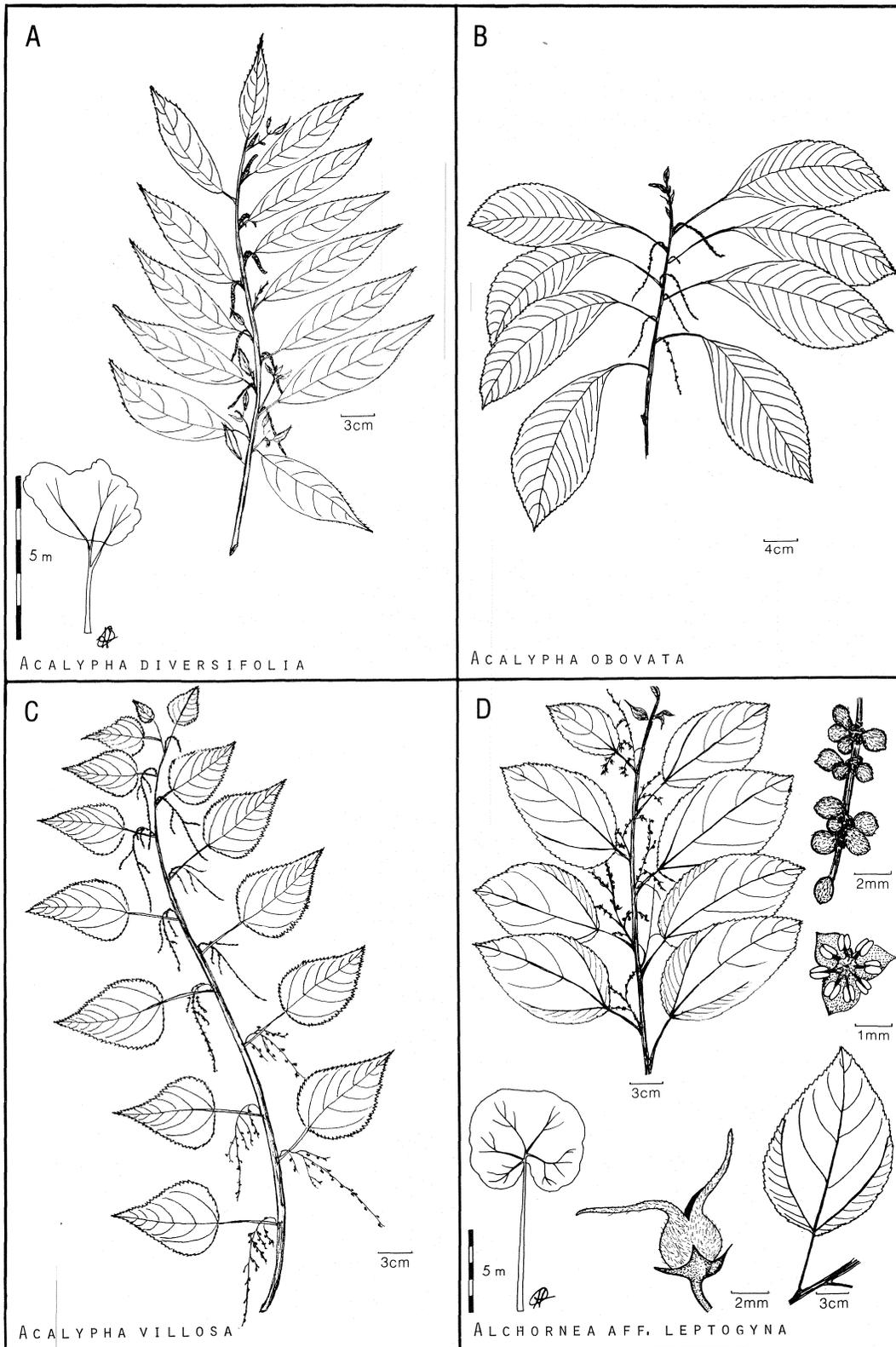


Plate 149

***Acalypha diversifolia* Jacq.**

Plate 149-A

Large shrub or small tree. Leaves elliptic to narrowly ovate, serrate, pinnately veined, acuminate, the base more or less rounded. Inflorescence bisexual, spicate, axillary, with the few female flowers at the base. Fruits tiny, 3-parted. Common, in disturbed areas. Southern Mexico to Brazil and Bolivia.
Common name: "Canilla de Venado"+

***Acalypha obovata* Benth.**

Plate 149-B

Shrub, sometimes scandent. Leaves obovate, obtuse to abruptly short-acuminate, serrate, pinnately veined, the base more or less cuneate. Inflorescences unisexual, axillary, spicate, the female flowers subtended by minute foliaceous bracts. Fruits tiny, 3-parted. Extremely common, in disturbed areas and mature forest. Colombia and Venezuela to Peru, perhaps the first record for Ecuador.

***Acalypha villosa* Jacq.**

Plate 149-C

Erect or scandent shrub. Leaves ovate, serrate, 3-veined from the base, acute, the base more or less truncate. Inflorescences unisexual, axillary, the male inflorescences spicate, the female inflorescences branched. Fruits tiny, 3-parted. Locally common along the river and in second growth. Belize to Brazil and Paraguay.

***Alchornea* aff. *leptogyna* Diels**

Plate 149-D

Tree, 10 to 15 m tall. Leaves broadly ovate or ovate-elliptic, obtusely serrate, 3-veined from the base, acute to short acuminate, the base rounded or subtruncate. Inflorescences unisexual, axillary, the male inflorescence paniculate with minute sessile greenish flowers, the female inflorescence few-branched, the female flowers bicarpellate with 2 long (8-10 mm) spreading styles. Capsule 2-parted. Infrequent, mostly near the river. Identification with this species of eastern Ecuador is provisional as the genus is badly in need of revision; Webster suggests that our plant may be undescribed.

****Aleurites moluccana* (L.) Willd.**

Plate 150-A

Tree, to at least 8 m tall. Leaves alternate, ovate, entire to somewhat 3-lobed, acute, truncate to subcordate at the base, stellately pubescent, palmately 3-to 5-nerved, to 30 × 27 cm; petiole to 50 cm long. Inflorescence paniculate; flowers small, white. Fruit asymmetrically ovoid, 5 cm long. Cultivated around homesites. Native to tropical Asia; rather recently introduced in Ecuador.

Common name: "Nuez"+

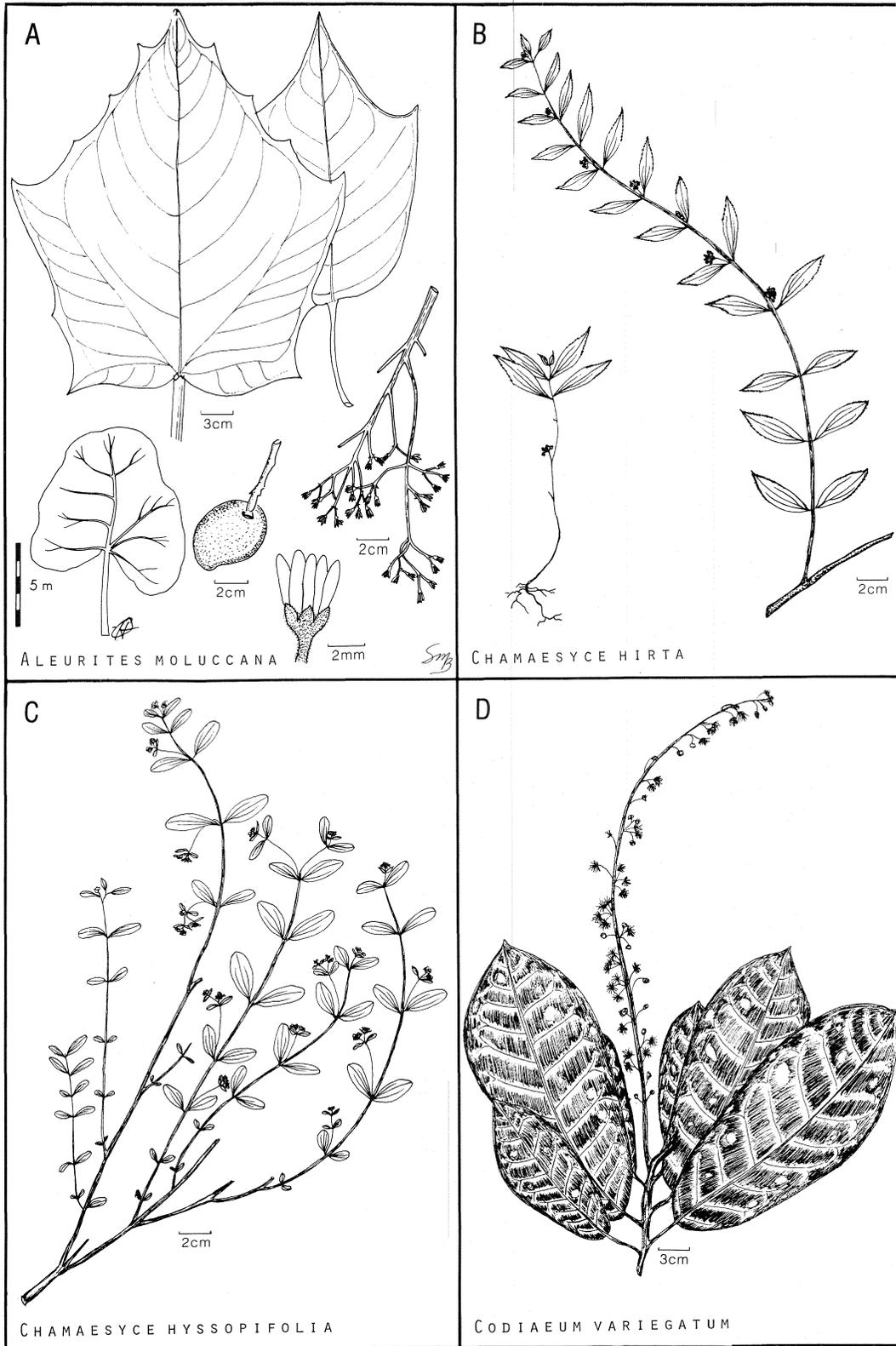


Plate 150

Chamaesyce hirta (L.) Millsp.

Plate 150-B

Herb. Leaves narrowly elliptic, less than 4.5×1.3 cm, minutely serrate; 3-veined from the base; acute at the base and the apex. Inflorescence an axillary, short-pedunculate cluster of "flowers" (cyathia). Capsule minute, 3-parted, pubescent. Infrequent, in disturbed areas. A pantropical weed.

Chamaesyce hyssopifolia (L.) Small

Plate 150-C

Herb. Leaves oblong, elliptic, to 3×1.2 cm, minutely serrate; 3-veined from the base; rounded at the base and the apex. Inflorescence an axillary or terminal few-flowered cluster of cyathia, subtended by and interspersed with the leaves. Capsule minute, 3-parted, glabrous. Infrequent on rocky beaches. New World tropics and subtropics; adventive in the Old World.

***Codiaeum variegatum** (L.) Blume

Plate 150-D

Shrub or small tree, to 3 m tall. Leaves entire (rarely 3-lobed), brightly colored or variegated with yellow and green, acute, rounded at the base, glabrous, to 30×12 cm. Inflorescence spicate, to 30 cm long. Flowers white. Fruits to 1 cm in diameter. Cultivated around homesites. Native to tropical Asia.

Common name: "Croto"+

Dalechampia scandens L.

Plate 151-A

Vine. Leaves trifid to below the middle, serrate, 5-veined from the base, the base more or less cordate. Inflorescence of three female flowers and one to several male flowers, appearing axillary, bisexual, distinctly pedunculate, the flowers subtended by a pair of conspicuous trifid foliaceous bracts. Capsule 3-parted. Formerly common, now infrequent, in disturbed areas. Through most of tropical America including the West Indies.

Common name: "Ortigailla"

Drypetes standleyi Webster

Plate 151-B

Canopy tree, to 35 m tall. Leaves alternate, narrowly ovate to narrowly ovate-elliptic, acuminate, somewhat obliquely cuneate at the base, entire or subserrulate, to 15×4.5 cm. Flowers minute, axillary, greenish, borne singly or a few in the leaf axils. Fruit drupaceous, ellipsoidal, pointed at both ends, ca. 2 cm long and 1.3 cm in diameter. Infrequent, in mature forest. Panama to Western Ecuador.

