

Plate 188

Phoradendron piperoides (HBK) Trel.

Plate 189-B

Parasitic shrub. Leaves oblanceolate to narrowly obovate, acute at the apex, the base attenuate and the petiole scarcely evident, the secondary veins not evident, to 13 × 5 cm. Inflorescences spicate, many per node, the rachis thick. Flowers ca. 2 mm long, partially immersed, borne singly along the inflorescence. Infrequent, in mature forest. Mexico and the West Indies to Argentina.

Phthirusa pyrifolia (HBK) Eichl.

Plate 189-C

Parasitic shrub. Leaves ovate to elliptic, obtuse at the apex, rounded at the base, the midvein prominent beneath, the secondary veins inconspicuous but visible, to 12 × 6 cm; petiolate. Inflorescences spicate, one or two per node, the rachis slender. Flowers ca. 2 mm long, sessile, borne in clusters scattered along the inflorescence. Common, especially in cacao, *Vernonia baccharoides* and *Ochroma*. Belize and the West Indies to Brazil.

Psittacanthus cupulifer (HBK) G. Don

Plate 189-D

Parasitic shrub. Leaves narrowly ovate to obovate, asymmetric, sometimes falcate, obtuse at the base and the apex, subsessile, to 12 × 4.5 cm, inconspicuously palmately 3-to 4-veined from the base. Inflorescence corymbose, axillary. Flowers 3.5 cm long, green at the apex, yellow in the middle, red at the base. Rare, in mature forest. Colombia to Peru.

Struthanthus leptostachyus (HBK) Eichl.

Plate 190-A

Struthanthus polystachyus (R. & P.) Bl.

Parasitic shrub. Leaves narrowly ovate, acuminate, rounded at the base, the midvein raised below, the secondary veins inconspicuous but visible, to 16 × 6 cm; petiolate. Inflorescence spicate, 2 to several per node. Flowers yellowish, 4 mm long, sessile, borne in clusters scattered along the inflorescence. Infrequent, in mature forest. Central and South America.

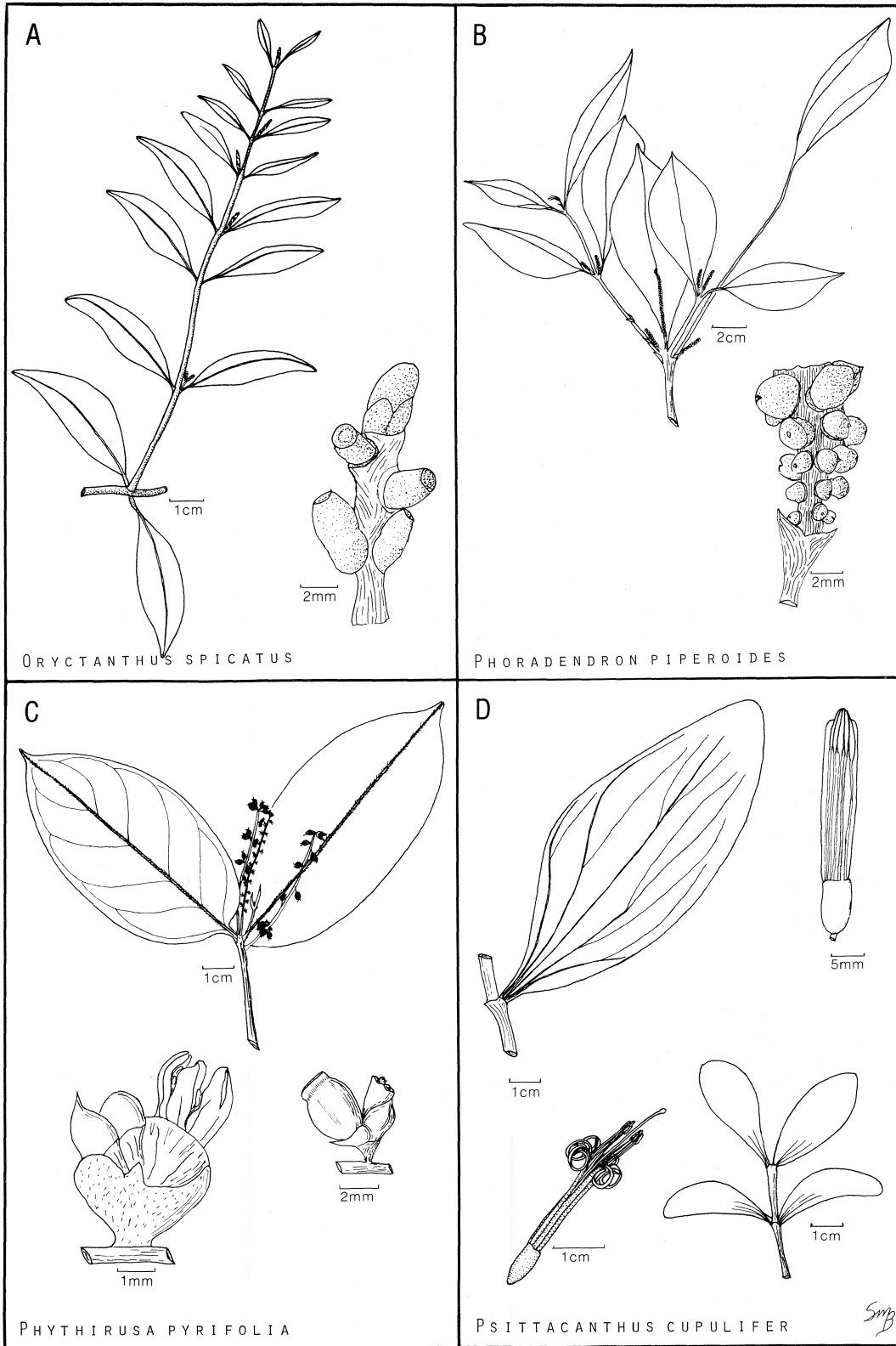


Plate 189

LYTHRACEAE

Herbs, shrubs or trees. Leaves opposite or whorled, simple, entire, the stipules minute or absent. Flowers bisexual, more or less regular; sepals joined at the base to form a zygomorphic tube; sepals 4, 6 or 8; petals the same number as the sepals, distinct and arising from the sepaline tube, alternate with the sepals, usually stalked; stamens twice as many as the petals; ovary superior, locules 2-6. Fruit a capsule.

Key to the species.

1. Flowers white; shrub 1-4 m tall. *Adenaria floribunda*
1. Flowers magenta; herb or subshrub to 1 m tall.
 2. Anthers exerted; leaves lanceolate, mostly more than 7 cm long *Cuphea tetrapetala*
 2. Anthers not exerted; leaves ovate, less than 4 cm long.
 3. Inflorescence a terminal raceme; calyx not spurred. *Cuphea racemosa*
 3. Inflorescence of 1 or 2 flowers in the leaf axils; calyx spurred *Cuphea strigulosa*

***Adenaria floribunda* HBK**

Plate 190-B

Shrub or small tree to 4 m tall. Leaves lanceolate to oblanceolate, acute at the base and the apex, to 6 × 1.6 cm. Inflorescence a few-to several-flowered umbelliform axillary cyme. Flowers with the hypanthium campanulate; petals white, clawed, 3-4 mm long. Fruit ovoid, dull red, indehiscent, its base enclosed by the persistent calyx and hypanthium. Locally common, along the river. Mexico to Argentina.

***Cuphea racemosa* (L.f.) Spreng.**

Plate 190-C

Subwoody herb. Stem puberulous. Leaves ovate, acute at the base and the apex, 2-3.5 cm long. Inflorescence a terminal raceme. Flowers magenta, pedicellate, the hypanthium not spurred. Common, in disturbed areas, especially near the river. Colombia to Argentina.

***Cuphea strigulosa* HBK**

Plate 190-D

Herb ca. 0.3 m tall. Stem sparsely hirsute. Leaves ovate, acute at the base and the apex, 1.5-3.5 cm long. Flowers magenta, one or two per leaf axil, almost sessile, the hypanthium spurred. Common, weed in disturbed areas. Colombia to Peru, mostly at intermediate elevations in the inter-Andean valleys. This species hardly warrants separation from widespread *C. carthaginensis* (Jacq.) Macbr. which differs in having its anthers included well within the calyx tube.

Common name: "Yerba de Toro"+

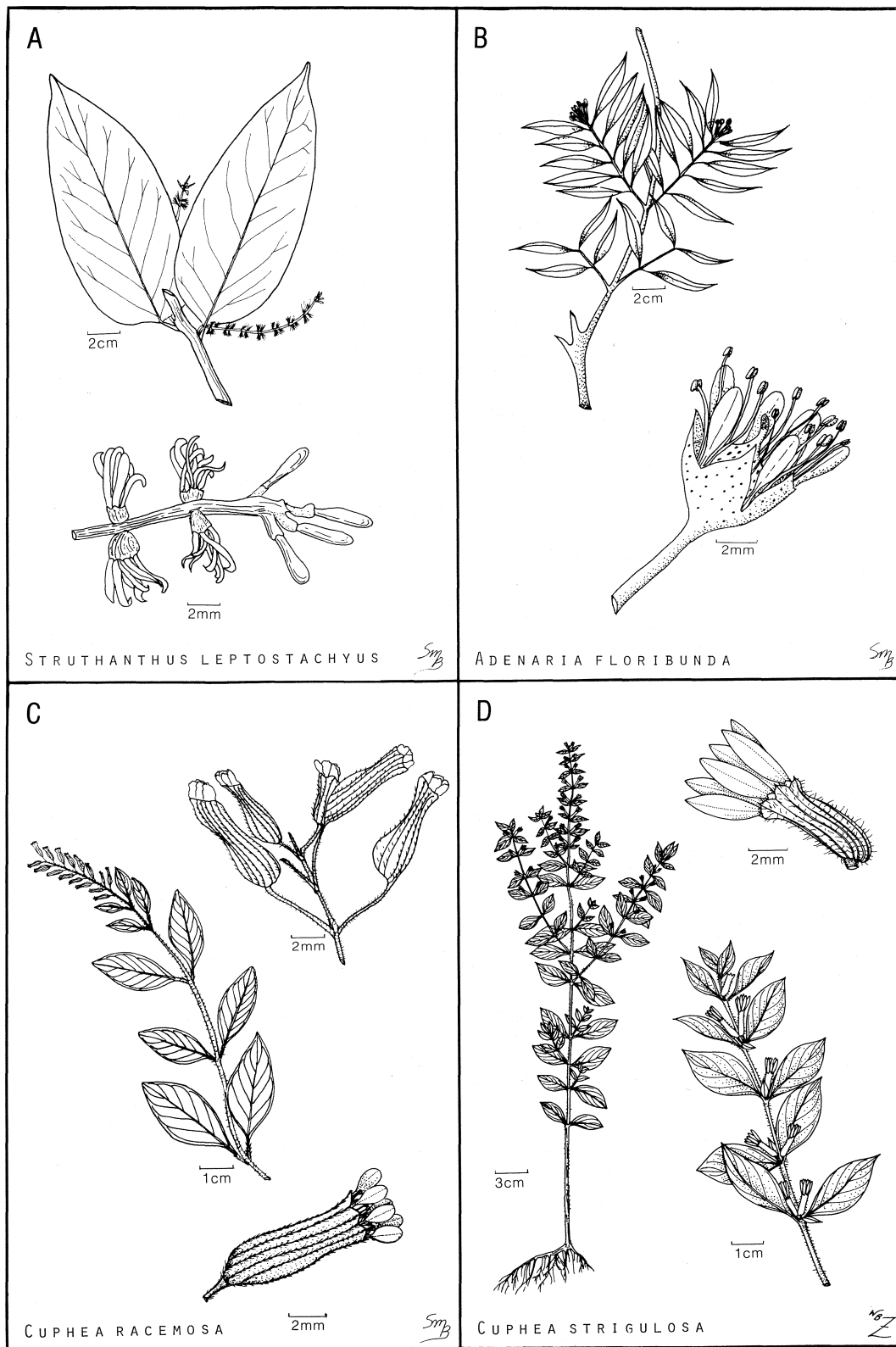


Plate 190

Cuphea tetrapetala Koehne

Plate 191-A

Subshrub to 1 m tall. Stem appressed-pubescent. Leaves lanceolate, mostly 7-10 × 1-2 cm, acuminate at the base and the apex. Inflorescence a terminal raceme or a panicle composed of several terminal racemes. Flowers magenta, 4-petaled; anthers exserted, the hypanthium with a conspicuous spur. Uncommon, along the river. Mexico and Colombia according to Koehne. This species is very similar to the common narrow-leaved wet forest species of Panama and Costa Rica which has been known as *C. epilobiifolia* Koehne; the Panamanian plant has 6 petals, however.

MALPIGHIACEAE

Trees, shrubs or vines without tendrils. Leaves opposite, simple, often with petiolar glands, with stipules. Flowers mostly bisexual, showy, yellow, white or pink, slightly zygomorphic; sepals 5, four or all five with a conspicuous pair of glands; petals 5, often unequal, clawed, sometimes fringed; stamens 10 (at Río Palenque) or various, often reduced in part to staminodes; ovary superior, usually with 3 uniovulate locules or 3 ± free carpels. Fruit often winged, sometimes drupaceous or berry-like.

Key to the species.