Common name: "Piñuelo"+

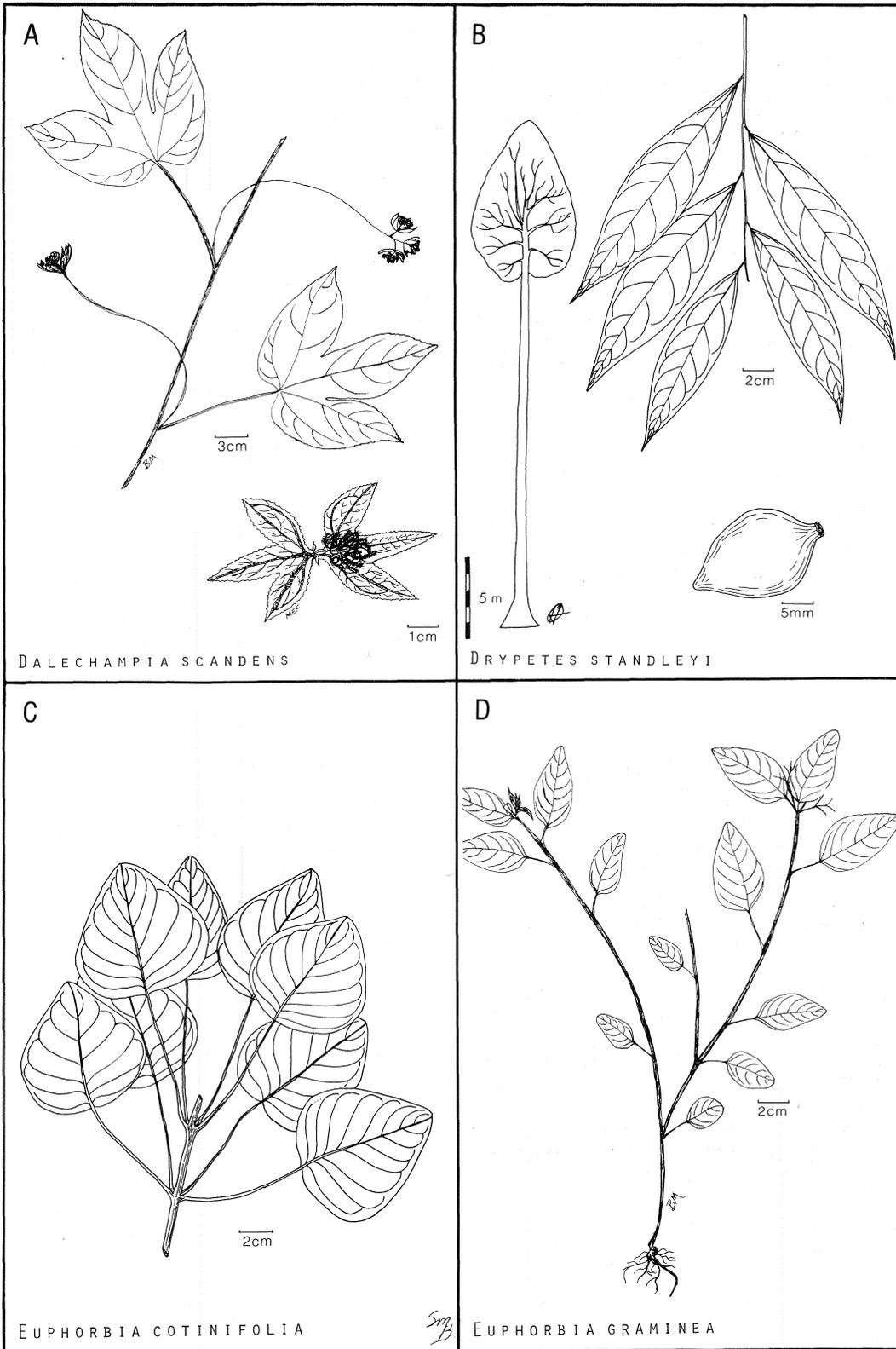


Plate 151

***Euphorbia cotinifolia L.**

Plate 151-C

Small tree, to 4 m tall. Petioles long and slender; leaves whorled, rounded-ovate, obtuse at the apex, truncate at the base, to 8 × 7 cm, red when fresh. Not flowering at Río Palenque. Cultivated around homesites. Apparently native to Central America and northern South America, but much cultivated in fence rows and the actual range of distribution obscure.

Common name: "Barrabás"

Euphorbia graminea Jacq.

Plate 151-D

Erect herb. Leaves narrowly ovate, pinnately veined. Inflorescences terminal, cymose, the flowers in cyathia. Capsule 3-parted, 3.5 mm in diameter. Locally common, around homesites and the forest edge. Southern Mexico to northern South America. The Río Palenque plants have broader leaves than most Central American collections but the species is apparently extremely variable.

***Hevea brasiliensis Müll.-Arg.**

Plate 152-A

Tree, to 20 m tall (becoming taller). Leaves palmately 5-pinnate; leaflets long-petiolulate, the blades to 25 × 15 cm, glabrous, acuminate, cuneate at the base. Inflorescence long-pedunculate. Fruits forcibly expelling the seeds for a considerable distance when ripe. Cultivated on Hacienda Chapil adjacent to the north boundary of the Science Center. It is only a matter of time until the plants escape into Río Palenque.

Manihot esculenta Crantz

Plate 152-B

Shrub to 2.5 m tall. Leaves deeply (3-) 5-to 7-parted, 5-to 7-veined from the base, the lobes acuminate. Flowers pinkish white, the racemes or few-branched panicles from the branch axils, the female flowers basal. Capsule apparently 6-parted. Cultivated and infrequently escaped along the river. Probably native to Brazil; cultivated throughout the tropics.

Common name: "Yuca"+

Manihot leptophylla Pax

Plate 152-C

Rambling shrub or vine. Leaves 3-parted to near the base, 3-veined from the base, the lobes acute to acuminate. Flowers cream, the racemes terminal on short shoots from branch axils, the female flowers basal and the male flowers terminal. Capsule apparently 6-parted. Common, in disturbed areas, especially along the entrance road. Colombia to Ecuador.

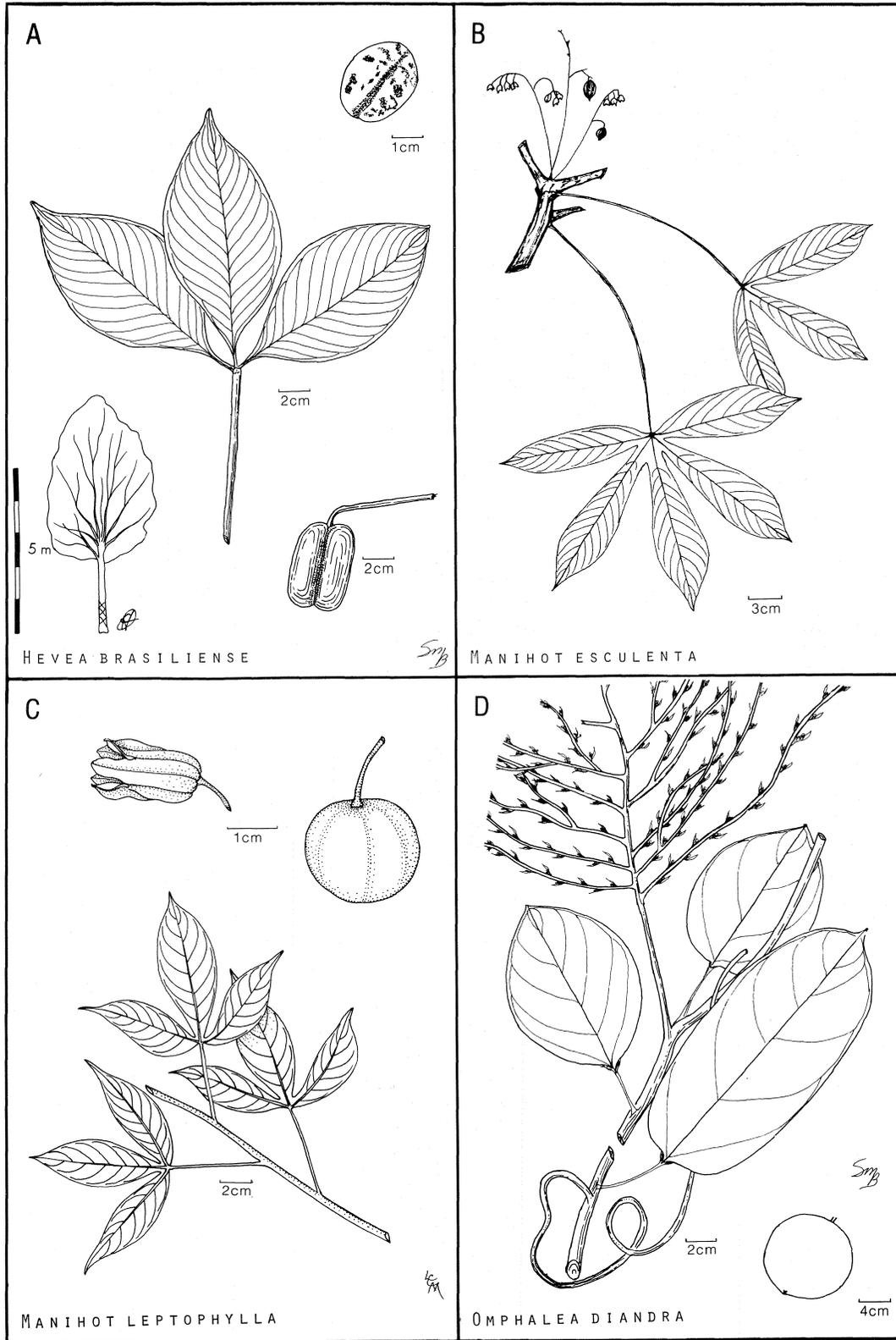


Plate 152

Omphalea diandra L.

Plate 152-D

Tendrillate liana, sometimes with purplish sap. Leaves elliptic, obtuse to abruptly short-acuminate, entire, 3-veined from the rounded base, with a pair of conspicuous glands just below the base of the blade. Inflorescence paniculate, with many male flowers, the few female flowers near the bases of the lateral branches. Fruit large, fleshy, spherical, 8-12 cm in diameter. Infrequent, in mature forest. Honduras and the West Indies to Peru and Brazil.

***Phyllanthus acidus** (L.) Skeels

Plate 153-A

Small tree, to 5 m tall. Petioles short, less than 5 mm long; leaves alternate, ovate, acute at the apex, rounded to truncate at the base, to 8 × 4 cm. Flowers 4-parted, monoecious, axillary or in narrow racemose panicles. Fruit fleshy, very acid, 1 cm in diameter, 6-8 sulcate. Cultivated around homesites. Perhaps native to Africa, cultivated through much of the tropics. Common name: "Grosella"+

Phyllanthus anisolobus Müll.-Arg.

Plate 153-B

Small second growth tree, to 4 m tall. Leaves elliptic, rounded at the base and the apex, entire, pinnately veined, 1.5-5 × 1-3 cm. "Flowers" (cymules) small, green, solitary, axillary, each cymule with a single female flower and several male flowers. Capsule ca. 3 mm long, 3-parted. Infrequent, mostly along the river and near abandoned homesites. Costa Rica to Peru. Used locally as a fish poison.

Common name: "Yuca de Ratón"+, "Barbasco"+

Phyllanthus caroliniensis Walt.

Plate 153-C

Weedy herb. Leaves elliptic to obovate, rounded at the base and the apex, entire, pinnately veined, 0.5-1 × 0.2-0.7 cm. "Flowers" (cymules) bisexual, small, green, solitary in the leaf axils. Capsule 1.5-2 mm in diameter, 3-parted. Infrequent, on rocky beaches. Pennsylvania to Argentina.

Phyllanthus niruri L.

Plate 153-D

Annual herb. Leaves narrowly elliptic, oblique, rounded at the base and the apex, entire, pinnately veined, 0.4-1 × 0.1-0.5 cm. "Flowers" (cymules) unisexual, small, green, pedicellate, solitary in the leaf axils, the proximal nodes with male flowers, the distal nodes with pistillate flowers. Capsule ca. 3 mm in diameter, 3-parted; seeds minutely verrucose-surfaced. Probably on the rocky river beaches. Texas to Argentina. Hardly differentiable from *P. stipulatus* except with a lens. We collected our number 6289 as two species which were mixed in processing; the MO and SEL sheets contain only *P. stipulatus* but other duplicates presumably include this species.

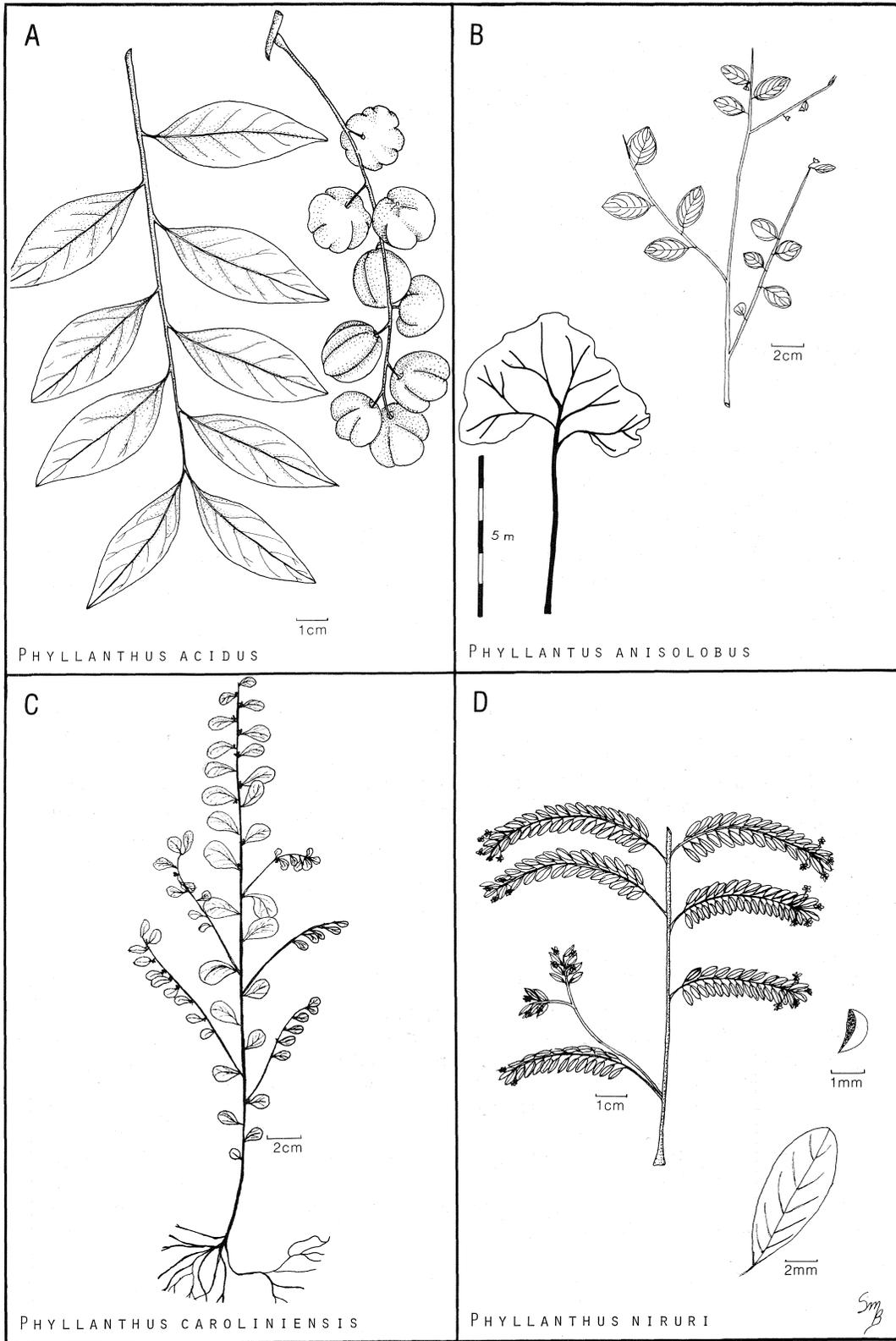


Plate 153

Phyllanthus stipulatus (Raf.) G. Webster

Plate 154-A

Annual herb. Extremely like *P. niruri* but with the leaves less oblique at the base and the seeds finely longitudinally striate. Common, in disturbed areas, especially along the river. Southern Mexico and the West Indies to northern Argentina.

Phyllanthus urinaria L.

Plate 154-B

Herb. Leaves narrowly elliptic, abruptly apiculate at the apex, rounded at the base, entire, pinnately veined, 0.5-1.4 × 0.2-0.5 cm. "Flowers" (cy-mules) unisexual, small, green, sessile, solitary in the leaf axils, the proximal nodes with female flowers, the distal nodes with male flowers. Capsule ca. 2 mm in diameter, 3-parted; seeds transversely ribbed. Infrequent, in disturbed areas, especially on rocky beaches. Pantropical weed; native to the Old World.

Plukenetia volubilis L.

Plate 154-C

Monoecious liana. Leaves ovate, acuminate, the base rounded, serrate, 3-veined from the base. Inflorescence axillary, narrowly paniculate, the female flowers solitary at the lowermost nodes, the male flowers in clusters at the distal nodes. Capsule 4-parted, almost square in cross-section, to 6.5 cm across. Infrequent, in mature forest. Lesser Antilles and Mexico to Brazil and Bolivia.

Ricinus communis L.

Plate 154-D

Shrub to 4 m tall. Leaves peltate, palmately 7-to 11-lobed, the lobes serrate, the blade mostly 10 cm or more across. Inflorescence paniculate, terminal, the lower nodes with male flowers, the upper nodes with female flowers. Calyx lobes of the staminate flowers 4-9 mm long, of the pistillate flowers 3-4 mm long. Capsules echinate, ca. 15-20 mm in diameter. Formerly absent at the field station; suddenly common along highway in 1977 subsequent to road-widening. Probably native to Africa; cultivated and naturalized pantropically.

Common name: "Higuerilla"

Sapium peruvianum (Macbr.) Jabl.

Plate 155-A

Monoecious canopy tree, to 30 m tall; latex white, exuded quite slowly. Leaves elliptic to oblong-elliptic, obtuse at the base and the apex, serrulate, pinnately veined, secondary veins inconspicuous, without glands at the base of the blade. Inflorescences a cluster of 3-5 bisexual terminal spikes; staminate flowers along the length of the spike; 8-15 pistillate flowers at the basal nodes. Capsule 3-parted, to 8 mm long. Infrequent, in mature forest. This name was tentatively supplied by Webster and would represent a trans-Andean disjunction; the species was described as a variety of Amazonian *S. martii* (Müll.-Arg.) Huber and elevated without comment by Jablonski. A second species with smaller leaves having basal glands occurs just across the river.

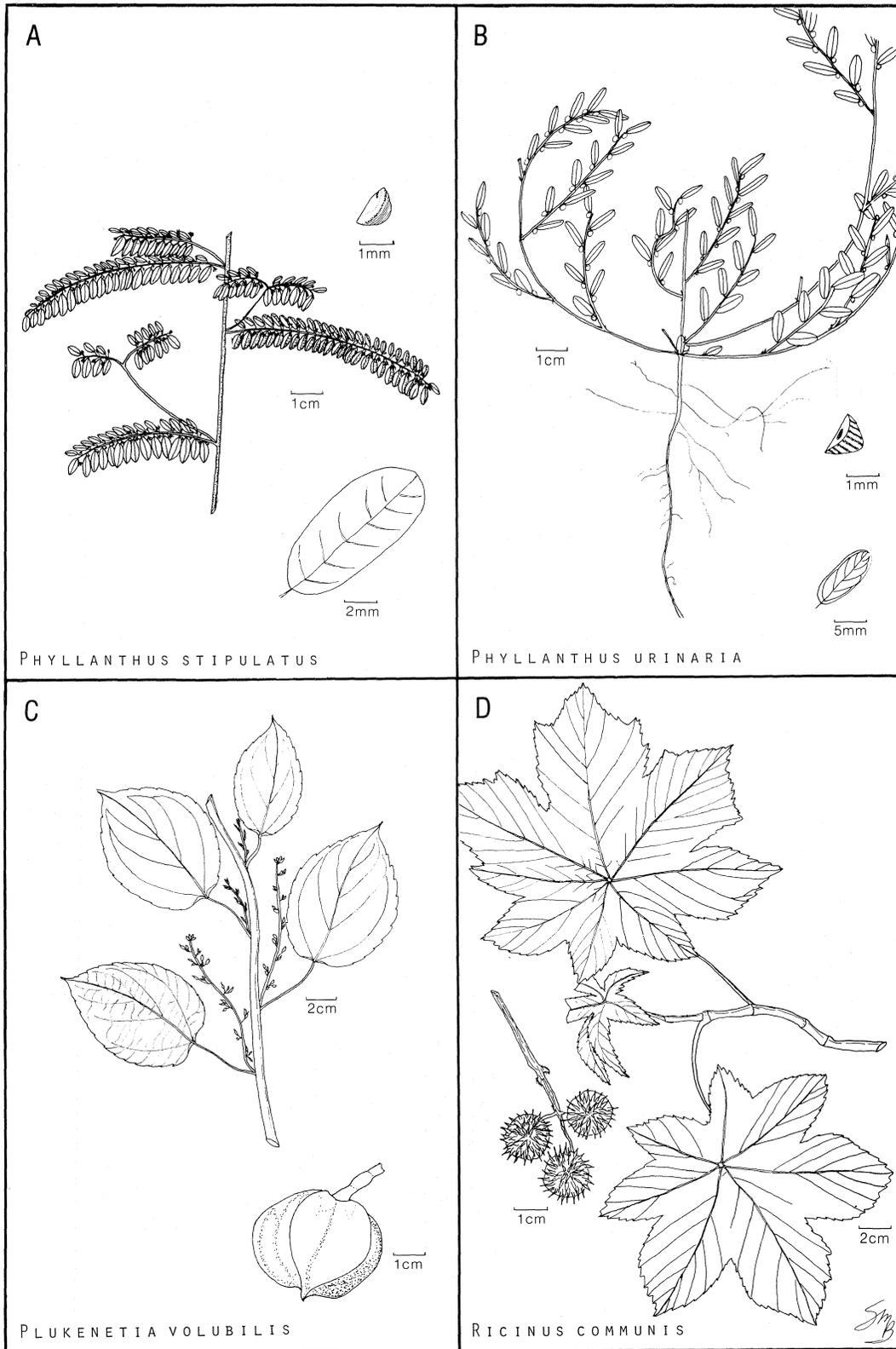


Plate 154

Tetrorchidium andinum Müll.-Arg.

Plate 155-B

T. gorgonae Croiz.

Dioecious midcanopy tree. Leaves obovate, obtuse at the apex, cuneate at the base, serrate, pinnately veined. Inflorescences axillary, the male inflorescence paniculate, the female inflorescence racemose or very narrowly apiculate, the flowers short-pedicellate. Capsule 3-parted, ca. 6 mm in diameter. Common, in mature forest. Panama to Ecuador. Webster (pers. comm.) reports that our female specimens are *T. andinum* but our male specimens are *T. gorgonae* so that the latter is presumably synonymous.

FLACOURTIACEAE

Trees or shrubs. Leaves alternate, simple, often glandular-serrate, the stipules falling early. Flowers generally bisexual, regular; sepals 2-15, free; petals 5-many; stamens numerous, free or in bundles opposite the petals; disc often present; ovary superior, unilocular, the placentae parietal.

Key to the species.

1. Fruit winged; treelet 2-4 m tall; leaves more than 40 cm long; petiole more than 6 cm long. *Carpotroche ramosii*
1. Fruit not winged; trees; leaves less than 25 cm long; petiole less than 4 cm long.
 2. Petals present; leaves conspicuously serrate; petiole 2-30 mm long.
 3. Leaves 3-nerved from the base, more or less elliptic.
 4. Flowers small (3-4 mm long); inflorescence a many-flowered terminal panicle. *Hasseltia floribunda*
 4. Flowers large (ca. 15 mm long); inflorescence a few-flowered raceme, axillary. *Neosprucea pedicellata*
 3. Leaves pinnately nerved, oblong. *Banara guianensis*
 2. Petals absent; leaves very finely serrulate; petiole ca. 2 mm long. *Casearia fasciculata*

Banara guianensis Aubl.

Plate 155-C

Small tree to 8 m tall. Leaves oblong, to 23 cm long, coarsely serrate, the base truncate. Inflorescence a terminal panicle. Flowers small, greenish cream. Fruits berry-like, subtended by the 5 persistent sepals, the style also persistent; seeds many. Rare, in disturbed forest. Costa Rica to Brazil and Bolivia.

Common name: "Guapilte"

Carpotroche ramosii (Cuatr.) Cuatr.

Plate 155-D

Dioecious understory treelet ca. 3 m tall. Petiole 7-9 cm long; leaves oblanceolate, acute at the base and the apex, 40-50 cm long. Inflorescences contracted, axillary, few-flowered. Petals white, 6-7 mm long. Fruits 3-4 cm long, longitudinally 6-to 10-winged, the thin wings ca. 1 cm broad, orange with green margins. Infrequent, in mature forest. Previously known only from the type from Western Colombia; this is the first record for Ecuador.