1. Fruit an ovoid berry; trees.
 2. Leaves elliptic, thin, acuminate at the apex, less than 17 × 9 cm *Bunchosia cornifolia*
 2. Leaves ovate, thick, obtuse at the apex, usually more than 14 × 8 cm *Bunchosia* sp. (5657)
1. Fruit dry, winged; lianas.
 3. Inflorescences with leafy bracts, paniculate; flowers yellow; three longest fruit wings narrow, strap-shaped, more than 2.5 cm long.
 4. Leaves subcoriaceous, broadly elliptic, obtuse at the base and apex; long fruit wings 2.5 cm long. *Tetrapteris calophylla*
 4. Leaves membranaceous, narrowly elliptic to ovate-elliptic, acuminate; long fruit wings more than 3 cm long. *Tetrapteris crispa*
 3. Inflorescence ebracteate or with minute non-leafy bracts, umbellate or paniculate; the flowers pink or yellow; fruit wings about as long as broad.
 5. Inflorescence umbellate; flowers yellow; stem and leaves pilose.
 6. Leaves broadly elliptic; trichomes forked or T-shaped with two subequal arms. *Hiraea cephalotes*
 6. Leaves narrowly elliptic; trichomes unbranched or with a short lateral branch. *Hiraea* sp. (6342)
 5. Inflorescence paniculate; flowers pink; stem puberulous; leaves glabrescent *Mascagnia ovatifolia*

Bunchosia cornifolia HBK

Plate 191-B

Tree 3-4 m tall. Leaves elliptic to ovate-elliptic, acute to acuminate, rounded at the base, 9-17 × 4-9 cm. Inflorescence axillary, racemose, the 5 stalked petals yellow. Fruit fleshy, subglobose, one-or two-seeded, 8 mm in diameter, 10 mm long, subtended by the persistent calyx. Rare in mature forest. Mexico to Ecuador.

Common name: "Cerezo"

Bunchosia sp. (5657, 5659, 6640)

Plate 191-C

Tree to 8 m tall, vining when young. Leaves coriaceous, oblong-elliptic, apiculate to obtuse at the apex, rounded at the base, 14-29 × 8-15 cm. Inflorescence axillary, racemose, the stalked petals yellow. Fruit a drupe 1.5 cm in diameter. Rare, one tree occurs in the Dodson compound.

Hiraea cephalotes Tr. & Pl.

Plate 191-D

Liana. Leaves elliptic, obtuse at the base and the apex, firm, 10-25 × 4.5-16 cm, softly pubescent beneath with evenly forked or T-shaped trichomes. Inflorescence axillary, umbellate, the 5 mm long stalked petals yellow, turning reddish with age. Fruit winged with three thin semi-circular longitudinal wings ca. 1 cm wide and 1.5-2 cm long. Rare, in mature forest. Colombia and Ecuador.

Hiraea sp. (6342)

Plate 192-A

Liana. Branchlets pilose with spreading mostly unbranched trichomes. Leaves narrowly elliptic, acuminate, acute at the base, to 21 × 7.5 cm, membranaceous, pilose, the trichomes mostly unbranched or with a much shorter lateral branch. Rare, in mature forest at top of the river cliff near trail 7. This may be a juvenile form of *H. cephalotes* but its very different leaf shape and pubescence type suggest otherwise.

Mascagnia ovatifolia (HBK) Griseb.

Plate 192-B

Liana. Branchlets puberulous with appressed trichomes. Leaves ovate, acute to obtuse at the apex, rounded or truncate at the base, membranaceous, almost glabrescent, a few appressed T-shaped trichomes below, mostly along the midvein. Inflorescence paniculate, terminal, with minute bracts; petals pink, ca. 4 mm long. Fruit broadly winged, 3-parted, the wings longer than wide. Rare, at the edge of Bates estero. Mexico to Argentina. Illustration of the fruit adapted from material from Amazonian Ecuador.

Tetrapteris calophylla Juss. var. **glabrifolia** Griseb.

Plate 192-C

Liana. Leaves elliptic to obovate-elliptic, obtuse at the base and the apex, subcoriaceous, 10-16 × 6-9 cm, sparsely pubescent beneath with sessile T-shaped trichomes. Inflorescence terminal, paniculate, conspicuously bracteate with puberulous pale yellow-orange leaf-like bracts 1-2 cm long, the 6-7 cm long stalked petals yellow. Fruit winged, mostly 3-parted, each segment with two long (3-5 cm) narrow wings and two smaller wings 1.5-2 cm long. Infrequent, at the forest edge. Costa Rica to Amazonian Peru.

Tetrapteris crispa Juss.

Plate 192-D

Liana. Leaves ovate to narrowly elliptic, obtuse at base, acuminate at apex, membranaceous, glabrous. Inflorescence terminal, paniculate; petals yellow. Fruit winged, 3-parted, each segment with two 3 cm long narrow wings and two smaller wings to 1 cm long. Rare, at the forest edge. Costa Rica to the Guianas and south to Brazil. Cuatrecasas suggests that this material is a form of *T. calophylla* but it seems distinct to us and matches specimens determined as *T. crispa*.

MALVACEAE

Usually herbs, sometimes shrubs or trees. Leaves alternate, simple, entire, serrate, or variously lobed, usually palmately veined, stipulate. Flowers bisexual, regular; sepals 5, distinct or basally joined, often subtended by an epicalyx; petals 5, distinct; stamens numerous, monadelphous (the filaments fused into a tube around the style); ovary superior, 2-to many loculed. Fruit usually a capsule, often dehiscent radially into mericarps, sometimes a berry.

Key to the species.

1. Woody shrubs or small trees; flowers red, petals more than 3 cm long; cultivated.
 2. Flower tubular, the petals twisted together at anthesis; stigmas 10 *Malvaviscus arboreus*
 2. Flower open, the petals spreading; stigmas 5 *Hibiscus rosa-sinensis*
1. Herbs (sometimes subwoody); flowers yellow or pink; petals less than 2 cm long; native.
 3. Leaves entire; fruits ca. 1 cm long *Wissadula excelsior*
 3. Leaves serrate; fruits ca. 0.5 cm long.
 4. Fruits densely echinate, the spines with 4 minute recurved barbs at tip; inflorescence of one or two short-pedicellate axillary flowers; flowers pink *Urena lobata*
 4. Fruits not echinate; inflorescence often many-flowered and/or terminal; flowers yellow or pinkish.
 5. Leaves broadly ovate, cordate, both irregularly toothed and finely serrate *Pavonia paniculata*
 5. Leaves rhombic, acute at base, serrate.
 6. Flowers pink; leaves pinnately veined; inflorescence more or less umbelliform on a long leafless peduncle *Pavonia rosea*
 6. Flowers yellow; leaves 3-veined at base; inflorescence mostly of single flowers in leaf axils.
 7. Stipules filiform, ca. 0.1 mm wide; stems puberulous; leaves spiral *Sida setosa*
 7. Stipules linear, 1-2 mm wide; stems hirsute; leaves distichous *Sida acuta*

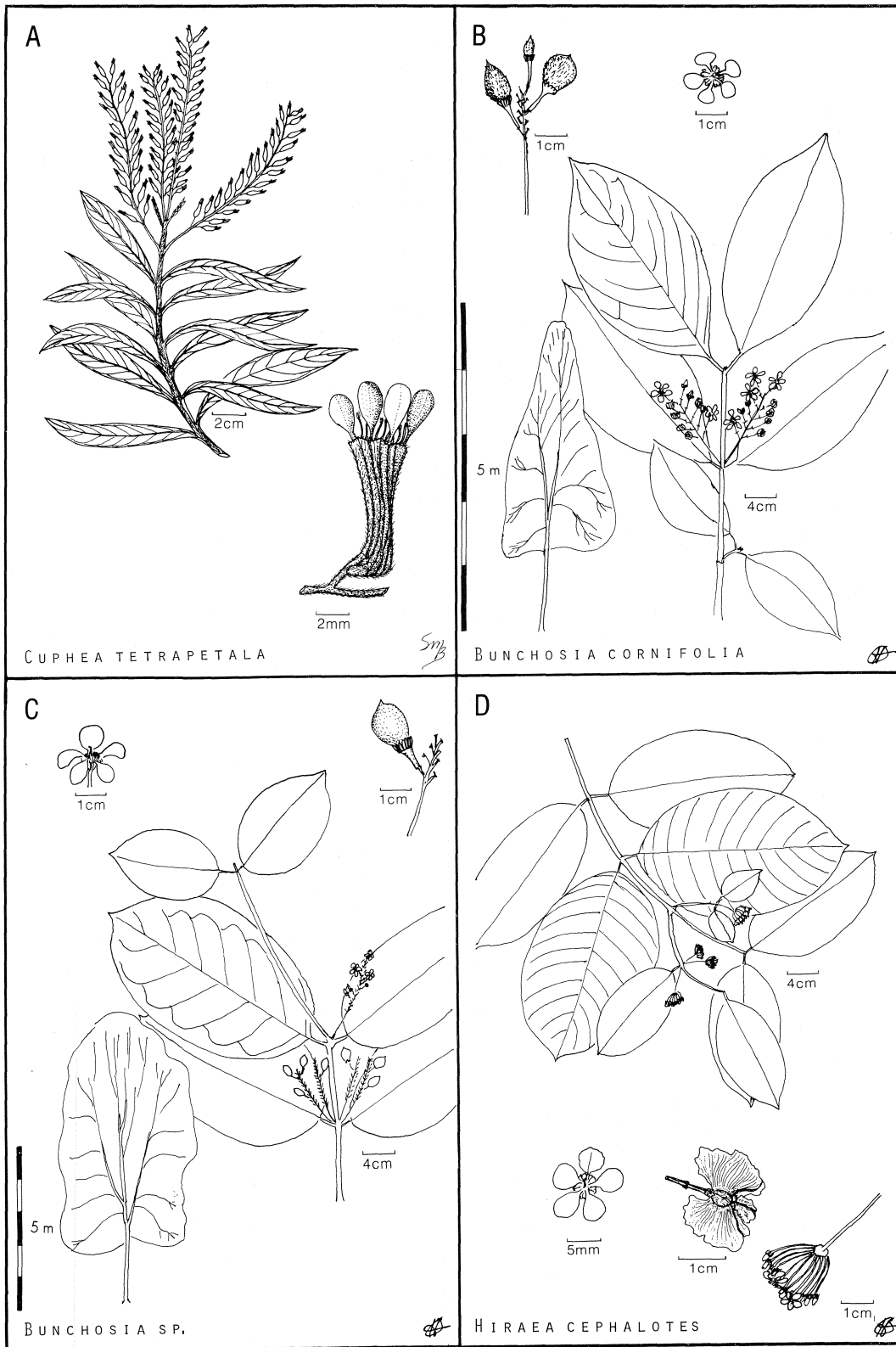
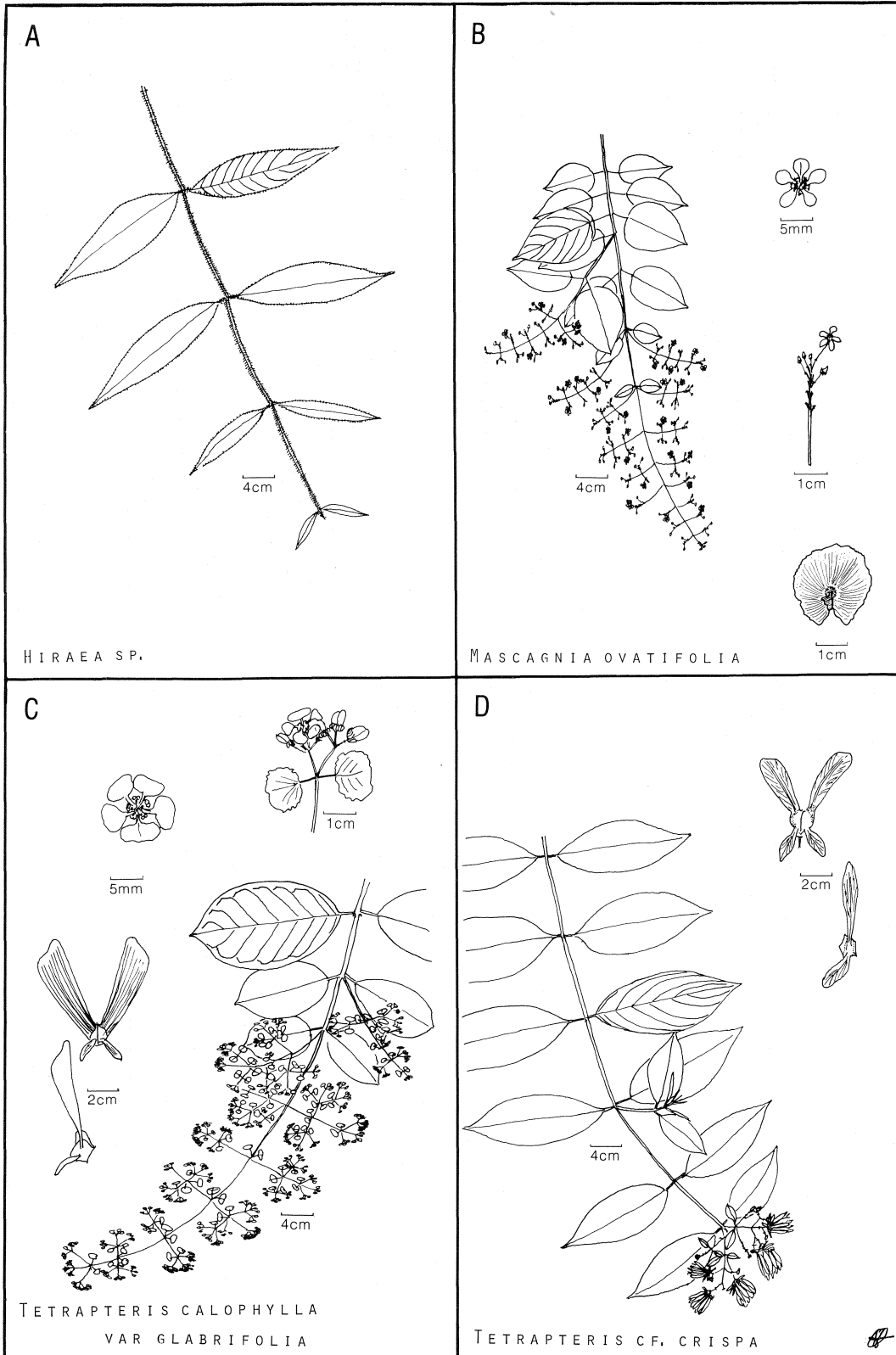


Plate 191



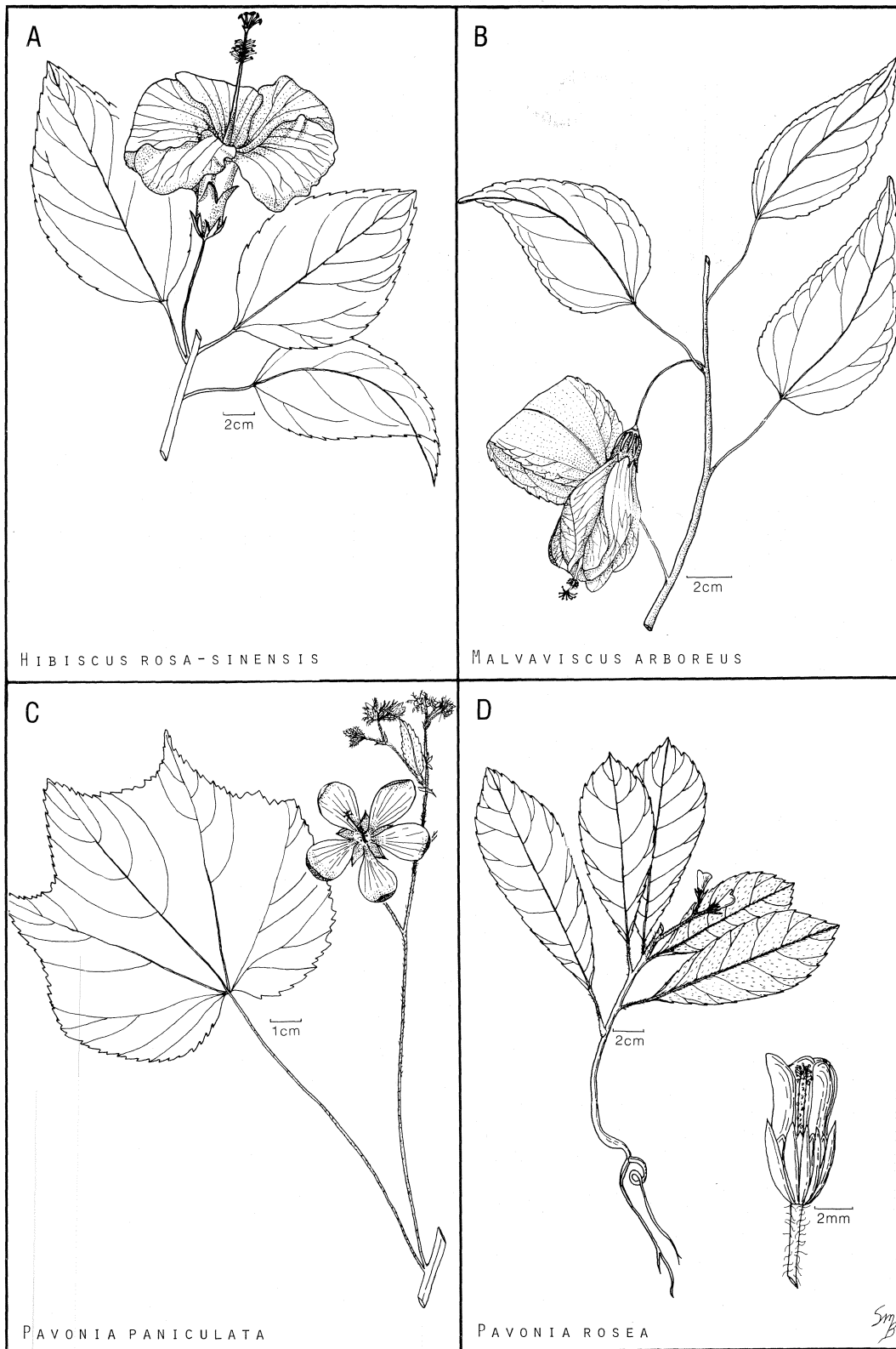


Plate 193

***Hibiscus rosa-sinensis L.**

Plate 193-A

Shrub. Leaves ovate, acute to acuminate, rounded at the base, serrate. Flowers red, the petals ca. 8 cm long, the staminal column longer than petals. Cultivated around homesites. Native to eastern Asia; cultivated throughout the tropics.

Common name: "Peregrina"+, "Hibiscus"

***Malvaviscus arboreus Cav.**

Plate 193-B

Shrub or small tree, sometimes scandent. Leaves ovate, acuminate, the base rounded, serrate. Flowers borne singly in leaf axils, the petals red, more than 3 cm long, twisted into a tube, the staminal column longer than petals. Cultivated around homesites. Extreme southern United States and the West Indies south to Brazil; often cultivated.

Pavonia paniculata Cav.

Plate 193-C

Herb or subshrub to 1.5 m tall in disturbed area along river. Leaves broadly ovate, acuminate, shallowly cordate, serrate, sometimes also shallowly and irregularly toothed, to 11 cm long and wide. Flowers in a terminal panicle, the petals orange-yellow, ca. 2 cm long. Infrequent, in disturbed areas. Panama to Peru.

Pavonia rosea Schlecht.

Plate 193-D

Herb to 40 cm tall. Leaves rhombic, acute to acuminate at apex and base, serrate, to 17 × 7 cm, pinnately veined. Inflorescence irregularly subumbellate, the petals pinkish, ca. 1 cm long. Infrequent, in mature forest. Mexico and the West Indies to Brazil.

Sida acuta Burm.

Plate 194-A

Herb, sometimes suffrutescent. Leaves lanceolate to rhombic-lanceolate, acute at the apex, acute or obtuse at the base, serrate, to 7 × 2 cm or larger, stipules linear, 1-2 mm wide. Flowers borne singly in the leaf axils all along stems, the petals yellow, ca. 1 cm long. Common, in disturbed areas. Pantropic weed.

Common name: "Escoba blanca"+, "Guisho"

Sida setosa Mart. ex Colla

Plate 194-B

Herb, sometimes suffrutescent. Leaves lanceolate to rhombic-ovate, acute at the base and the apex, serrate, to 8.5 × 3 cm; stipules filiform, ca. 0.1 mm wide. Flowers borne singly or in pairs in leaf axils mostly toward tips of branches, the petals yellow, ca. 0.8 cm long. Common, in disturbed areas. Costa Rica to Brazil and Amazonia Peru; often treated as a variant of *S. rhombifolia* L. which differs in lacking long-setate mericarps.

Common name: "Escoba Verde"+

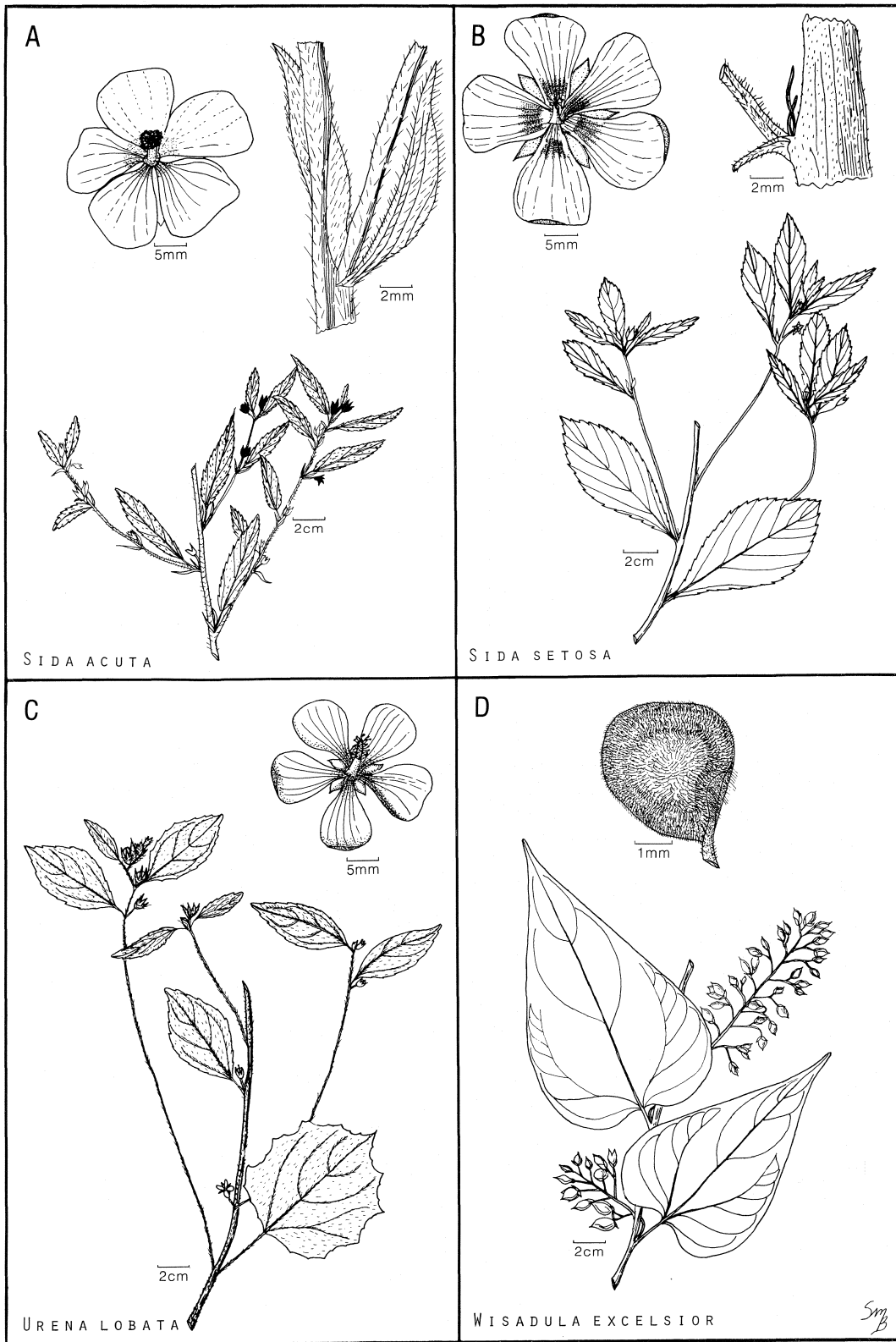


Plate 194

Urena lobata L.

Plate 194-C

Herb or subshrub to 2 m tall. Leaves variously narrowly ovate and irregularly serrate to broadly ovate and deeply lobed, obtuse at base and apex. Flowers borne singly or in pairs in leaf axils, the petals pink, ca. 1.5 cm long. Fruit echinate with barb-tipped spines. Common, in disturbed areas. Pantropic weed.

Common name: "Amonan"

Wissadula excelsior (Cav.) Presl

Plate 194-D

Herb or subshrub. Leaves ovate, acuminate, cordate, entire, to 15 × 9 cm. Flowers borne on few-branched panicles, the petals light yellow, 4-5 mm long. Infrequent, in disturbed areas. Cuba and southern Mexico to Peru and Brazil. Our plant has longer mericarps (10-11 mm) than previously reported for this species but is otherwise indistinguishable.

MARCGRAVIACEAE

Epiphytic or hemiepiphytic vines or shrubs, the distinctive juvenile form appressed to tree trunks. Leaves alternate, estipulate, simple, entire. Inflorescence terminal, a spike or a raceme or pendulous and forming an umbellate compound unit with terminal nectaries and a subterminal whorl of flowers, the bracts transformed into variously shaped nectaries, these often saccate. Flowers bisexual; sepals (4-) 5; petals (3-) 5, separating as a cap; stamens 3-40; ovary superior, 2-to 20-loculed. Fruit globose, seeds small, often in a brightly colored pulp.

Key to the species.

1. Inflorescence racemose or spicate; each flower subtended by a nectary.
 2. Flowers pedicellate; inflorescence to 2 cm long; leaf secondary venation very obscure and very strongly ascending. *Norantea sodiroi*
 2. Flowers sessile; inflorescence to 30 cm long; leaf secondary venation somewhat obscure, hardly ascending. *Norantea anomala*
1. Inflorescence contracted, of two whorls, a terminal whorl of nectaries and a subterminal whorl of flowers without nectaries *Marcgravia coriacea*

Marcgravia coriacea Vahl.

Plate 195-A

Hemiepiphytic vine. Leaves oblong-elliptic, obtuse at the base and the apex, 8-10 × ca. 3 cm, the secondary venation not evident, with conspicuous marginal black dots beneath. Inflorescence of two terminal whorls, an apical one of saccate nectaries and a subapical one of pedicellate flowers; flower set at an angle to the pedicel. Fruits globose, ca. 1.5 cm in diameter. Common, in mature forest. Northern South America, but the upland *M. brownei* (Tr. & Pl.) Krug & Urb. which ranges from Honduras (and Jamaica) to Bolivia is suspiciously similar.

Norantea anomala HBK

Plate 195-B

N. sessilis L. Wms.

Epiphytic vine. Leaves narrowly elliptic, acute to obtuse at the base and the apex, the extreme apex minutely apiculate, 7-13 × 2.5-4 cm, thinly coriaceous, the secondary venation prominulous below, slightly ascending. Inflorescence an elongate terminal spike, each sessile flower subtended by a red saccate nectary. Fruits globose, ca. 5 mm in diameter. Rare, at the edge of forest near the river. Nicaragua to Pacific Ecuador.