Common name: "Caraña"

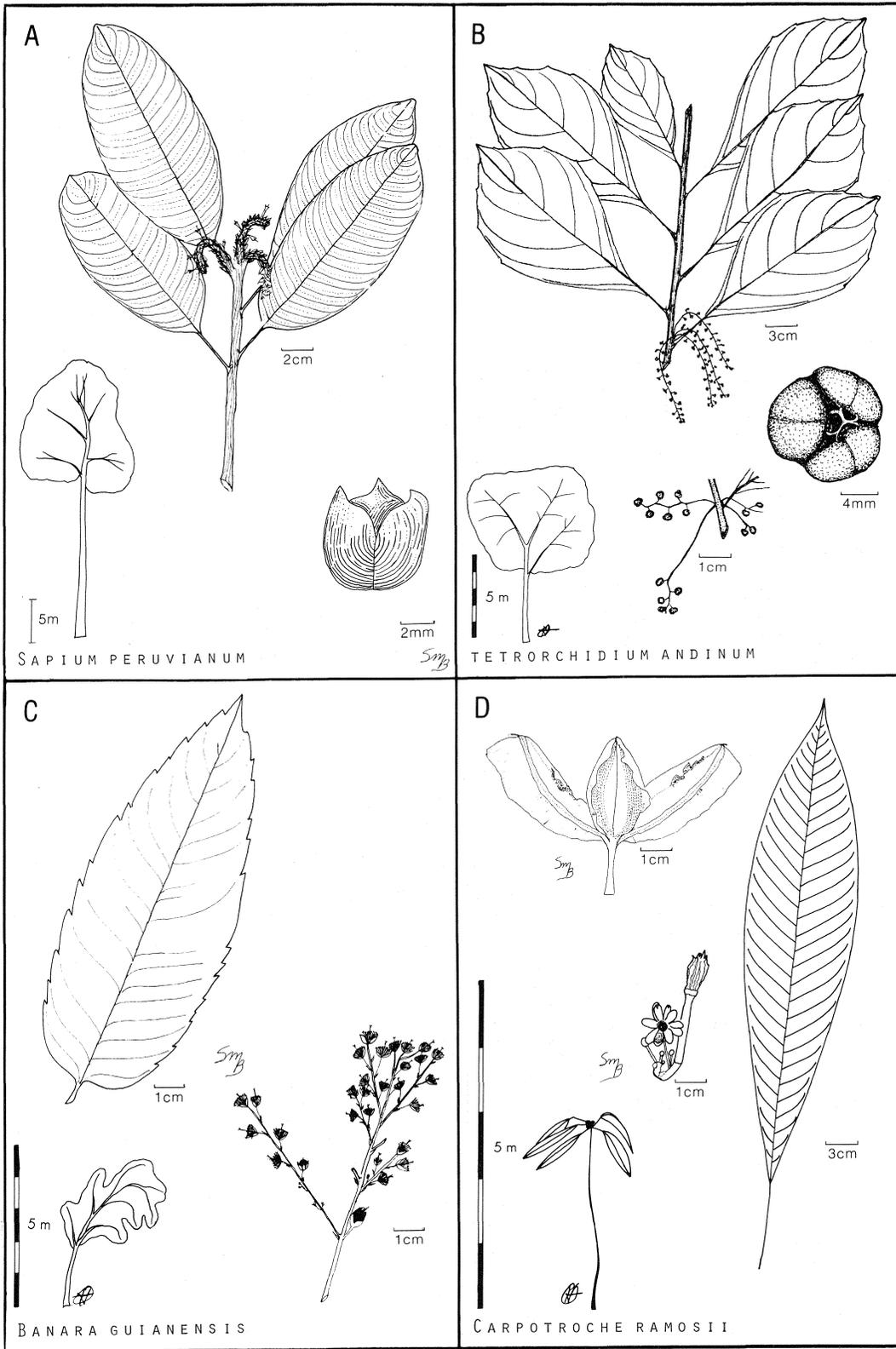


Plate 155

Casearia fasciculata (R & P) Sleum.

Plate 156-A

Small tree to 7 m tall. Leaves elliptic or obovate-elliptic, acuminate, cuneate at the base and tapering to an inconspicuous 2 mm long petiole, the margins very minutely serrulate, the tertiary veins close together and conspicuously parallel. Fruit globose-ovoid, 2-3 cm in diameter. Uncommon, in mature forest. Otherwise known from Amazonian Peru & Ecuador, a trans-Andean distribution, but the identification of our material in the absence of flowers remains tentative.

Hasseltia floribunda HBK

Plate 156-B

Tree to 15 m tall. Leaves elliptic, serrate, conspicuously 3-veined from the rounded base. Inflorescence a many-flowered terminal panicle. Flowers greenish cream; sepals 4, reflexed; stamens 30-40. Fruit subglobose, tipped by the persistent style, puberulous; seeds 1 or 2. Rare, in mature forest. Honduras to Bolivia.

Neosprucea pedicellata Little

Plate 156-C

Small tree. Leaves elliptic, serrate, conspicuously 3-veined from the rounded base. Inflorescence a 2-to 3-flowered raceme, axillary or borne below the leaves. Flowers large (ca. 2 cm in diameter); petals white; the many pubescent stamens yellow. Uncommon, in mature forest. Endemic to the Pacific lowlands of Ecuador.

GENTIANACEAE

Herbs (rarely shrubs), sometimes saprophytic. Leaves opposite, simple, entire. Inflorescence usually cymose; flower parts in combinations of 4 or 5, regular; sepals fused at the base; corolla bell-shaped, 4- to 5-lobed; stamens inserted on the corolla tube; ovary superior, usually with parietal placentation. Fruit a septicidal 2-valved capsule; seeds small, numerous.

Chelonanthus alatus (Aubl.) Pulle

Plate 156-D

Upright herb with square, 4-angled stems. Leaves ovate, opposite, sessile, the bases of each pair joined. Inflorescence racemose; the bell-shaped flowers greenish; the stamens subexserted. Locally common, on the cliff face below the building. Mexico to Brazil.

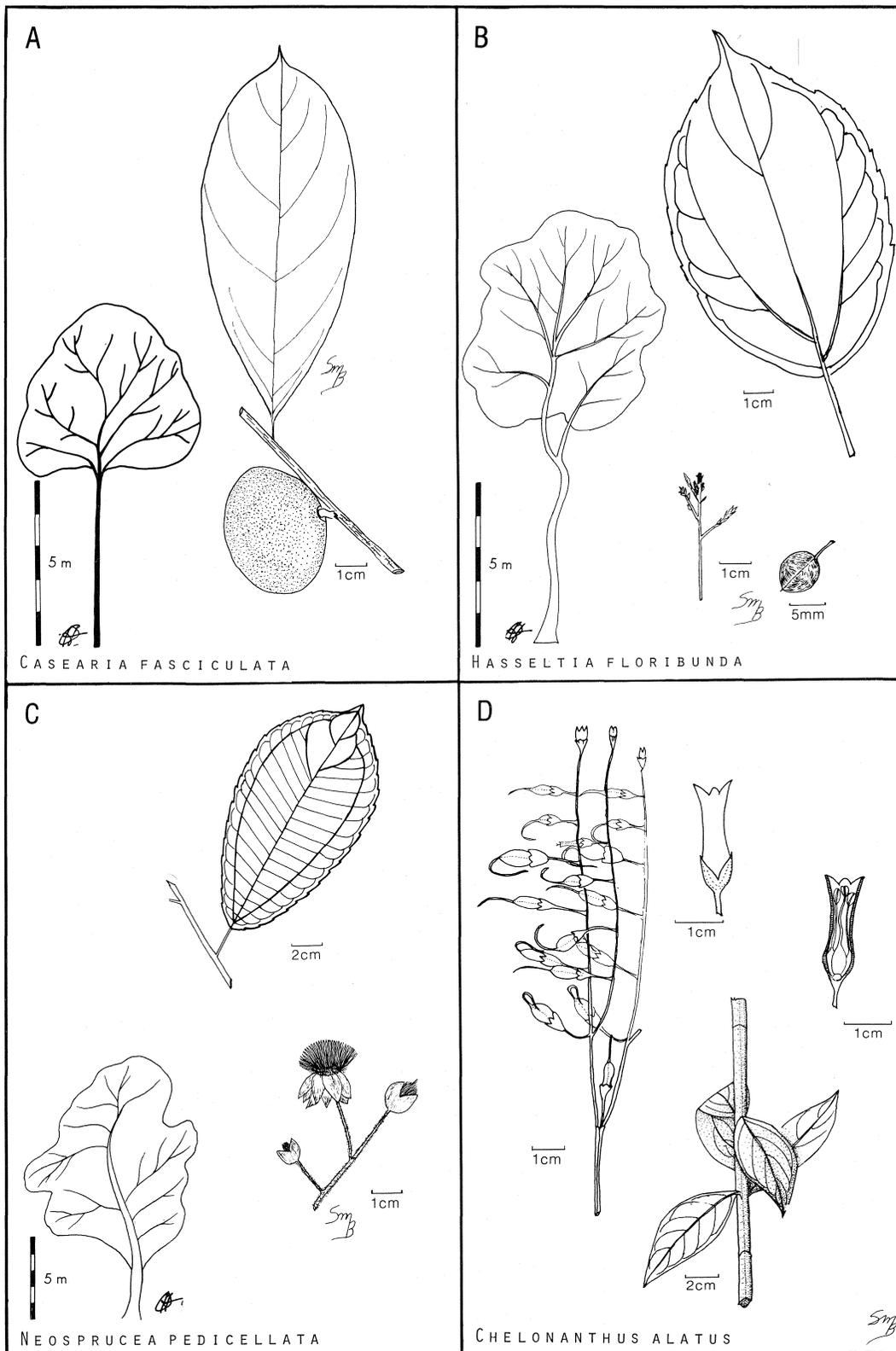


Plate 156

GESNERIACEAE

Herbs, semi-vines or shrubs, rarely trees, commonly epiphytic. Leaves opposite or in rosettes. Flowers showy, red, orange, yellow, white or blue, bisexual, zygomorphic; calyx 5-lobed; corolla 5-lobed, usually bilabiate; stamens 4, mounted on the corolla, anthers usually joined; nectariferous disc or glands conspicuous; ovary superior to inferior, unilocular, with 2 parietal placentae. Fruit a dry or fleshy capsule, or a berry.

Ten species are included here which have not been collected at Río Palenque (marked in the key with **), but which occur nearby and may be expected.

Key to the species.

1. Plants terrestrial (rarely found as epiphytes).
 2. Inflorescence terminal. *Kohleria spicata*
 2. Inflorescences lateral, in axils of leaves.
 3. Corolla subtended by an obvious, colorful calyx.
 4. Calyx lobes long-fimbriate, yellow *Alloplectus sprucei*
 4. Calyx lobes entire or merely serrate, red or purple.
 5. Calyx lobes serrate, red; corolla red with a pouch and a small limb *Alloplectus dodsonii*
 5. Calyx lobes entire, purple; corolla whitish, campanulate, with a large limb *Drymonia turrialvae*
 3. Corolla subtended by a green calyx.
 6. Opposite leaf pairs extremely unequal, purple below; plants to 50 cm tall; flowers white with purple lobes. *Monopyle sodiroana***
 6. Opposite leaves more or less equal.
 7. Plants erect, to 90 cm tall; inflorescence a cluster of 4-20 flowers; corolla bright orange.
 8. Corolla tubular, not inflated *Gasteranthus carinatus***
 8. Corolla with a pouch below the limb.
 9. Corolla 2 cm long; calyx lobes small, rounded. *Gasteranthus oncogastrus*
 9. Corolla 4 cm long; calyx lobes large, pointed *Gasteranthus macrocalyx***
 7. Plants creeping, forming pseudo-rosettes; inflorescence with one or a few flowers open at a time; corolla white, blue or orange.
 10. Corolla orange, with a pouch below the narrow limb, the opening (or throat) very constricted *Gasteranthus crispus***
 10. Corolla white or blue, campanulate or tubular, with the throat wide open.
 11. Corolla with blue lobes and a white throat with a yellow spot, large (to 4 cm broad). *Gloxinia dodsonii*
 11. Corolla with white or yellow lobes, small (less than 2 cm broad).
 12. Corolla cream-yellow; leaves glabrous *Diastema scabrum*
 12. Corolla white with a purple spot on each lobe; leaves pubescent *Diastema eggersianum*

1. Plants epiphytic, sometimes vine-like (rarely found growing terrestrially).
13. Corolla bright red or purple-black.
 14. Calyx lobes entire or serrate; corolla bright red.
 15. Leaves glabrous; stems to 2 m long, pendent, slender *Columnea dodsonii*
 15. Leaves densely fine-pubescent; stems to 1 m long, lax, fleshy, swollen between the nodes *Pentadenia ecuadorana*
 14. Calyx lobes long-fimbriate; corolla purple-black *Trichantha minor***
13. Corolla yellow, orange-red, white or dull red-brown.
 16. Leaves green with a bright red spot at the apex (or near the apex) on both sides.
 17. Corolla lobes of equal size, all yellow.
 18. Corolla lobes flared, obvious; leaves red along the margin *Dalbergaria asteroloma***
 18. Corolla lobes erect, indistinct; leaves red at the apex only *Dalbergaria rubriacuta*
 17. Corolla lobes very unequal, lower lobe long and narrow, yellow blotched with maroon *Dalbergaria picta*
 16. Leaves green or green on the upper side and red on the underside.
 19. Corolla narrowly tubular, corolla lobes small.
 20. Calyx lobes bright orange-red *Trichantha herthae***
 20. Calyx lobes green or green with maroon tips.
 21. Undersides of leaves mostly red-purple; calyx lobes elliptic, corolla to 1 cm long *Pentadenia spathulata***
 21. Undersides of leaves with a splash of red at the apex only; calyx lobes triangular, corolla to 2.5 cm long. *Pentadenia zapotalana***
 19. Corolla bell-like with large corolla lobes or corolla swollen on the underside and with small lobes.
 22. Calyx lobes to 0.5 cm long, triangular; mature leaves to 5 cm long, glabrous.
 23. Corolla to 2 cm long *Codonanthe crassifolia*
 23. Corolla to 4 cm long *Codonanthe uleana*
 22. Calyx lobes more than 1.5 cm long, oblique or narrowly ovate; mature leaves more than 7 cm long, glabrous or pubescent.
 24. Calyx bright orange-red; corolla conspicuously swollen beneath.
 25. Corolla orange-red *Drymonia coriacea*
 25. Corolla white. *Paradrymonia hypocyrta***
 24. Calyx plain green, purple or veined with dull-red; corolla not conspicuously swollen underneath, white, yellow or with dull-red lobes.