Norantea sodiroi Gilg

Plate 195-C

Hemiepiphytic vine. Dried branchlets conspicuously transversely striate. Leaves obovate-oblong, more or less truncate at the base and the apex, 7-11 × 3-5 cm, thick-coriaceous, the secondary veins very obscure, very strongly ascending. Inflorescence a thick rather contracted raceme. Flowers (not seen at Río Palenque) each subtended by a saccate nectary. Infrequent, in mature forest. Endemic to Pacific Ecuador.

MELASTOMATACEAE

Herbs, shrubs, trees, or vines, sometimes epiphytic. Leaves opposite, simple, usually with 3-9 obvious parallel veins, without stipules. Flowers bisexual, regular, the perianth and stamens borne on a hypanthium; sepals 4-6; petals 4-6, distinct; stamens mostly twice as many as petals, the anthers opening by terminal pores, connective usually with conspicuous appendages; ovary superior or inferior, 1-to several-celled. Fruit a capsule or berry.

Key to the species.

1. Fruit a capsule; herbs or vines, if herbaceous the stem not woody; ovary (in flower only) more or less superior.
 2. Vines. *Adelobotrys ascendens*
 2. Herbs.
 3. Inflorescence spicate; capsules 3-winged.
 4. Leaves glabrous above. *Triolena barbeyana*
 4. Leaves pubescent above with stiff 1-2 mm long trichomes . . .
. *Triolena pustulata*
 3. Inflorescence paniculate or the flowers single in the leaf axils; capsules round, unwinged.
 5. Inflorescence paniculate; petals ca. 0.3 cm long
. *Aciotis amazonica*

5. Inflorescence racemose, the flowers 1-5, mostly from leaf axils; petals ca. 1.5 cm long. *Arthrostema ciliatum*
1. Fruit a berry; subshrubs, shrubs or trees, the stem woody; ovary inferior.
6. Flowers subtended by two pairs of large enclosing bracts more than 2 cm long; petals ca. 2 cm long; plant often epiphytic *Blakea subconnata*
6. Flowers ebracteate or subtended by minute bracts less than 0.5 cm long; petals less than 1 cm long; plant terrestrial.
7. Inflorescence more or less openly paniculate, terminal or axillary.
8. Stems, leaves and inflorescence short-puberulous to glabrate.
9. Leaves sessile; inflorescence axillary and cauliflorous *Ossaea palenquensis*
9. Leaves petiolate; inflorescences terminal or in axils of the uppermost leaf pairs.
10. Leaves of a pair very unequal; petioles of the small leaves less than 2 mm long. *Clidemia radicans*
10. Leaves of a pair about equal; petioles more than 5 mm long.
11. Leaves 3-veined from well above the acute base.
12. Nerve axils beneath with conspicuous domatia; fruits about 2 mm wide. *Clidemia caudata*
12. Nerve axils beneath without domatia; fruits about 5 mm wide.
13. Leaves conspicuously pubescent beneath with thick-stellate trichomes *Conostegia centronioides*
13. Leaves glabrous beneath except for a few minute scurfy trichomes mostly along the main veins *Conostegia formosa*
11. Leaves 3-veined from near the obtuse to subcordate base, nerve axils without domatia.
14. Leaf bases broadly acute to obtuse.
15. Petiole to 10 cm long; leaves becoming very large, to 32 × 19 cm *Miconia astroplocama*
15. Petiole less than 2 cm long; leaf blades less than 17 × 8 cm *Ossaea micrantha*
14. Leaf bases more or less subcordate *Miconia guayaquilensis*
8. Stems, leaves and inflorescences pilose with reddish-brown trichomes more than 1 mm long.
16. Flowers scattered along the inflorescence; leaves widest below the middle. *Leandra dichotoma*
16. Flowers in pedunculate clusters, each cluster subtended by bracts; leaves widest at the middle *Miconia barbinervis*
7. Inflorescence contracted, more or less subumbelliform or fasciculate, axillary.

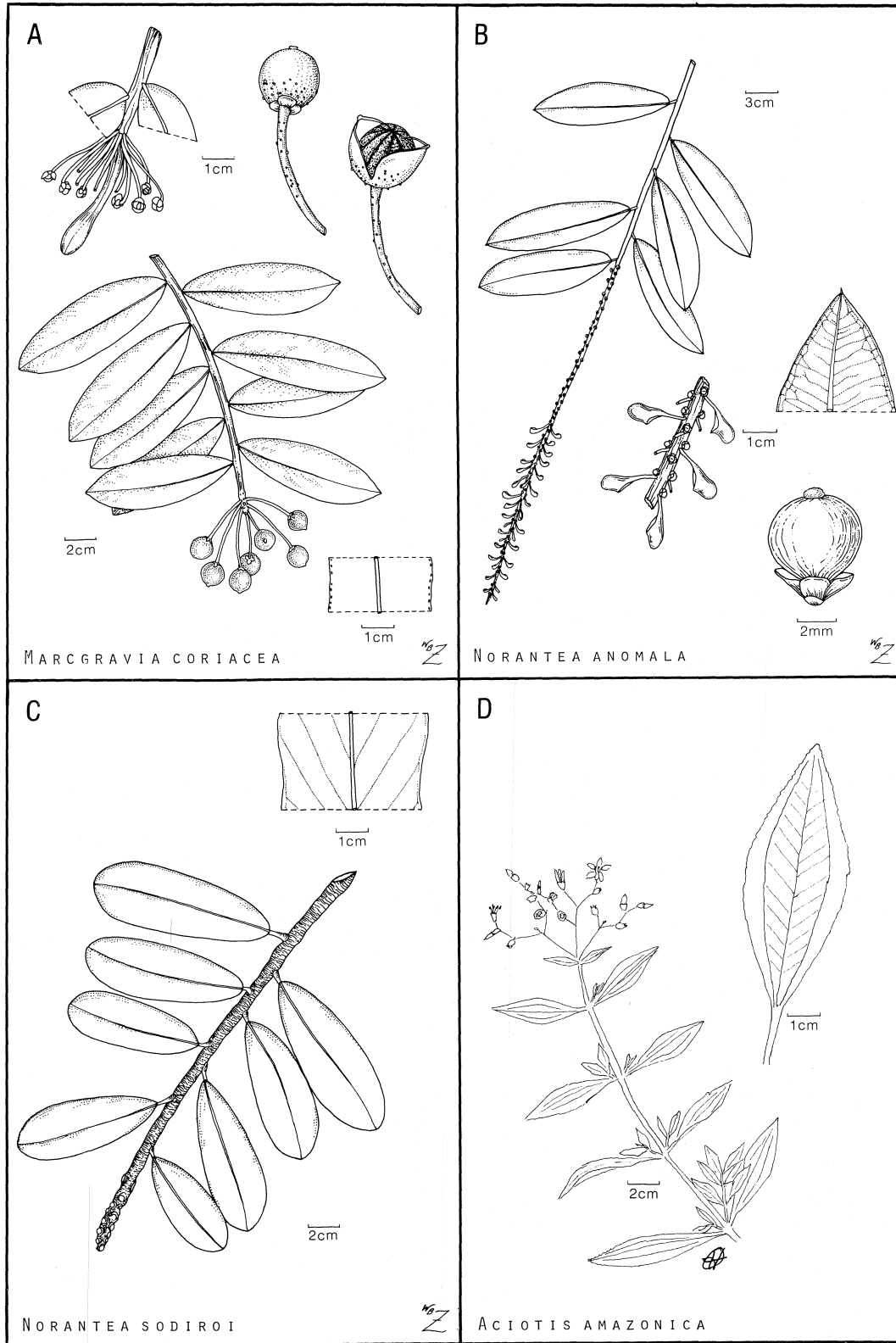


Plate 195

17. Flowers cauliflorous below the leafy part of the stem.
 18. Calyx subulately 4-toothed; pedicels 1-2 mm long; petals ca. 1 mm long. *Clidemia septupulinervis*
 18. Calyx truncate; pedicels ca. 10 mm long; petals almost 1 cm long
 *Loreya umbellata*
17. Flowers from the axils of existing leaves.
 19. Calyx minutely 5-denticulate; leaves purple beneath.
 *Clidemia purpurea*
 19. Calyx subulately 5-toothed, the teeth 5 mm long; leaves green above
 and below *Clidemia dentata*

***Aciotis amazonica* Cogn.**

Plate 195-D

Herb less than 1 m tall. Leaves narrowly ovate, acute, cuneate at the base, finely and evenly serrate, to 10 × 3 cm. Inflorescence terminal, paniculate, open. Flowers with the calyx minutely 5-denticulate, 1 mm long, the petals lavender, 3-5 mm long. Fruit capsular. Common, along the river. Otherwise known from Amazonian Brazil. 4351 has much smaller leaves than the other collections but Wurdack considers them conspecific.

***Adelobotrys adscendens* (Sw.) Tr.**

Plate 196-A

Vine. Leaves ovate, acute, rounded or truncate at the base, subentire, to 11 × 7 cm, 5-nerved from the base. Inflorescence paniculate, terminal or from the upper axils. Flowers with the calyx subtruncate, ca. 5 mm long; petals white, 1 cm long. Rare, in mature forest. Mexico to Venezuela and Amazonia.

***Arthrostema ciliatum* R. & P.**

Plate 196-B

Weak-stemmed herb. Leaves ovate, acute, truncate at the base, very finely serrate, to 5 × 2.5 cm, purple beneath. Flowers borne singly or on few-flowered inflorescences in the leaf axils; calyx narrow, subtruncate, ca. 7 mm long; petals magenta, ca. 1.5 cm long. Fruit capsular. Infrequent, in disturbed areas. Mexico to Bolivia.

***Blakea subconnata* Berg ex Tr.**

Plate 196-C

Hemiepiphytic tree, sometimes terrestrial. Leaves elliptic, acuminate, decurrent at the base (the petiole often winged), entire, to 25 × 11 cm. Flowers borne singly in the leaf axils, subtended by 4 enclosing bracts 2-3 cm long; calyx bluntly 5-dentate, ca. 12 mm long; petals pink, 2 cm long. Infrequent, in mature forest. Western Ecuador and Colombia.

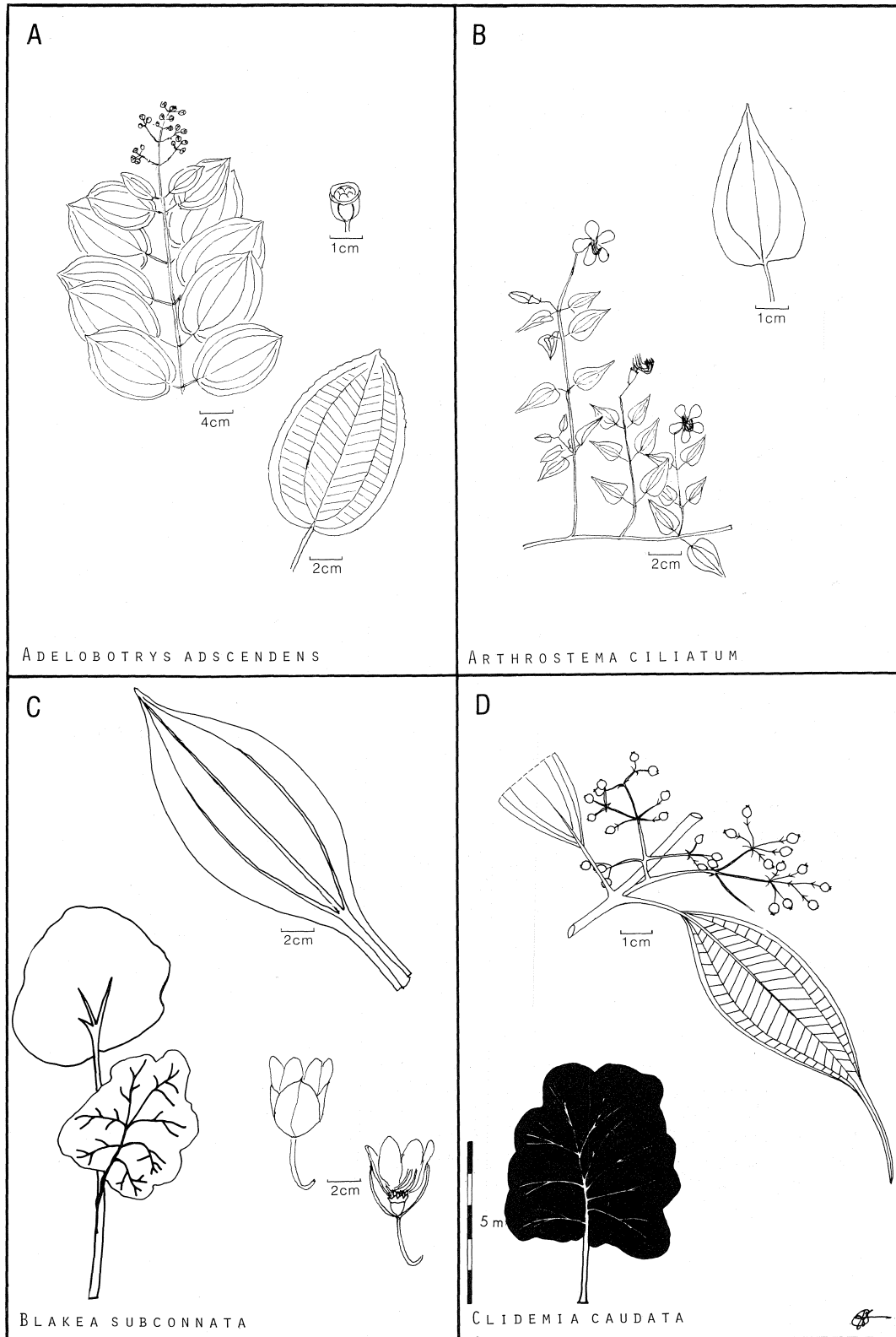


Plate 196

Clidemia caudata Wurdack

Plate 196-D

Understory tree 5 m tall. Leaves elliptic, acuminate at the apex, entire, to 19 × 17 cm, 3-veined from well above the base. Inflorescence terminal, open-paniculate. Flowers with the calyx minutely 5-dentate, ca. 1.5 mm long; petals greenish, ca. 2 mm long. Rare, in mature forest. Endemic to Pacific Ecuador.

Clidemia dentata D. Don

Plate 197-A

Subshrub less than 1 m tall. Branchlets hirsute. Leaves ovate, acuminate, rounded at the base, serrate, hirsute along the veins and the veinlets beneath, to 16 × 7 cm. Inflorescence congested, axillary. Flowers with the calyx pilose, 5-toothed, 4 mm long without the 4-5 mm long teeth; petals white, ca. 5 mm long. Common, at forest edge. Mexico to Bolivia.

Clidemia purpurea D. Don

Plate 197-B

Shrub to 1.5 m tall. Leaves elliptic-ovate, acuminate, more or less attenuate at the base, serrate to subentire, bright red-violet beneath and thick-stellate puberulous along the main nerves, to 28 × 11 cm. Inflorescence axillary, rather contracted, the pedicels 0.5-1 cm long. Flowers with the calyx pilose, minutely 5-denticulate, ca. 2 mm long; petals white, ca. 1 mm long. Berries pink, turning blue, ca. 4 mm in diameter. Infrequent, mostly along the creek in mature forest. Colombia and Ecuador.

Clidemia radicans Cogn.

Plate 197-C

Shrub 1-2 m tall. Leaves unequal in each pair, the larger elliptic to obovate or ovate, acute, cuneate at the base, petiolate, the smaller, ovate, acute, subcordate, subsessile. Inflorescence a terminal panicle. Flowers with the calyx almost subtruncate, 2.5 mm long, constricted near the middle; petals white, ca. 1 mm long. Fruit a berry, red when immature, turning blue. Infrequent, in mature forest, only along the creek. Costa Rica to Pacific Ecuador.

Clidemia septupulinervis Cogn.

Plate 197-D

Shrub 1.5-2 m tall. Leaves elliptic, acuminate, decurrent at the base (the petiole narrowly winged at least in the upper half), entire, to 20 × 11 cm (not counting the winged petiole). Inflorescence cauliflorous below the leaves, congested, almost fasciculate. Flowers with the calyx ca. 2 mm long (without teeth), 4-lobed with subulate, ca. 1 mm long teeth, red; petals ca. 2 mm long, white. Fruits red. Infrequent, in mature forest. Belize and Guatemala to Peru and Brazil.

Conostegia centronioides Marcgr.

Plate 198-A

Tree to 7 m tall. Leaves elliptic, acuminate, subentire, to 22 × 8 cm, conspicuously puberulous over the whole surface, with thick-stellate trichomes beneath. Inflorescence terminal, paniculate. Calyx acuminate while in bud, the tip circumscissilely dehiscent so that the calyx becomes 3 mm long and truncate in flower; petals white, to 1 cm long. Infrequent, in mature forest. Western Ecuador.

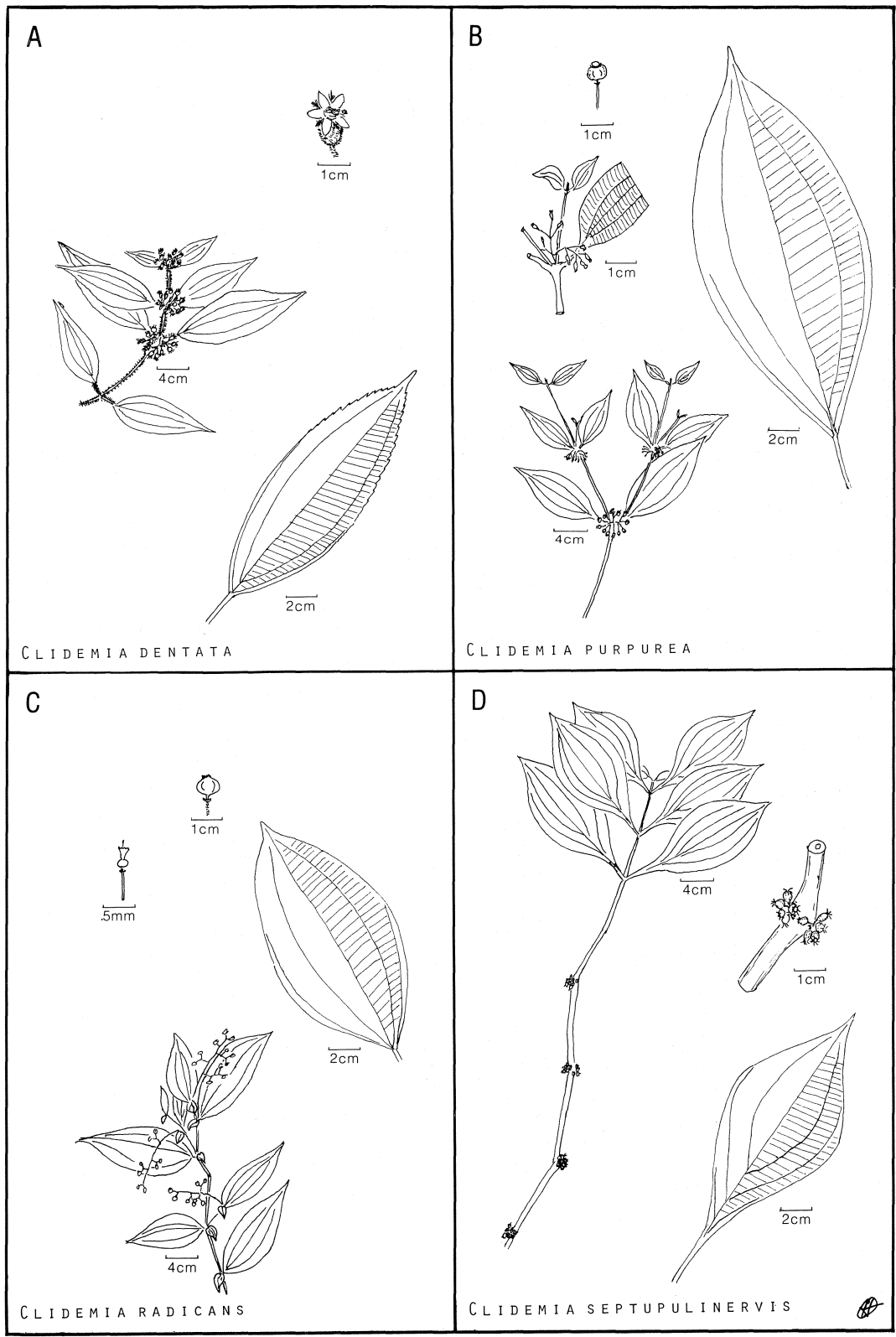


Plate 197

Conostegia formosa Macf.

Plate 198-B

Middlestory tree to 20 m tall. Leaves elliptic, acute at the base and the apex, entire, stellate puberulous along the main vein beneath, sparsely stellate-lepidote over the lower surface, ca. 15 × 7 cm. Inflorescence terminal, paniculate. Calyx in fruit truncate. Fruit a berry 5-6 mm in diameter. Infrequent, in mature forest. Western Ecuador.

Leandra dichotoma (Don) Cogn.

Plate 198-C

Shrub ca. 2 m tall. Branchlets stiff-pilose. Leaves ovate, acuminate, the base rounded, serrate, to 30 × 14 cm, pilose with stiff trichomes, especially on the petiole and the main veins beneath. Inflorescence terminal, open, paniculate. Flowers with the calyx 5-dentate, ca. 2 mm long; petals white, ca. 2 mm long. Infrequent, in mature forest. Belize to Bolivia.

Loreya umbellata (Gleason) Wurdack

Plate 198-D

Middlestory tree to 10 m tall. Leaves elliptic, acute to acuminate, obtuse at the base, entire, to 32 × 18 cm. Inflorescence cauliflorous along the branches, umbellate, the pedicels ca. 1 cm long. Flowers with the calyx truncate, 6 mm long; petals white, 8-9 mm long. Uncommon, in mature forest. Amazonian Colombia to Peru.

Miconia astroplocama J. D. Sm.

Plate 199-A

M. mcdaniellii Wurdack

Small tree to 8 m tall. Branches stellate rufescent. Leaves elliptic, acute to short-acuminate, obtuse or rounded at the base, to 45 × 24 cm, stellate puberulous below, especially along the main veins; petiole to 12 cm long. Known only from sterile material at Río Palenque. Infrequent, in mature forest. Costa Rica to Western Ecuador and Amazonian Peru. Illustration of the inflorescence adapted from Panamanian material.

Miconia barbinervis (Benth.) Triana

Plate 199-B

Shrub to 2 m tall. Leaves elliptic, acuminate, cuneate at the base, remotely sub-serrate, to 21 × 8 cm, hirsute, the trichomes above simple or forked, below mostly stellate. Inflorescence a terminal panicle; the flowers congested into pedunculate clusters, each cluster subtended by several 3 mm long foliaceous bracts. Flowers with the calyx stellate pubescent with barbate trichomes, 5-toothed, ca. 3 mm long without the 2 mm long subulate teeth; petals white, ca. 3 mm long. Infrequent, in disturbed forest. Guatemala to Bolivia and Brazil.

Miconia guayaquilensis (Bonpl.) D. Don

Plate 199-C

Shrub to 2.5 m tall. Branchlets thick-stellate puberulous. Leaves ovate, acuminate, shallowly subcordate at the base, entire, very sparsely stellate puberulous beneath, glabrescent above, to 27 × 12 cm; petiole to 3 cm long, reddish when fresh. Inflorescence an open terminal panicle. Flowers with the calyx thick-stellate tomentose, shallowly 5-lobed, 2.5-3 mm long; petals white. Fruits black. Rare, in mature forest. Endemic to Pacific Ecuador.

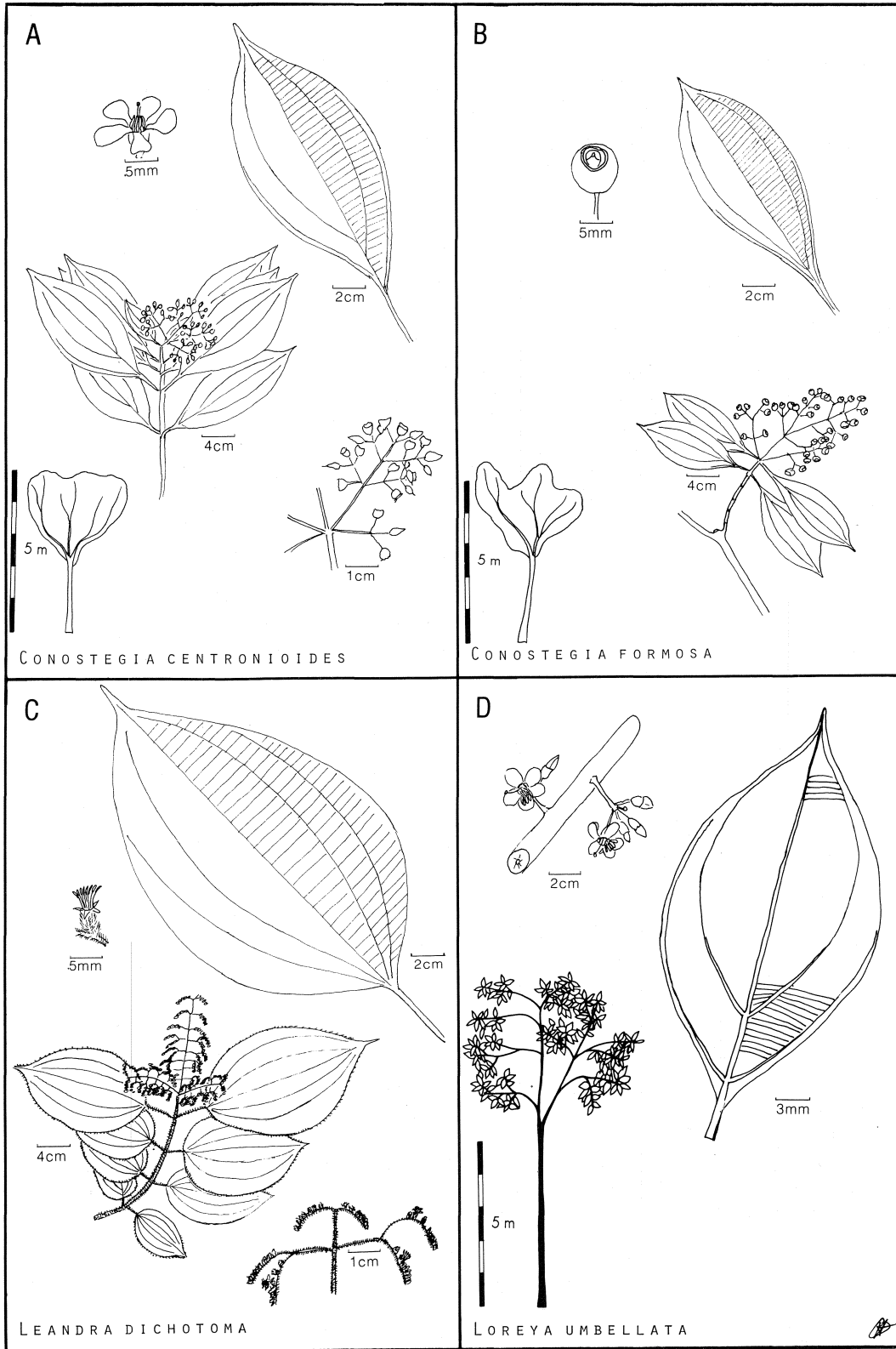


Plate 198

Ossaea micrantha (Sw.) Macf.