26. Plants vine-like, creeping through the tops of understory trees.
 27. Leaves appearing glabrous *Drymonia serrulata*
 27. Leaves densely pubescent *Drymonia alloplectoides*
26. Plants shrub-like on tree trunks or growing in ant nests.
 28. Margins of the sepals laciniate *Drymonia laciniosa*
 28. Margins of sepals dentate, not laciniate.
 29. Corolla lobes yellow-white.
 30. Stem red with small white, lenticular spots; margins of the leaves entire. *Drymonia ecuadorensis*
 30. Stem gray; margins of leaves irregularly dentate
 *Drymonia macrophylla*
29. Corolla lobes dull-red or brown margined with yellow.
 31. Leaf pairs of equal size; upper lobes of corolla yellow striped with brown, lower lobes brown with a yellow margin
 *Drymonia warszewicziana*
 31. Leaf pairs of unequal size; all lobes of the corolla dull-red . . .
 *Drymonia rhodoloma*

***Alloplectus dodsonii* Wiehler**

Plate 157-A

Terrestrial, rarely epiphytic on tree trunks near the ground. Stem to 1.5 m tall. Leaves ovate, the blade to 30 × 20 cm; petiole to 11 cm long, red. Calyx red, the margins of the lobes serrate; corolla swollen on the underside, 1.5 cm long, the mouth to 3 mm in diameter, yellow-red. Common, in mature forest. Western Ecuador and Colombia.

***Alloplectus sprucei* (Kuntze) Wiehler**

Plate 157-B

Terrestrial. Stem to 1 m tall. Leaves broadly elliptic, the blade to 20 × 20 cm; petiole 15 cm long, yellow. Calyx yellow, the margins of the lobes long-fimbriate; corolla elongate, to 5 cm long, tubular, bilabiate, zygomorphic, the mouth to 1 cm in diameter, long-pubescent outside, yellow with red spots inside. Local and uncommon, in mature forest. Western Ecuador and Colombia.

***Codonanthe crassifolia* (Focke) Morton**

Plate 157-C

Epiphytic. Stems lax to pendent, to 1 m long, to 2.5 cm between the nodes. Leaves elliptic, thick and fleshy, blade to 3 × 2 cm; petiole to 1 cm long. Calyx green, the lobes triangular; corolla yellow-white, to 4 cm long, 1 cm broad, the lobes to 1 cm broad, the margin serrate. Common, in ant nests in mature forest and in trees overhanging the river. Guatemala to the Guianas and Peru.

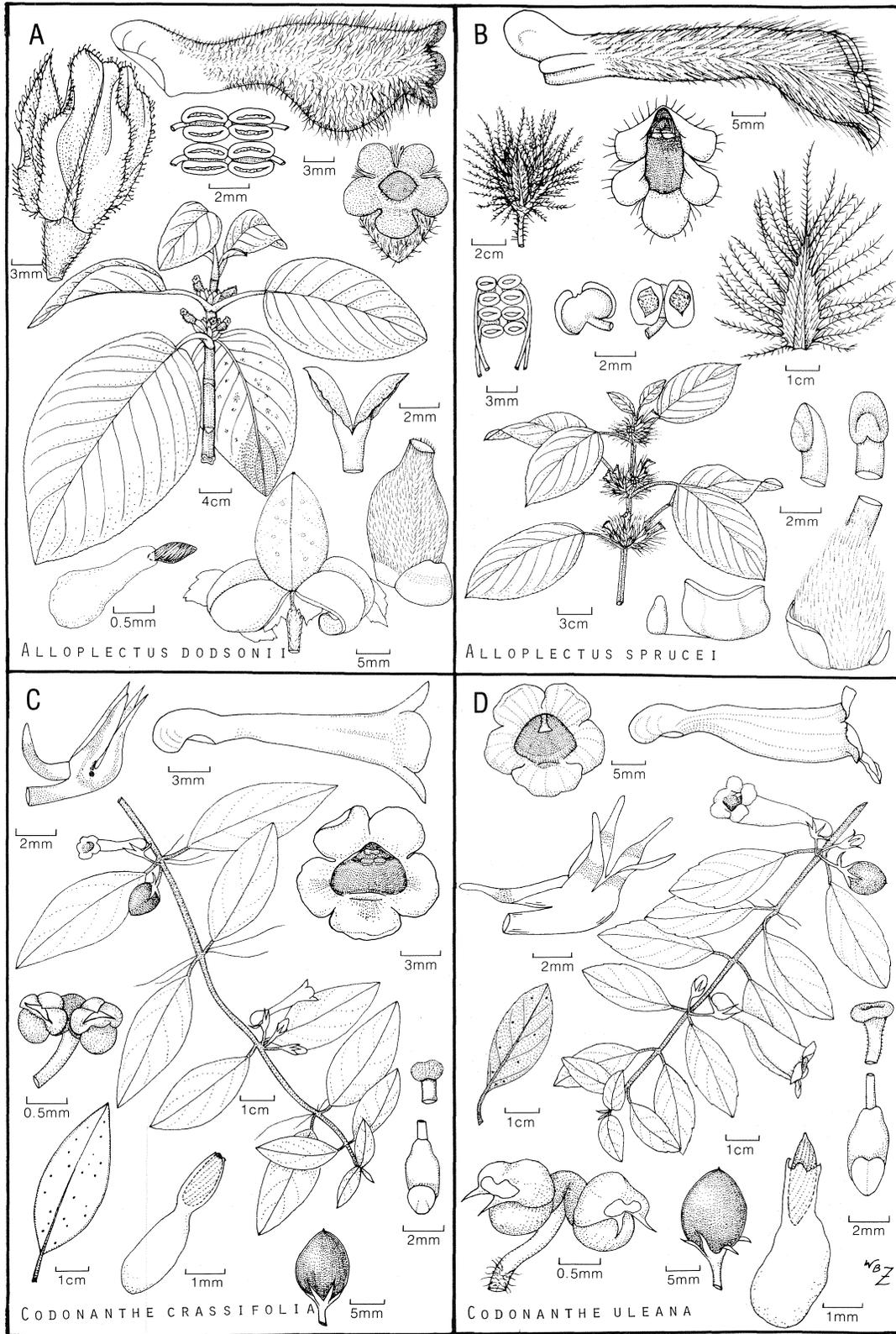


Plate 157

Codonanthe uleana Fritsch

Plate 157-D

Epiphytic. Stems red, lax, to 1 m long, 3 cm between the nodes. Leaves elliptic, leathery, the blade to 5×3 cm, red on the underside; petiole 2 cm long. Calyx green, the lobes triangular; corolla white, to 6 cm long, 2 cm broad, the lobes triangular; 1.5 cm broad, the margin serrate. Rare, only in ant nests in *Ficus peroblonga* along banks of esteros. Mexico to Amazonia and Western South America.

Columnnea dodsonii Wiehler

Plate 158-A

Epiphytic. Stems pendent to 2 m long, slender. Leaves ovate, thick, the blade to 3×1.5 cm; petiole to 7 mm. Pedicel to 2.5 cm long; calyx green, the lobes to 1.5 cm long, the margin dentate; corolla bright red, the tube slender, bilabiate, to 3 cm long, sparsely pubescent. Local and uncommon, on interior limbs of large trees. Endemic to western Ecuador.

Dalbergaria asteroloma Wiehler

Plate 158-B

Epiphytic. Stems lax, red-pilose, 2-5 cm between nodes. Leaves sessile, very unequal, narrowly obovate, long-acuminate, margin serrulate, reddish-green above, green below with margins and apex spotted with red, $15-30 \times 5-7$ cm. Calyx red, narrowly ovate, sericeous; corolla yellow, tubular, to 4.8 cm long, lobes equal in size, star-shaped. Not yet collected at Río Palenque, but locally common in hills across the river. Western Ecuador.

Dalbergaria picta (Karsten) Wiehler

Plate 158-C

Epiphytic. Stem lax, to 1 m long, to 3 cm between the nodes, thick and fleshy. Leaves obliquely elliptic, green with 5 cm of the apex bright red, 20×8 cm; petiole to 1 cm long, opposing leaves very unequal in size. Calyx yellow with a red splotch, to 3 cm long; corolla yellow with red-maroon splotches on the lobes, bilabiate, to 5 cm long. Common, in trees overhanging streams in mature forest. Eastern and western Ecuador and Colombia. Common name: "Punta de Lanza"+

Dalbergaria rubriacuta Wiehler

Plate 158-D

Epiphytic. Stems lax, to 60 cm long, thick and fleshy. Leaf pairs very unequal, obliquely ovate, green on both sides with a red tip below, $2-18 \times 1.2-10$ cm. Calyx wine-red, to 2.8 cm long; corolla yellow, lobes small, yellow, to 4.2 cm long. Rare, as an epiphyte growing low on tree trunks near the upper end of Lodo Creek. Western Ecuador.

Diastema eggersianum Fritsch

Plate 159-A

Terrestrial. Stem creeping or erect, forming mats of leaves. Leaves elliptic to ovate, dentate, densely fine-pubescent. Corolla to 2 cm long, white with purple spots on each lobe and with purple lines running inside. Infrequent, in mature forest. Costa Rica to eastern and western Ecuador.

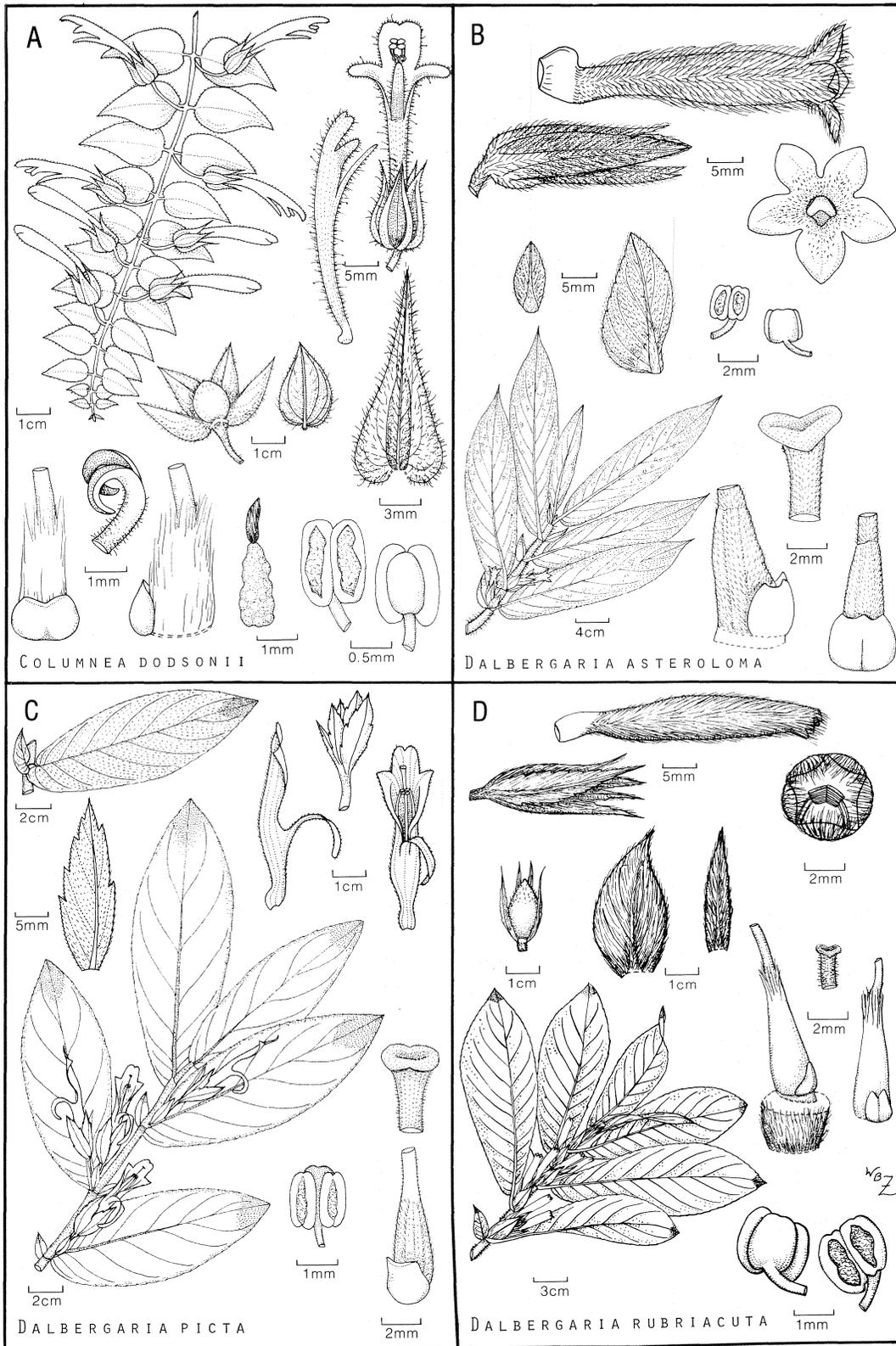


Plate 158

Diastema scabrum (Poepp.) Walp.

Plate 159-B

Terrestrial. Stems creeping or erect, forming mats of leaves. Leaves elliptic, dentate, bullate between the veins, glabrous. Corolla to 1 cm long, cream-yellow. Common, in mature forest, especially along paths. Panama to Peru.

Drymonia alloplectoides Hanst.

Plate 159-C

Vine-like epiphyte. Stems to several meters long, branched, glabrous. Leaves to 15 × 8 cm, elliptic, shallowly dentate, glabrous. Calyx lobes to 3 cm long, green; corolla to 5 cm long, glabrous, light reddish-brown inside. Rare, in mature forest along the path to the generator. Guatemala to western Ecuador.

Drymonia coriacea (Oerst.) Wiehler

Plate 159-D

Epiphyte. Stem to 1 m long, branched at the base, glabrous. Leaves to 15 × 9 cm, elliptic, with veins on the underside red, glabrous. Calyx red, the lobes shallowly dentate, to 1.5 cm long; corolla orange-red, conspicuously inflated on the underside, densely short-pubescent, to 3 cm long, the lobes small. Rare, at the upper end of the creek in mature forest. Costa Rica to Peru on the western slope.

Drymonia ecuadorensis Wiehler

Plate 160-A

Epiphytic. Stem to 1 m long, branched at the base, green, thick, fleshy, spotted with grey lenticel-like spots. Leaves elliptic, to 40 × 10 cm, glossy-green; opposing leaves equal in size; petiole to 5 cm long. Calyx green, the lobes to 1.5 cm long; corolla cream-white outside, lemon-yellow inside, to 4 cm long, the lobes to 1 cm wide, spreading. Infrequent, in mature forest. Western Ecuador.

Drymonia laciniosa Wiehler

Plate 160-B

Epiphytic. Stems to 1.5 m long, the internodes to 15 cm long, green. Leaves obliquely elliptic, to 18 × 10 cm, dentate with each tooth acuminate, the opposing leaves unequal in size; petiole to 2.5 cm long. Calyx green, lacinate, with red veins, to 1.5 cm long; corolla cream with red inside the throat, to 3 cm long. Uncommon, along the creek in mature forest. Western Ecuador.

Drymonia macrophylla (Oersted) H. E. Moore

Plate 160-C

Epiphytic. Stems to 50 cm long, branched at the base, thick. Leaves fleshy, green; petiole to 2 cm long; the opposing leaves unequal in size, elliptic, 25 × 9 cm. Calyx green, the lobes serrate, 2 cm long; corolla yellow-white, to 3 cm long, the lobes to 0.6 cm wide. Uncommon, in mature forest. Guatemala to Peru.

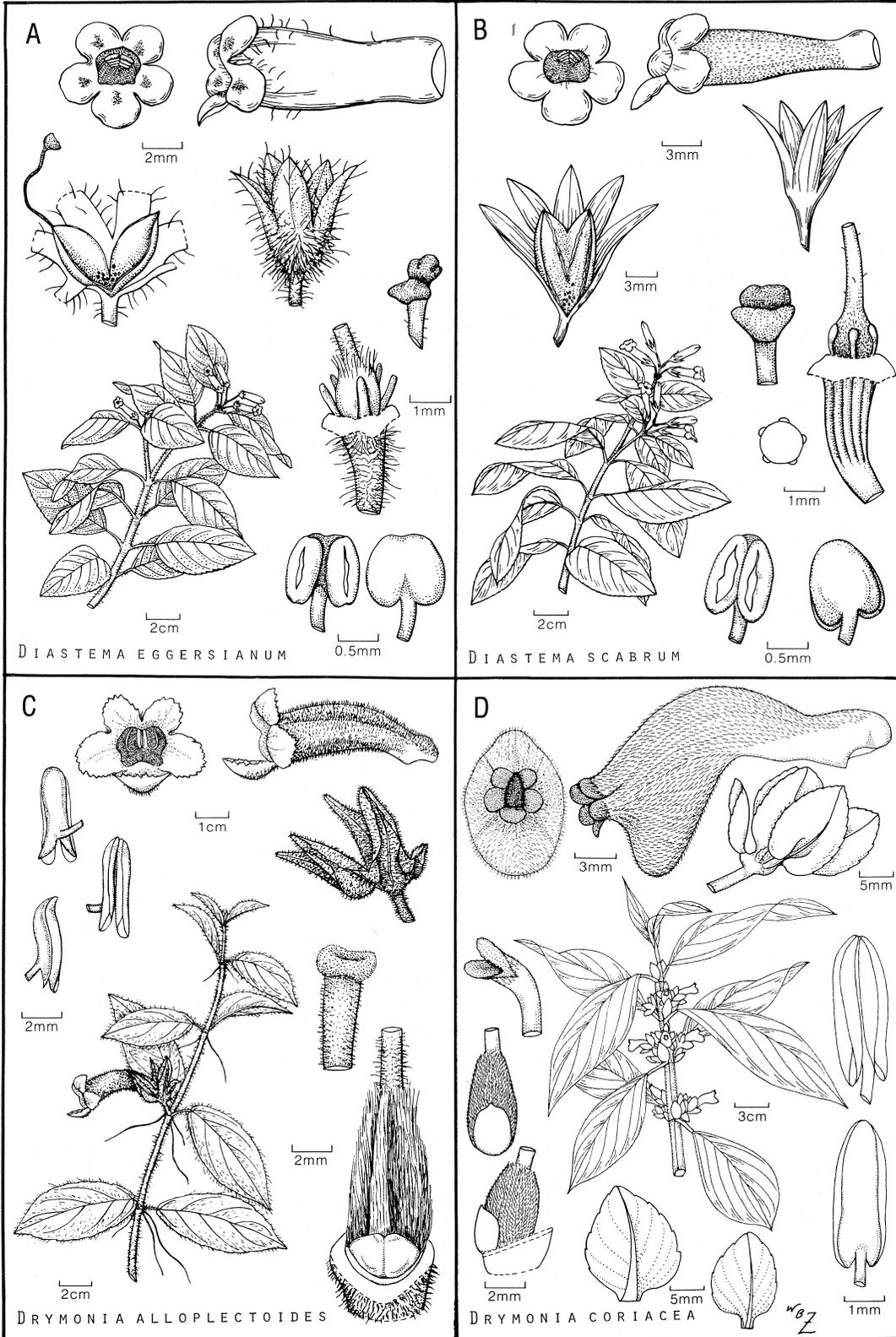


Plate 159

Drymonia rhodoloma Wiehler

Plate 160-D

Epiphytic. Stems to 1 m long, branched at the base, thick, fleshy, green; internodes to 5 cm. Leaves obliquely elliptic, to 20×8 cm, margin entire, the opposing leaves very unequal in size; petiole to 5 cm long. Calyx lobes green with red veins, dentate, 2 cm long; corolla tube cream, 3 cm long, the lobes to 0.8 cm wide, dull red. Infrequent, in mature forest. Western Ecuador.

Drymonia serrulata (Jacq.) Mart.

Plate 161-A

Vine-like epiphyte. Stems to several meters long, branched, densely pubescent. Leaves to 15×18 cm, elliptic, shallowly dentate, densely pubescent. Calyx lobes to 3 cm long, green, pubescent; corolla to 5 cm long, long-pubescent outside, pink. Uncommon, in mature forest. Mexico and the Antilles, to Bolivia.

Drymonia turrialvae Hanst.

Plate 161-B

Terrestrial. Stem erect, thick, to 70 cm tall, 3 cm thick, reddish. Leaves equal; blade broadly elliptic, round at the base and the apex, slightly cordate, serrate, silver-green above, red below, $15-25 \times 10-18$ cm; petioles thick, red, to 15 cm long. Calyx purple, entire; corolla white with yellow on the lobes, tubular-campanulate, to 6 cm long. Rare, along creek banks. Costa Rica to western Ecuador.

Drymonia warszewicziana Hanst.

Plate 161-C

Epiphyte. Stems to 3 m long, branched, glabrous. Leaves to 15×5 cm, elliptic, entire, acuminate, the opposing leaves equal in size. Calyx green, 2 cm long, dentate; corolla tube yellow, 3 cm long, the lobes 1 cm wide, flaring, the upper lobes yellow striped with brown, the lower lobes brown with yellow margins. Uncommon, in mature forest. Costa Rica to Amazonian Peru and western Ecuador.

Gasteranthus carinatus Wiehler

Plate 161-D

Terrestrial. Stems erect, to 50 cm tall, branched at the base, glabrous. Leaves equal in size; blade elliptic, serrate, obtuse at the apex and the base, acuminate, $16-26 \times 7-12$ cm; petiole 2-3 cm long. Sepals yellow; corolla tubular, barely swollen on the underside, 2.2 cm long, with a long, solid keel on the top of the corolla, yellow. Not yet collected at Río Palenque. Uncommon, in mature forest on hills across the river. Western Ecuador.

Gasteranthus crispus (Mansf.) Wiehler

Plate 162-A

Terrestrial. Stems very short, erect or creeping, very succulent, rosette-forming. Leaf blade broadly elliptic, round at the apex and the base, bullate, entire, 14×9 cm; petioles to 2 cm long. Sepals green, the lobes to 1.2 cm long; corolla red-orange, to 3 cm long, swollen on the underside, the mouth to 6 mm broad, the lobes tiny. Not yet collected at Río Palenque; but locally common, in creek beds around Santo Domingo. Western Ecuador.