Plate 199-D

Shrub or tree to 8 m tall. Leaves elliptic-ovate, acuminate, obtuse or cuneate at the base, serrulate, to 17 × 7.5 cm, sparsely puberulous along the main veins with thick-stellate trichomes. Inflorescence terminal, paniculate, rather few-flowered. Flowers with the calyx almost subtruncate, 1.5 mm long; 4 petals very narrow, 3-4 mm long, white. Infrequent, in mature forest. Southern Mexico and the West Indies to Peru.

Ossaea palenquensis Wurdack

Plate 200-A

Shrub to 3 m tall. Leaves oblong-ovate, acute, sessile, the base subcordate, entire to inconspicuously subserrate, to 22 × 10.5 cm, stellate-puberulous along the main veins below and sparsely and glabrescently over the surface. Inflorescence openly paniculate, axillary and cauliflorous. Flowers with the calyx ca. 2 mm long, subtruncate, sparsely and minutely thick-stellate puberulous. Fruits orange, the inflorescence pendent in fruit. Rare, in mature forest along trail 1. Known only from Río Palenque.

Triolena barbeyana Cogn.

Plate 200-B

Herb less than 30 cm tall. Leaves ovate, acute, obtuse to narrowly subcordate at the base, serrulate, to 18 × 8 cm, glabrate above. Inflorescence terminal, one-sidedly spicate. Flowers with the calyx 5-dentate, 2 mm long without the ca. 2 mm long subulate teeth, conspicuously 3-winged in fruit; petals pinkish white, ca. 4 mm long. Fruits 3-winged, to 8 mm across. Common, on floor of mature forest. Eastern Panama to Ecuador.

Triolena pustulata Triana

Plate 200-C

Herb to 40 cm tall. Leaves elliptic, rounded at the base, acute at the apex, to 15 × 7 cm, surface raised between the veins and the veinlets (bullate), each bump armed with a stiff hair, central portion of the leaf red, the lateral portions green. Inflorescence terminal, spicate. Calyx with long [2-3(-5) mm] spreading trichomes; petals white. Fruits 3-winged. Locally infrequent, on rocks and cliff faces in wet places in mature forest. Pacific Ecuador and adjacent Colombia.

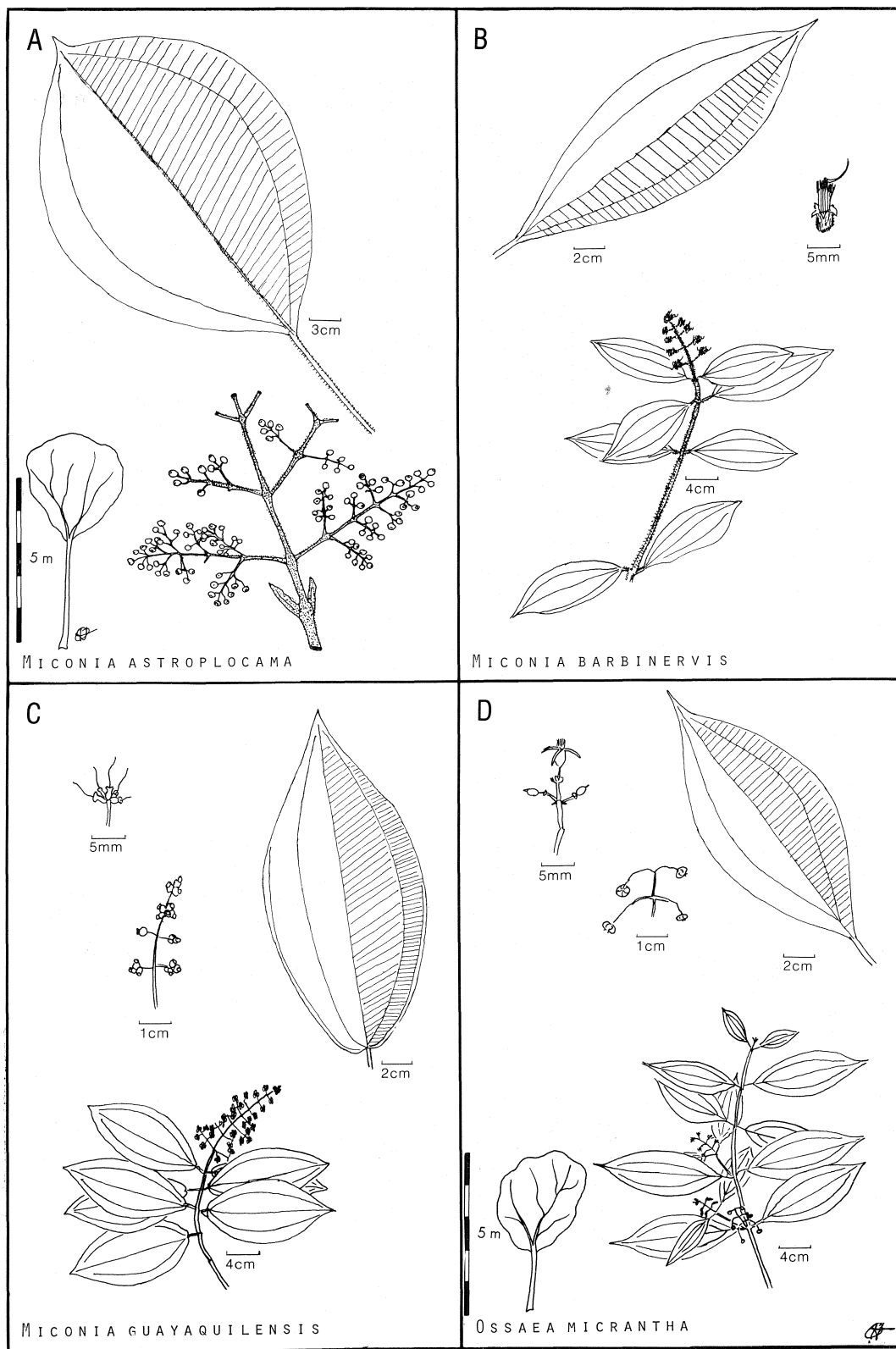


Plate 199

MELIACEAE

Shrubs or treelets. Leaves alternate, pinnate, trifoliolate or unifoliolate, without stipules. Flowers usually bisexual, less frequently unisexual, white or pinkish, regular, the calyx small; sepals 4-5; petals 4-5; stamens 8-10, the filaments partially or completely united to form a tube; disc usually present between the stamens and ovary, the ovary superior, 2-to 5-loculed. Fruit a capsule, often large and somewhat woody.

Key to the species.

1. Leaves even-pinnate; fruits not spiny, more than 1 cm in diameter.
 2. Leaf rachis not continuing growth from the apex; fruits ca. 15 cm in diameter, 1 or 2 per inflorescence *Carapa guianensis*
 2. Leaf rachis continuing growth from the apex; fruits less than 10 cm in diameter, several to many per inflorescence.
 3. Fruit ca. 10 cm in diameter, on a peduncle to 70 cm long; leaflets to 70 × 25 cm. *Guarea cartaguenya*
 3. Fruit less than 5 cm in diameter; leaflets less than 30 × 11 cm.
 4. Fruits 4-5 cm in diameter; large canopy and emergent tree *Guarea kunthiana*
 4. Fruits less than 3 cm in diameter; midcanopy tree usually less than 15 m tall.
 5. Ovary pubescent; inflorescence narrow, elongate, to 30 cm long, the pedicels 1-2 mm long; capsule brownish *Guarea guidonia*
 5. Ovary glabrous; inflorescence relatively lax, less than 15 cm long, the pedicels 3-4 mm long; capsule reddish. *Guarea glabra*
1. Leaves odd-pinnate; fruit spiny (muricate), less than 1 cm in diameter *Trichilia pallida*

***Carapa guianensis* Aubl.**

Plate 200-D

Tree to 40 m tall. Leaves even-pinnate, to 80 cm long, with up to 8 pairs of leaflets; the rachis not continuing to grow beyond the terminal leaflet pair; leaflets narrowly obovate, acute to obtuse at the apex, apiculate, the base obtuse, glabrous, ca. 20 × 10 cm. Inflorescence very narrowly paniculate, axillary; flowers whitish, subsessile, 4-5 mm long, 4-parted; anthers 8, sessile. Fruit large, to 15 cm in diameter, 7-to 8-seeded, produced on a stout peduncle to 20 cm. Infrequent, in mature forest. West Indies and Belize to Brazil. Common name: "Fiqueroa"+, Tangare"

***Guarea cartaguenya* Cuatr.**

Plate 201-A

Tree to 60 m tall. Leaves even pinnate, rachis to 3 m long, of indeterminate growth, continuing to grow from the apex; leaflets elliptic, to 70 × 25 cm. Calyx dark green; corolla greenish white. Peduncle of the fruiting inflorescence to 70 cm long, with 3 to 5 fruits. Fruits pear-shaped to 10 cm in diameter. Rare, in mature forest. Western Colombia and Ecuador. This is the first record for Ecuador and the second record for the species. Common name: "Caoba"+

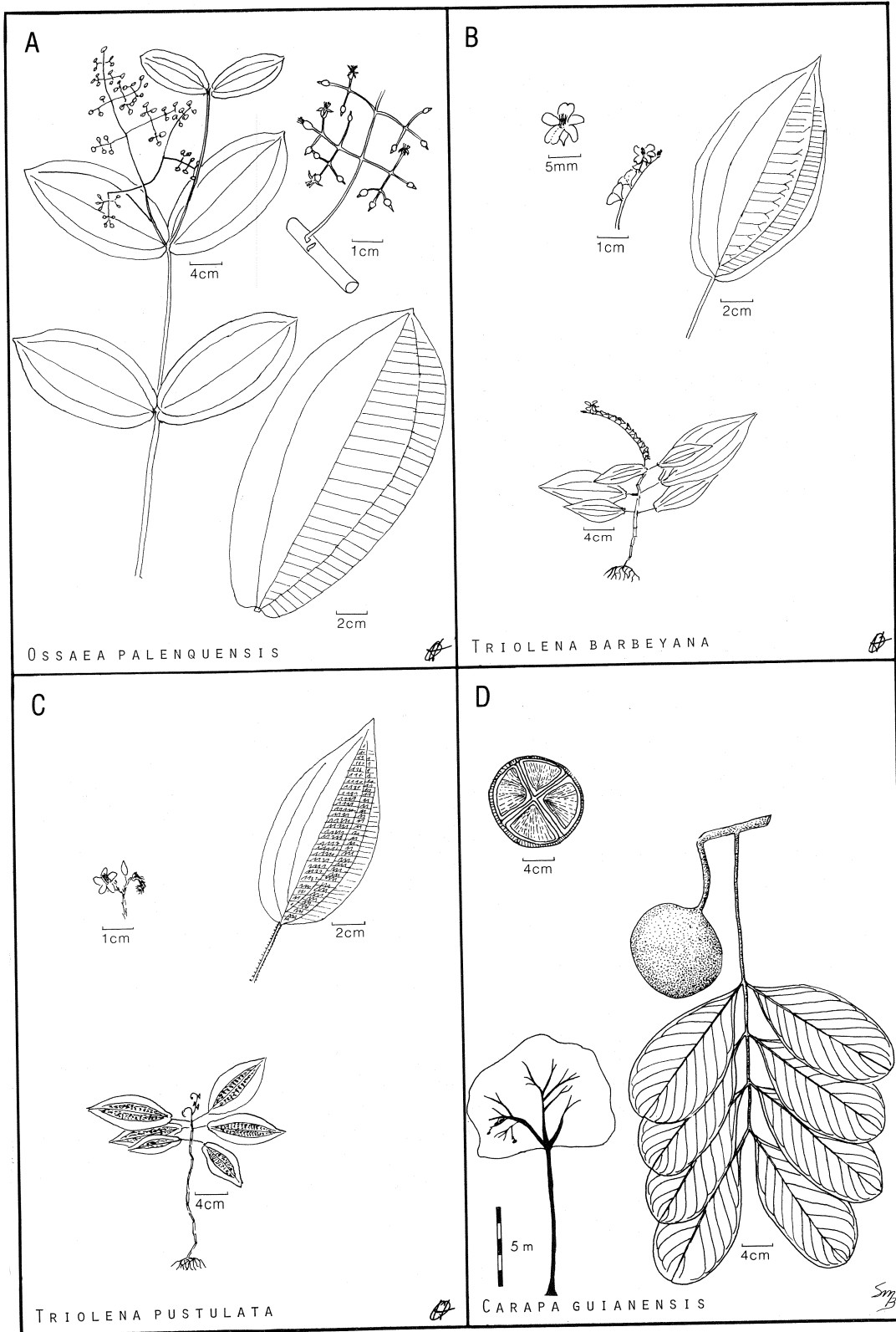


Plate 200

Guarea glabra Vahl

Plate 201-B

Tree to 7 m tall. Leaves even pinnate with the tip of the rachis continuing to grow, rachis to 30 cm long; leaflets elliptic, acuminate at the apex, the base acute, to 25 × 10 cm. Flowers loosely arranged on a panicle to 15 cm long; corolla white, to 8 mm long. Fruits red, nearly globose, 4-seeded, to 2 cm in diameter. Rare, in mature forest. From Mexico and the West Indies to Bolivia.

Guarea guidonia (L.) Sleum.