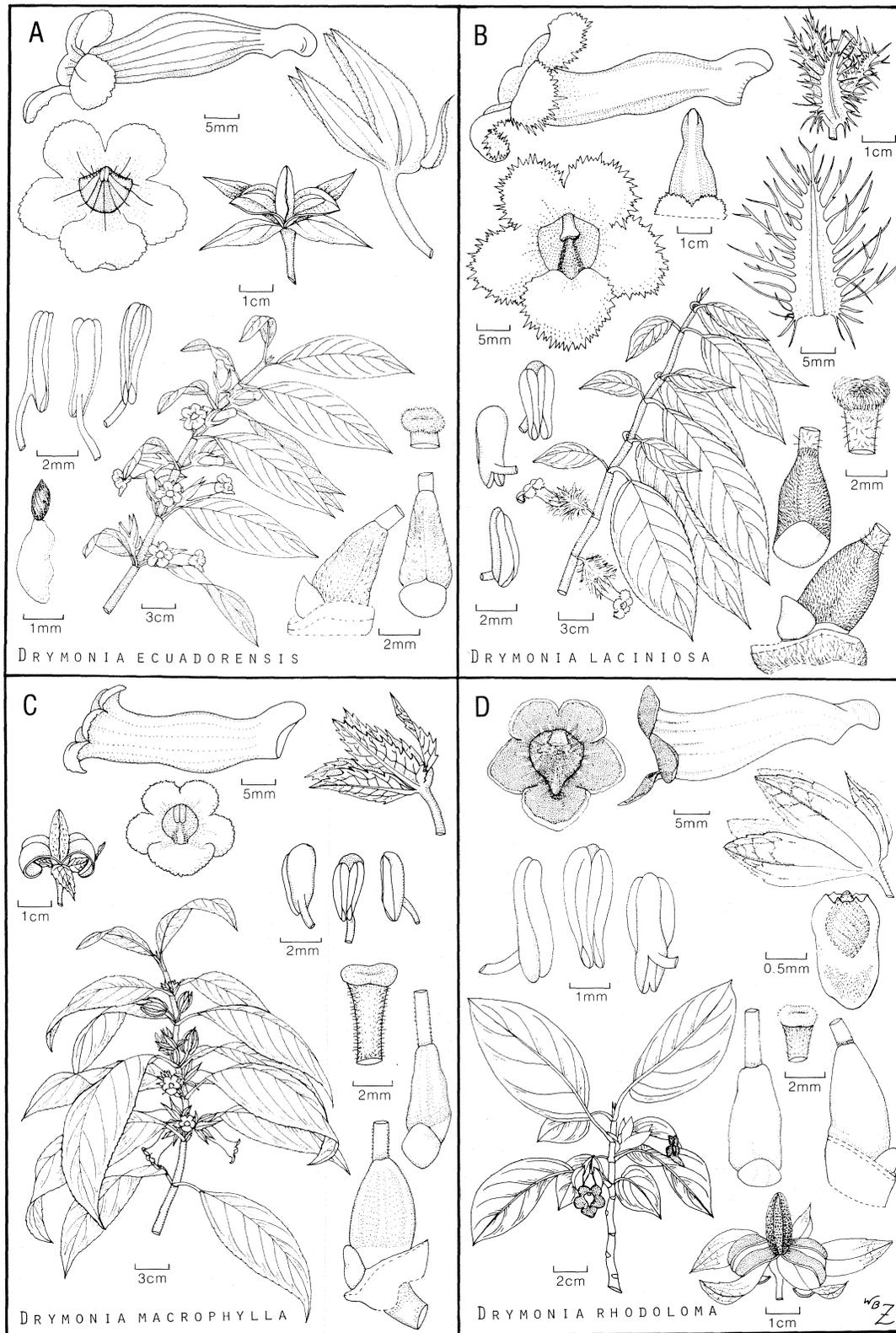
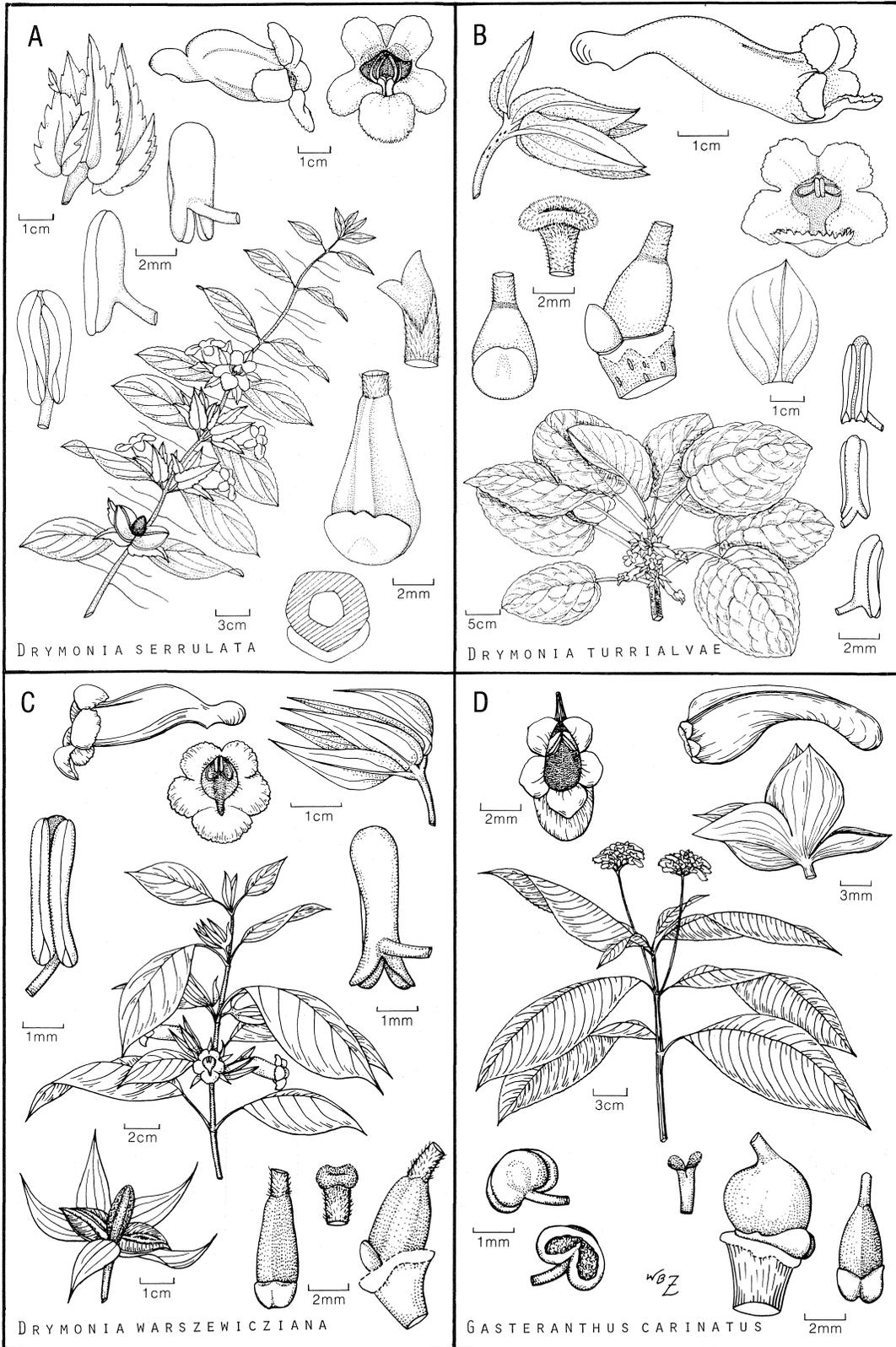


Plate 160



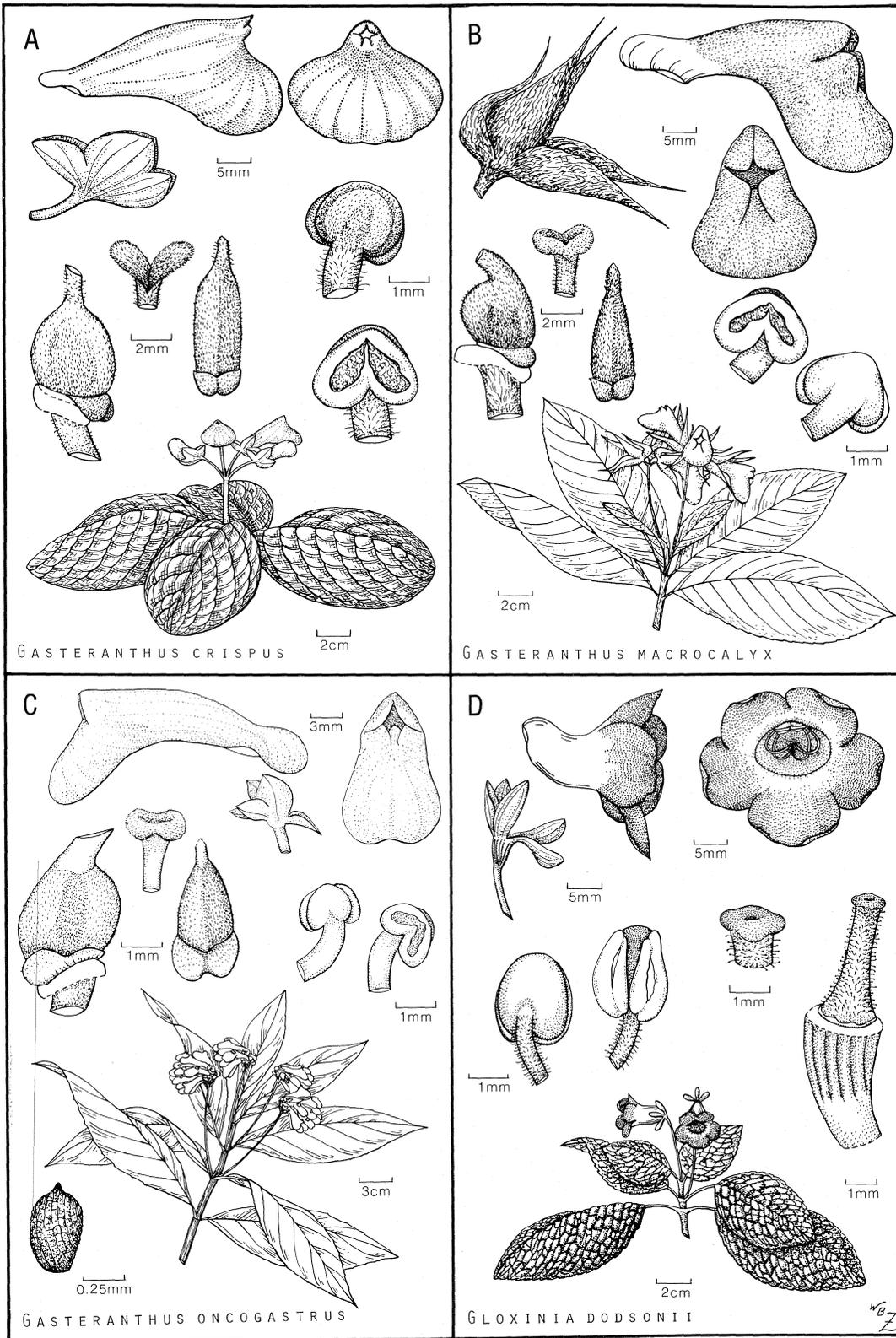


Plate 162

Gasteranthus macrocalyx Wiehler

Plate 162-B

Terrestrial. Stem erect, sparsely branched, villous, to 50 cm tall. Leaves equal; blade elliptic, acuminate at the apex, cuneate at the base, 10-15 × 4.5-7 cm; petiole to 1.2 cm long. Calyx green, villous; corolla orange, to 4.2 cm long, swollen on the underside, pubescent. Not yet collected at Río Palenque; uncommon, in mature forest on hills across the river. Western Ecuador.

Gasteranthus oncogastrus (Hanst.) Wiehler

Plate 162-C

Terrestrial. Stems erect to 80 cm tall, branched at the base, glabrous. Leaves to 18 × 6 cm, elliptic, dentate, acuminate; petiole to 3 cm. Inflorescence on an elongate rachis to 10 cm long, capitata with up to 10 open flowers; sepals green, the lobes to 0.6 cm long; corolla orange, to 1.5 cm long, swollen on the underside, the opening 3 mm broad, the lobes tiny. Common, in mature forest. Western Ecuador.

Gloxinia dodsonii Wiehler

Plate 162-D

Terrestrial. Stems short, erect or creeping. Leaves in a rosette, elliptic, to 10 × 6 cm, bullate between the veins, dark green, glabrous. Inflorescence with an elongate rachis to 10 cm long, the flowers produced singly. Calyx green; corolla bell-shaped, the tube white, to 2.5 cm long, the lobes blue inside, to 1.5 cm wide, spreading, the throat yellow. Local and rare, in mature forest. Northwestern Ecuador.

Kohleria spicata (HBK) Oerst.

Plate 163-A

Terrestrial. Stems erect, to 50 cm tall, densely soft-pubescent. Leaves elliptic, to 25 × 8 cm, long tapered to the stem at the base, the margin dentate, the upper surface green, the lower surface silver, densely soft-pubescent underneath. Inflorescence terminal, the flowers in whorls. Calyx green; corolla orange-red on the dorsal half, yellow-red on the ventral half, to 2 cm long, the lobes yellow with red spots, the throat spotted with red. Uncommon, on steep cliffs along river. Mexico to Peru.

Monopyle sodiroana Fritsch

Plate 163-B

Terrestrial. Stems erect to lax, short pubescent, to 70 cm long. Leaves very unequal; blade obliquely ovate, crenulate-serrate, the apex acuminate, the base rounded, the under surface red, 12 × 5 cm; petioles to 0.8 mm long on one side, 1 cm long on the other. Calyx green; corolla bell-shaped, white with lobes blue to pink, throat white, orange deep inside, 2.5 cm in diameter. Not yet collected at Río Palenque; locally common, in mature forest on hills across the river. Western Ecuador.

Paradrymonia hypocyrta Wiehler

Plate 163-C

Epiphytic. Stems attached tightly to tree trunks at 1-2 m elevation; to 1 cm in diameter, internodes to 3 cm, glabrous. Leaf blade obovate, acuminate at the base and the apex, remotely dentate, red on the underside, to 20 × 14 cm; petiole to 13 cm long. Calyx lobes dentate, acuminate, red-orange; corolla white, swollen on the underside, to 3 cm long. Common, on hills across the river. Western Ecuador.