Plate 201-C

Tree in middle story to 15 m tall. Leaves even pinnate with the tip continuing to grow, rachis to 15 cm; leaflets narrowly elliptic, acuminate at the apex, the base acute, ca. 25 × 5 cm. Flowers densely arranged on a few-branched panicle, to 30 cm long; sepals pink; corolla yellowish, to 8 mm long. Fruits nearly round, to 2 cm in diameter. Uncommon, in mature forest. From Panama throughout tropical South America, usually near rivers.

Guarea kunthiana Juss.

Plate 201-D

Tree to 35 m tall. Leaves even pinnate, with the tip continuing to grow, rachis to 70 cm long; leaflets narrowly elliptic, acute at the apex and the base, ca. 30 × 11 cm. Inflorescences (not seen at Río Palenque) very narrowly paniculate, axillary or cauliflorous, glabrescent; the ovary glabrous. Peduncle of fruiting inflorescence to 30 cm long, with numerous fruits attached. Fruits evenly round, to 4 cm in diameter. Uncommon, in mature forest. From Panama throughout tropical South America.

Common name: "Chocho"+, "Pilche"

Trichilia pallida Sw.

Plate 202-A

Tree in mature forest and along river banks to 10 m tall. Leaves odd-pinnate, rachis terminating growth in one season, to 15 cm long; leaflets obovate, acuminate at the apex, acute at the base, to 25 × 11 cm. Inflorescence very narrowly paniculate, axillary, to 4 cm long; the flowers fasciculate; corolla white, to 3 mm long. Fruits ellipsoid, to 1.5 cm long, 8 mm thick, covered with short, blunt spines. Infrequent, in mature forest and along the river. Mexico to southern Brazil and Paraguay.

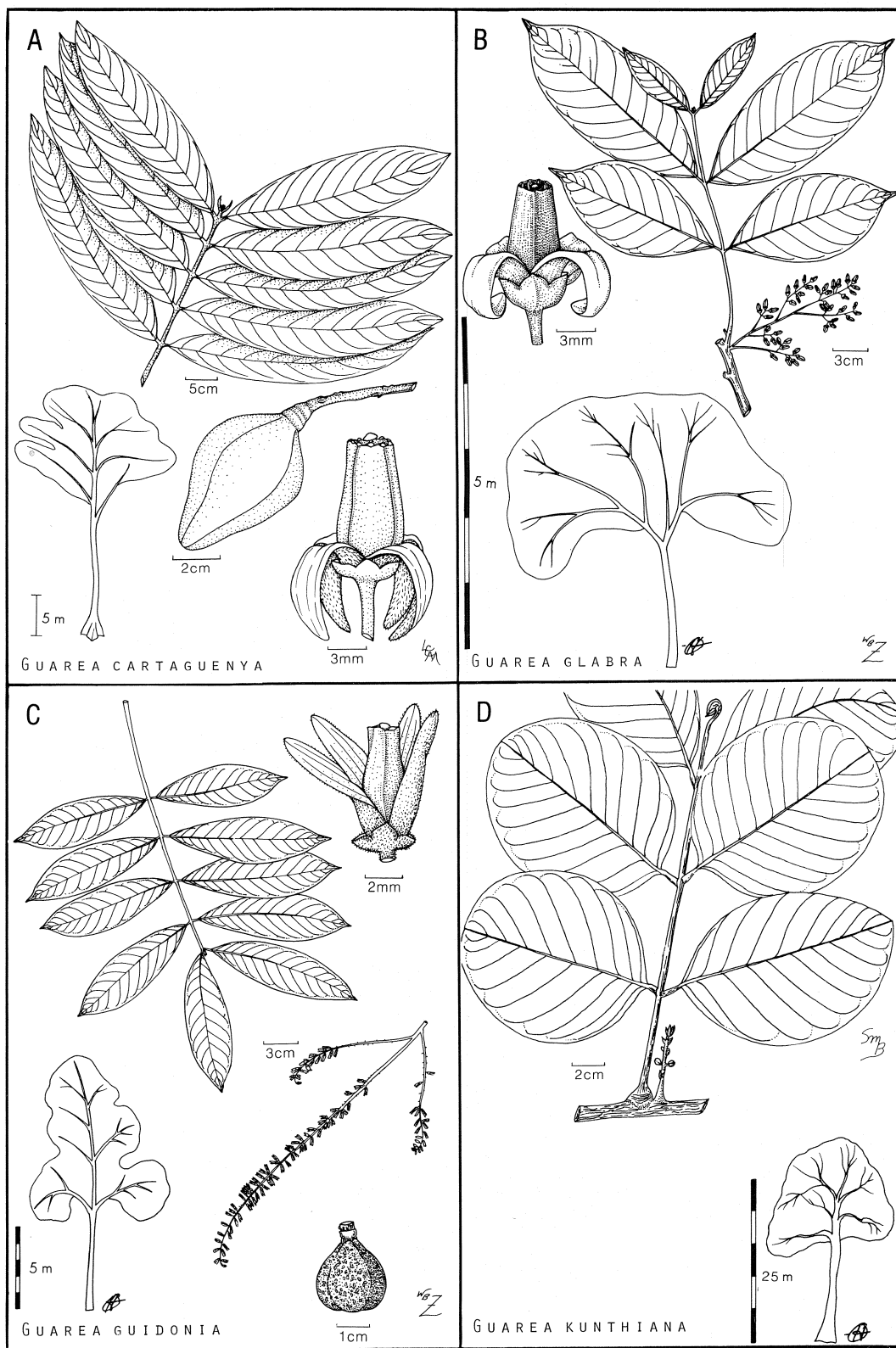


Plate 201

MENISPERMACEAE

Mostly dioecious vines without tendrils, rarely small dioecious trees. Leaves alternate, simple, entire, usually palmately nerved, petiolate, without stipules. Flowers minute, unisexual, greenish, regular; sepals usually 6; petals mostly 6, distinct; stamens usually 6, opposite the petals, distinct or joined; gynoecium apocarpous with 3 or 6 carpels; the ovaries superior. Fruit a drupe, the endocarp frequently partitioned.

Key to the species.

1. Fruits 4-5 mm long, the endocarp curved into a ring or horseshoe-shaped; staminate flowers with 4 sepals and connate petals, pistillate flowers with 1 sepal and 1 petal; usually herbaceous vines.
 2. Leaves peltate, acuminate at the apex.
 3. Leaf blade peltate 5 mm from the base; inflorescence broadly paniculate, bracts lacking or caducous. *Cissampelos andromorpha*
 3. Leaf blade peltate 1.5-3 cm from the base; inflorescence narrowly paniculate, the lateral branches subtended by bracts. *Cissampelos tropaeolifolia*
 2. Leaves not peltate, the apex obtuse. *Cissampelos fasciculata*
1. Fruits 1-3 cm long, the endocarp straight, erect (incurved but over 2 cm long in *Anomospermum*); staminate and pistillate flowers with 6-18 sepals and free petals; woody lianas.
 4. Leaf bases all rounded, the blade oblong-ovate; branchlets conspicuously pilose *Anomospermum* sp. (6309)
 4. Leaf bases cordate, at least in part, the blade broadly ovate to suborbicular; branchlets glabrous to puberulous.
 5. Inflorescence spicate; flowers and fruits sessile.
 6. Leaves glabrous or glabrate beneath *Disciphania* cf. *inversa*
 6. Leaves velvety pubescent beneath *Disciphania juliflora*
 5. Inflorescence paniculate; flowers and fruits pedicellate.
 7. Fruits more than 2.5 cm long *Odontocarya perforata*
 7. Fruits 1 cm long *Odontocarya tripetala*

Anomospermum sp. (6309)

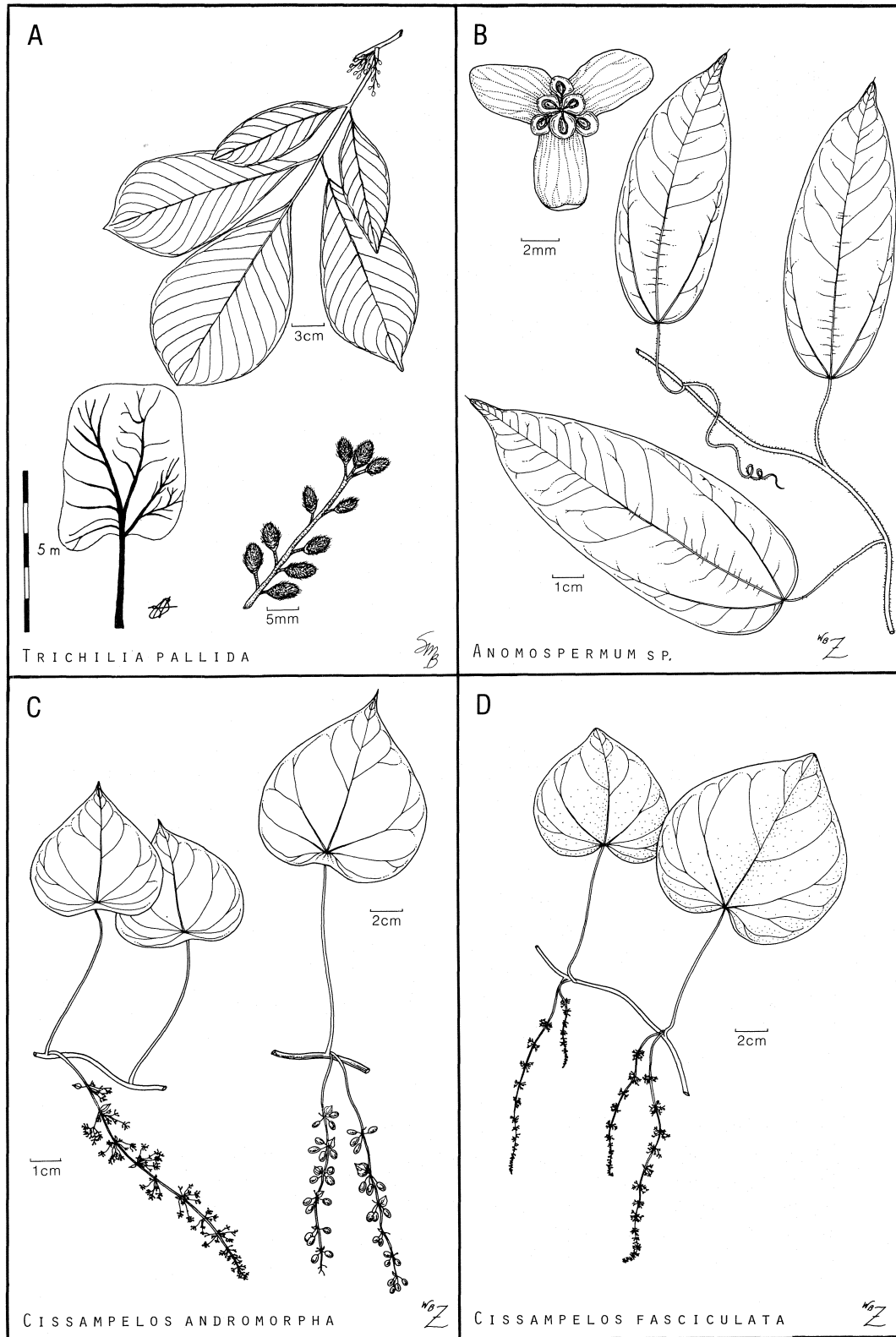
Plate 202-B

Woody vine; branchlets pilose. Petiole 5-8 cm long; leaves oblong-ovate, acute (the extreme apex with a minute spine to 2 mm long), rounded at the base, 3-veined from the base, 9-13 × 4.5-7 cm. Inflorescence not seen. Flowers green, 3-parted, 1 cm across. Rare, in mature forest. Allied by the leaves to *Anomospermum* and the flowers to *Disciphania*; apparently undescribed.

Cissampelos andromorpha DC

Plate 202-C

Slender vine. Leaves broadly ovate, short-acuminate, peltate a few mm from the base, to 11 cm long and wide. Male inflorescence fasciculately paniculate, finely branched; female inflorescence less branched. Flowers minute, greenish cream. Fruits globose, 4-5 mm in diameter. Common, at the forest edge. Costa Rica to Paraguay and Bolivia.



Cissampelos fasciculata Benth.

Plate 202-D

Slender vine. Leaves broadly ovate, rounded at the apex, broadly cordate at the base, not peltate, to 13 × 14 cm. Male inflorescence fasciculately paniculate, finely branched. Flowers minute, greenish cream. Fruits globose, 4 mm in diameter. Common, at the forest edge. Nicaragua to Ecuador. The Río Palenque specimens are less pubescent than Central American material.

Cissampelos tropaeolifolia DC.

Plate 203-A

Like *C. andromorpha* but the leaves peltate 1.5-3 cm from the base and the inflorescence narrow, subracemose, with each lateral branch subtended by a persistent foliaceous bract. Infrequent, at the forest edge. Southern Mexico to northern South America.

Disciphania sp. nov. cf. *inversa* Barneby

Plate 203-B

Liana. Leaves ovate, acuminate, truncate or broadly and shallowly cordate, to 12 × 8 cm. Inflorescence cauliflorous, pendent, spicate, the small sessile female flowers greenish, 3-parted. Fruits red, subglobose, ca. 1.5 cm long. Infrequent, in mature forest. Known only from Río Palenque, but description is impossible without male flowers (fide Barneby).

Disciphania juliflora Barneby

Plate 203-C

Vine. Leaves broadly ovate, acuminate, broadly cordate at the base, to 17 × 17 cm, velvety pilose beneath. Inflorescence axillary, spicate, densely multi-flowered, the small sessile male flowers greenish, 2.5 mm long. Fruits ellipsoid, ca. 1 cm long. Rare, in old disturbed forest on Hacienda Cerecita. Known only from western Ecuador.