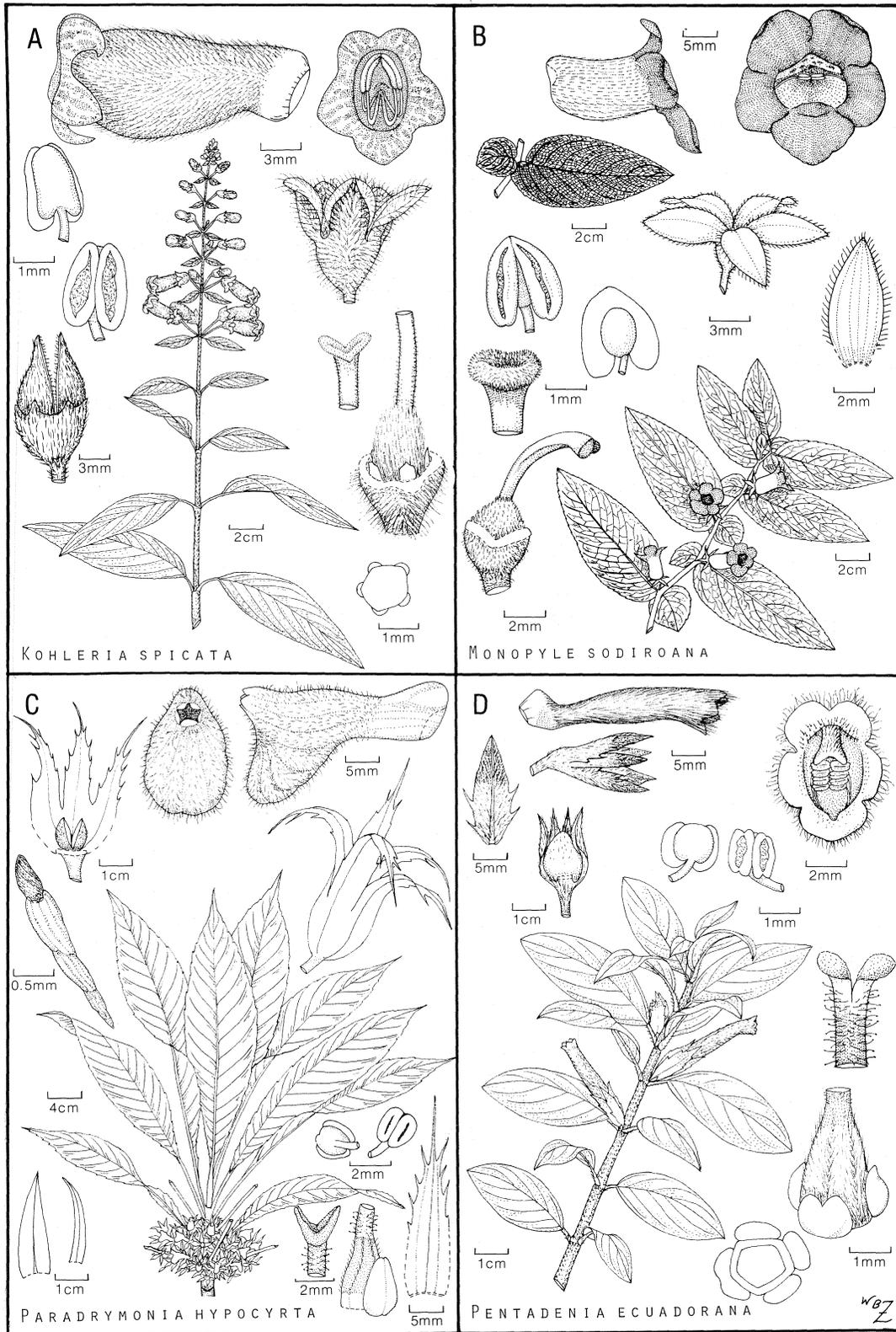


Plate 163

***Pentadenia ecuadorana* Wiehler**

Plate 163-D

Epiphytic. Stems to 70 cm long, lax, thick, swollen between the nodes, the internodes to 4 cm long. Leaves elliptic, 5 × 2 cm, green on both sides, densely pubescent, the opposite pairs slightly unequal. Flowers 1 or 2 per node. Calyx green, the lobes triangular, pubescent, to 1 cm long; corolla tube slender, red, 3 cm long, glabrous to finely pubescent. Infrequent, in mature forest. Eastern and western Ecuador, a trans-Andean distribution.

***Pentadenia spathulata* (Mansf.) Wiehler**

Plate 164-A

Epiphytic. Stem to 1 m, erect, thick, swollen between the nodes, the internodes to 5 cm long. Leaves obliquely elliptic, 15 × 5 cm, green on the upper side, red on the underside, the opposing leaves unequal, the smaller leaf to 9 × 3 cm, lightly pubescent. Flowers in dense clusters in the axils of both leaves; calyx lobes reddish, 0.6 cm long, elliptical, long-hairy; corolla yellow, 1 cm long, long-hairy outside. Not yet found on the Río Palenque Center, but known from just across the river. Flowering continuously. Western Ecuador.

***Pentadenia zapotalana* Wiehler**

Plate 164-B

Epiphytic. Stems to 70 cm long, lax, thick, swollen between the nodes, the internodes to 6 cm long. Leaves obliquely elliptic, 13 × 5 cm, green on the upperside, green on the underside with a red spot to 1.5 cm in diameter near the apex, the opposing leaves unequal, the smaller leaf to 5 × 2.5 cm, lightly pubescent. Flowers 2 or 3 in the axils of the larger leaves. Calyx lobes green, to 2 cm long, dentate, sub-glabrous; corolla yellow, narrowly tubular, 2.5 cm long, the lobes erect, sparsely long-hairy outside. Not yet found at the Río Palenque Center, but common, around Quevedo and to within 20 km of the Center at elevations to 150 m, growing mostly on cacao and likely to appear at Río Palenque as the cacao plantation matures. Flowering continuously. Western Ecuador.

***Trichantha herthae* (Mansf.) Wiehler**

Plate 164-C

Epiphytic. Stems lax, densely red-pubescent, internodes to 2 cm long. Leaves very unequal; petiole to 0.8 cm long; blade obliquely elliptic to obovate, serrate, acute at the base and the apex, green, to 8 × 3 cm. Calyx red-orange, pubescent; corolla yellow, tubular, pubescent, 1.8 cm long. Not yet collected at Río Palenque; rare, in mature forest on hills across the river. Western Ecuador.

***Trichantha minor* Hooker**

Plate 164-D

Epiphytic vine on tree trunks and scrambling over shrubs in cloud forest. Stems slender, densely red-pubescent, to 10 cm between nodes. Leaves ovate, acuminate at the apex, obtuse at the base, margin entire, pubescent, to 7 × 4 cm; petiole hirsute, to 1 cm long. Calyx red, the lobes long, fimbriate, hispid-pubescent, 1.5 cm long; corolla tubular, purple-black, hispid pubescent, with 5 clavate appendages between the yellow lobes, tube 3 cm long, 7 mm in diameter. Not yet collected at Río Palenque; uncommon, on hills across the river. Western Ecuador.

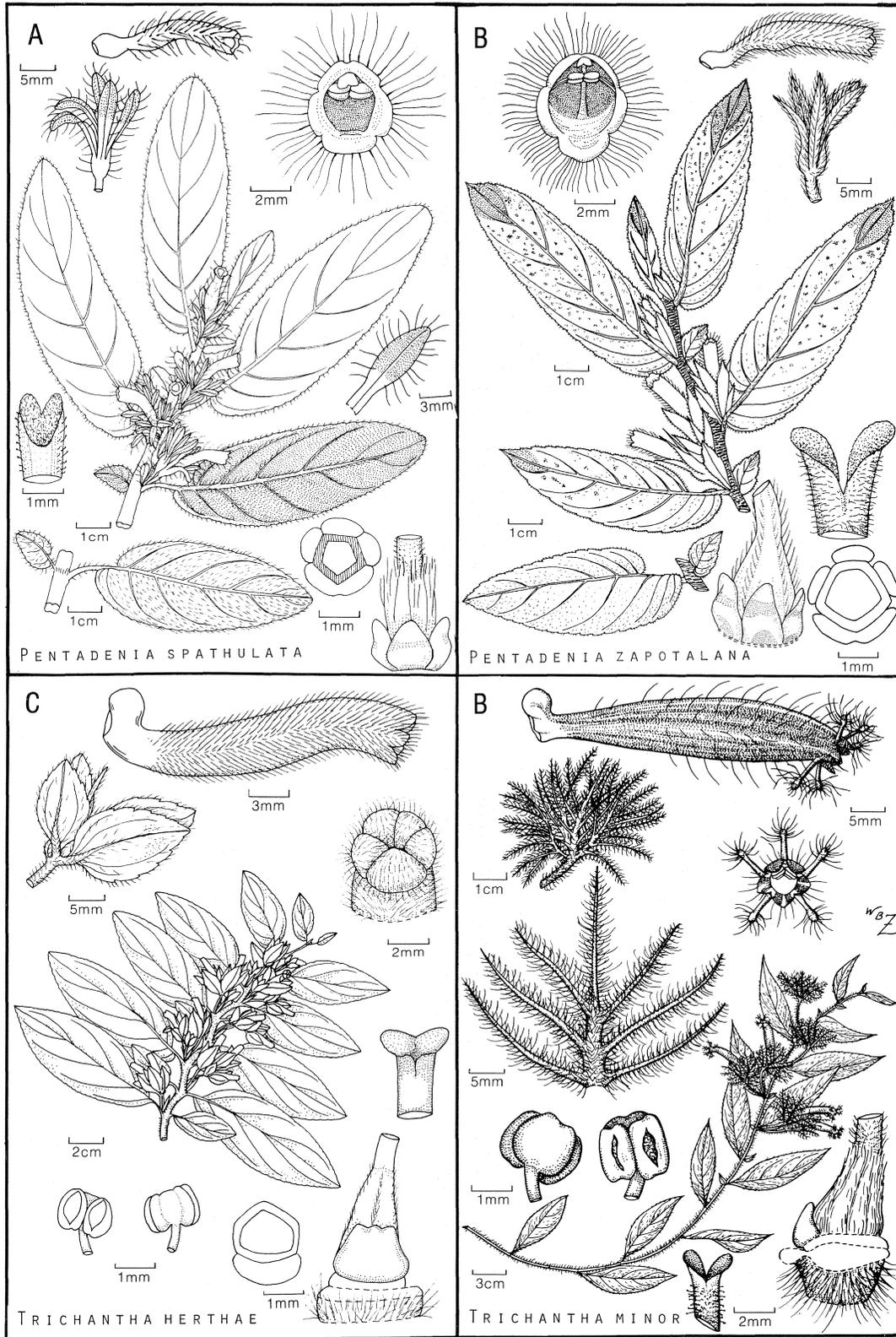


Plate 164

GUTTIFERAE

Trees or shrubs, usually dioecious, often epiphytic or hemiepiphytic, usually with colored sap. Leaves opposite or whorled, simple, without stipules. Flowers unisexual or bisexual, regular; sepals 2-10; petals 4-12; stamens few to numerous; ovary superior, 1-many-loculed. Fruit a capsule or berry.

Key to the species.

1. Terrestrial trees; petals white; fruits indehiscent.
 2. Secondary veins of the leaves prominent beneath, ca. 1 cm apart; leaves obovate *Chrysochlamys dependens*
 2. Secondary and tertiary veins of the leaves parallel and not differentiated, close together and relatively inconspicuous; leaves elliptic or narrowly obovate.
 3. Flowers borne singly; 2° and 3° venation clearly visible; leaves elliptic; cultivated *Mammea americana*
 3. Inflorescence paniculate; 2° and 3° venation hardly evident; leaves narrowly obovate; native *Tovomita weddelliana*
1. Epiphytic or hemiepiphytic trees or shrubs; petals pink or pinkish white; fruits dehiscent.
 4. Leaves ca. 25 cm long; flowers 6 cm or more across.
 5. Leaves without obvious secondary veins *Clusia dixonii*
 5. Leaves strongly veined. *Clusia venusta*
 4. Leaves less than 15 cm long; flowers less than 5 cm across.
 6. Leaves sessile, the apex rounded.
 7. Leaves narrowly obovate, to 6 cm wide.
 *Clusia fructiangusta*
 7. Leaves broadly obovate, about 10 cm wide. . . *Clusia cf. rosea*
 6. Leaves petiolate, the apex acute to abruptly acuminate
 *Clusia decussata*

Chrysochlamys dependens Tr. & Pl.

Plate 165-A

Small dioecious tree to 10 m tall. Stems more or less tetragonal. Leaves opposite, obovate, acute or obtuse, basally more or less attenuate, to ca. 30 × 15 cm, the secondary veins prominent beneath, ca. 1 cm apart. Inflorescences mostly from below the leaves, paniculate. Flowers ca. 1 cm across; petals white. Fruits turning purple, ca. 2 cm long. Infrequent, in mature forest. Probably Panama to Amazonian Peru; according to D'Arcy (pers. comm.) but not Maguire (Phytologia 36:391-406. 1977) our plant may belong in *Tovomitopsis*.

Clusia decussata R. & P.

Plate 165-B

Epiphytic tree. Petiole ca. 1 cm long; leaves subcoriaceous, elliptic, acute or abruptly acuminate, cuneate basally, the secondary veins close together and inconspicuous but clearly visible. Inflorescence terminal, paniculate. Flowers ca. 1 cm across; sepals ca. 0.5 cm long; petals pink. Fruit valves 8, 1.5 cm long, ca. 3 mm wide. Common, in mature forest and in trees along the river. A trans-Andean disjunction from Amazonian Peru and Ecuador.