Odontocarya perforata Barneby

Plate 203-D

Canopy vine. Leaves suborbicular, shallowly cordate, ca. 12-14 cm in diameter. Inflorescence racemose-paniculate, glabrous; flowers 6-parted, greenish, tiny, less than 1 mm long. Fruits ellipsoid, 2.5-3 cm long, the pedicels 1.2-1.5 cm long, 2 mm thick. Rare, in mature forest. Endemic to Río Palenque.

Odontocarya tripetala Diels

Plate 204-A

Vine. Leaves broadly ovate, acuminate, broadly shallowly cordate, to 13 × 9.5 cm. Inflorescences racemose, from the leaf axils, the minute flowers with the perianth parts in 6's. Fruits ellipsoid, ca. 1 cm long. Infrequent, at the forest edge. Panama to Peru.

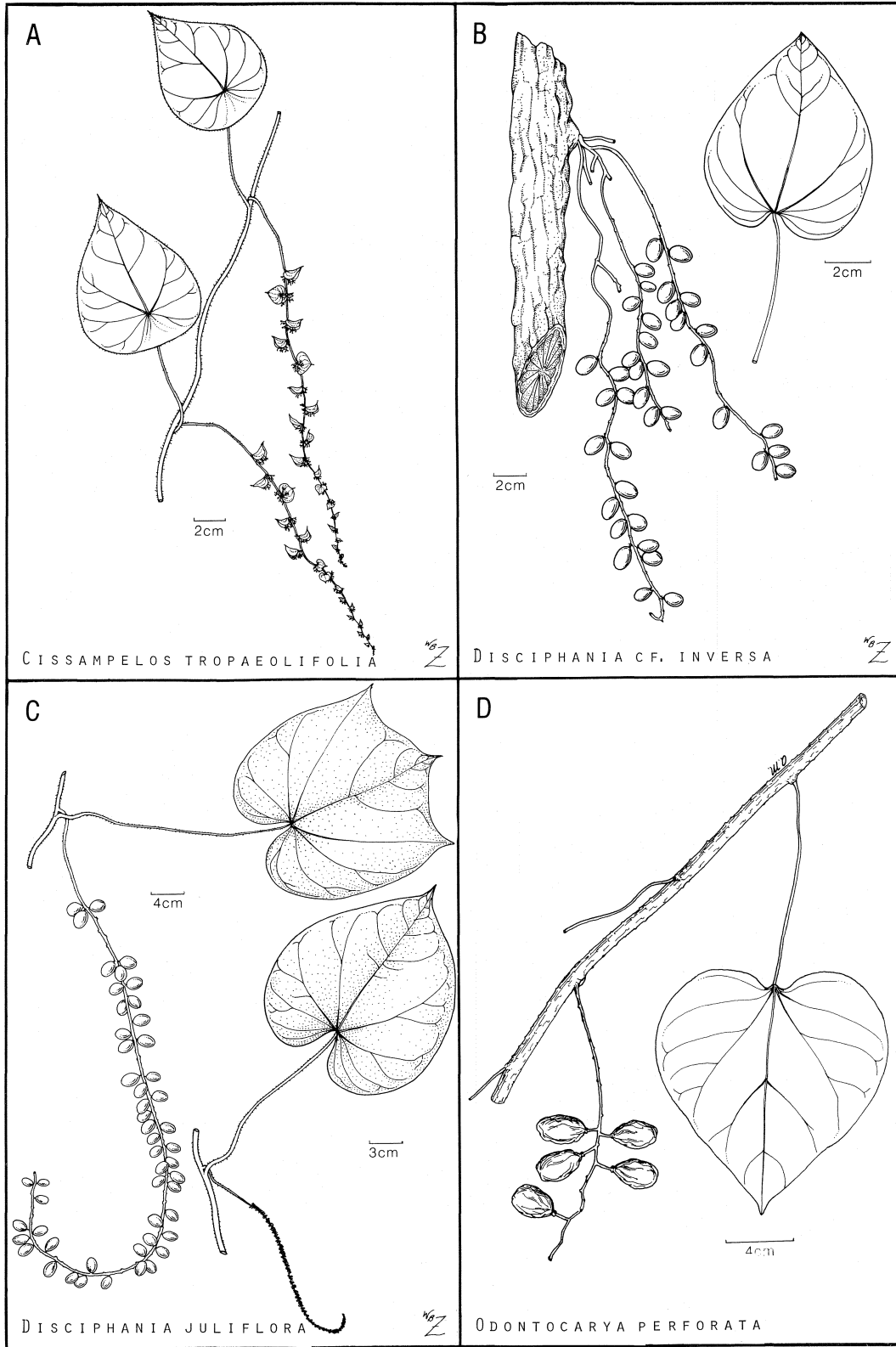


Plate 203

MONIMIACEAE

Dioecious or monoecious shrubs or trees. Leaves opposite, simple, leathery, without stipules, aromatic. Inflorescence usually axillary. Flowers small, unisexual, regular; sepals few-to-several, sometimes reduced to an annulus encircling the hypanthium; stamens 2-to-many; ovaries superior, the several carpels each 1-loculed. Fruit aggregate, usually a drupe, the several one-seeded carpels enclosed in the enlarged hypanthium.

Key to the species.

1. Leaves glabrous or glabrescent, at least above.
 2. Leaf bases with small domatiolate auricles; female inflorescence branched, several-flowered or fruited *Siparuna domatiata*
 2. Leaf bases without domatia or auricles; female inflorescence unbranched, more or less fasciculate, few-flowered or fruited.
 *Siparuna nicaraguensis*
1. Leaves conspicuously pubescent above and below.
 3. Petioles and young stems stellate-villous; leaf pubescence of large, long-branched stellate trichomes *Siparuna gesnerioides*
 3. Petioles and young stems closely stellate-puberulous; leaf pubescence of small short-branched stellate trichomes. *Siparuna eggersii*

***Siparuna domatiata* A. Gentry**

Plate 204-B

Treelet 2-3 m tall. Leaves obovate, short-acuminate, more or less rounded basally, with a pair of small domatiolate auricles at the extreme base, to 29 × 15 cm, rather glabrescently stellate pubescent below, almost completely glabrescent above, the surface smooth and the veins not at all impressed above, inconspicuously and relatively remotely serrate. Inflorescence axillary, contracted, densely and finely stellate puberulous. Flowers minute, whitish. Uncommon, in mature forest. Panama to Pacific Ecuador.

***Siparuna eggersii* Hieron.**

Plate 204-C

Tree 4-10 m tall. Leaves obovate, to 26 × 14 cm, obtuse to obtusely apiculate, truncate at the base, conspicuously stellate pubescent below, more or less glabrescently so above, rough-surfaced and with impressed fine venation above, closely and finely serrate. Inflorescence axillary, contracted, paniculate, sparsely stellate-pubescent. Flowers minute, white, 4-to 5-parted. Fruit globose, to 1 cm in diameter, tuberculate when dry. Infrequent, in mature forest. Endemic to Pacific Ecuador.

***Siparuna gesnerioides* (HBK) DC.**

Plate 204-D

Tree to 7 m tall. Leaves obovate-elliptic, to 22 × 12 cm, truncate at the base, villous-pubescent with large long-branched stellate trichomes; petiole villous. Inflorescences axillary, several per node, to 6 cm long, villous. Flowers greenish, 4-parted, to 5 mm long. Rare, in mature forest near the entrance to Trail 4. Western and northern Colombia and western Ecuador, mostly at intermediate elevations.

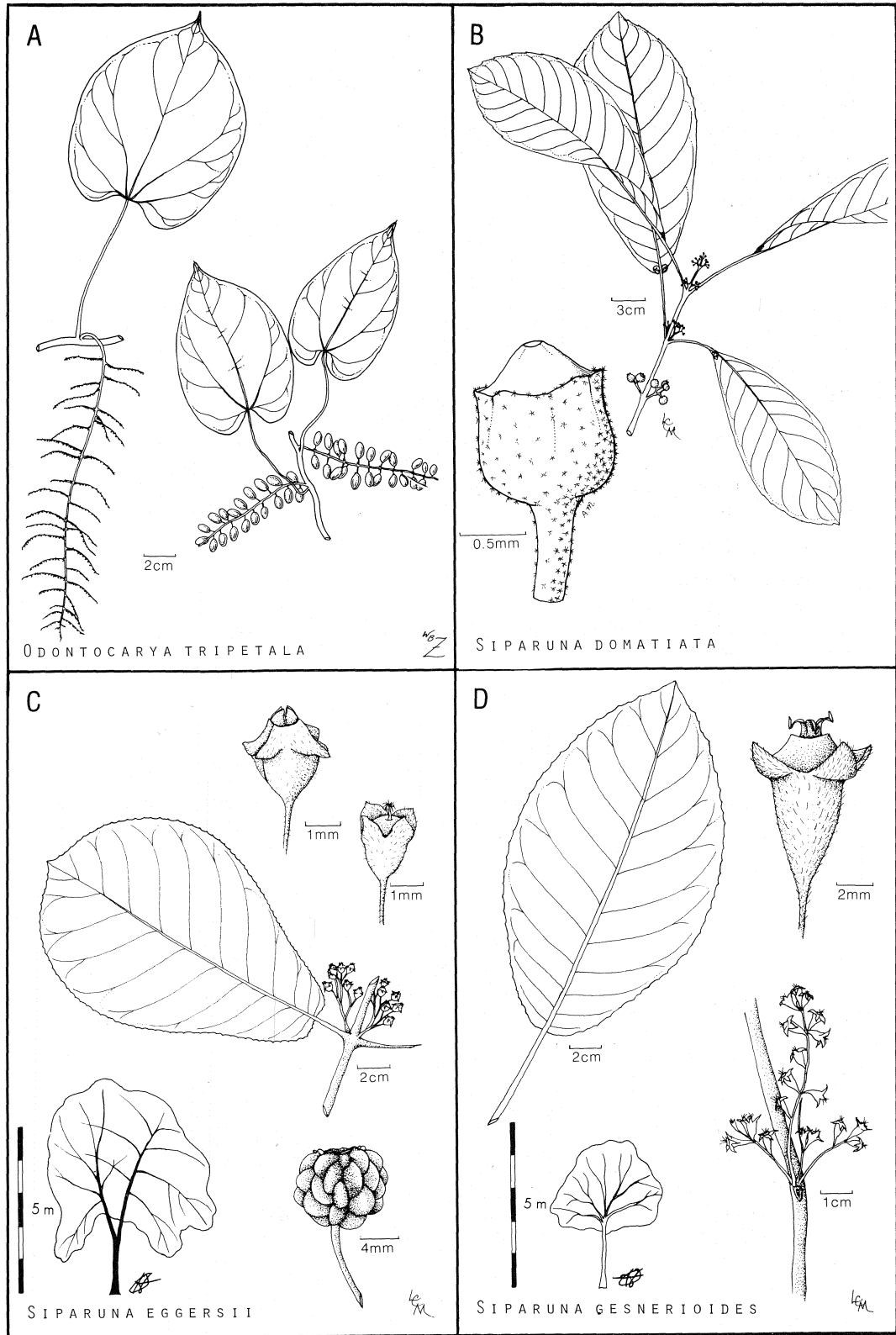


Plate 204

Siparuna nicaraguensis Hemsl.

Plate 205-A

Slender subscaudent shrub. Leaves obovate-elliptic, to 17 × 9 cm, obtuse to apiculate at the apex, acute at the base, finely serrulate to subentire, essentially glabrous, usually with a few minute and inconspicuous stellate trichomes on the undersurface and the petiole. Inflorescence axillary, contracted, more or less fasciculate; flowers small, whitish. Rare, in mature forest along the road near the entrance into the forest. Previously reported from Guatemala to Panama.

Common name: "Limoncillo"

MORACEAE

Monoecious or dioecious trees or shrubs, rarely herbs, often starting as epiphytes and becoming stranglers, usually with milky latex. Leaves alternate, simple, entire, serrate, or lobed, stipules small and lateral or each pair forming a characteristic conical cap over the terminal bud and leaving a circular scar around the branchlet at each node. Flowers unisexual, often minute, regular, the inflorescences commonly racemes, spikes, or heads, often much modified (as in figs); male and female inflorescences of the same species often very different. Fruit usually a drupe with the enclosing perianth (or the whole inflorescence) becoming fleshy at maturity.

Key to the species.

1. Leaves lobed.
 2. Leaves palmately lobed; native.
 3. Leaves (5-)7-to many lobed, peltate; inflorescence composed of spikes.
 4. Leaves deeply divided to near or below middle.
 5. Leaves divided to near the middle, 5-to 7(-8)-lobed, the lobes broadest at the base; trunk unridged; canopy tree to 30 m tall; pulvinus divided in half by a non-pubescent central ridge *Cecropia insignis*
 5. Leaves divided to well below the middle, the lobes narrowest near the base; trunk with annular ridges; mostly in second growth, to 20 m tall; pulvinus undivided, continuous.
 6. Trunk ridges not strongly elevated; leaves white beneath *Cecropia obtusifolia*
 6. Trunk ridges very prominently raised; leaves green with red veins beneath. *Cecropia* aff. *obtusifolia*
 4. Leaves shallowly lobed (less than 1/3 of the way to the base).
 7. Trunk ridges not conspicuously raised; female spikes less than 7 cm long *Cecropia* aff. *peltata*
 7. Trunk ridges very prominently raised; female spikes more than 15 cm long *Cecropia* aff. *obtusifolia*
 3. Leaves 3-to 5(-7)-lobed, not peltate; inflorescence openly paniculate *Pourouma* cf. *guianensis*
 2. Leaves pinnately lobed; cultivated. *Artocarpus atilis*
1. Leaves entire or serrate, not lobed.
 8. Inflorescence a fig, the flowers on the inner surface of a globose hollow receptacle opening only by an apical pore.

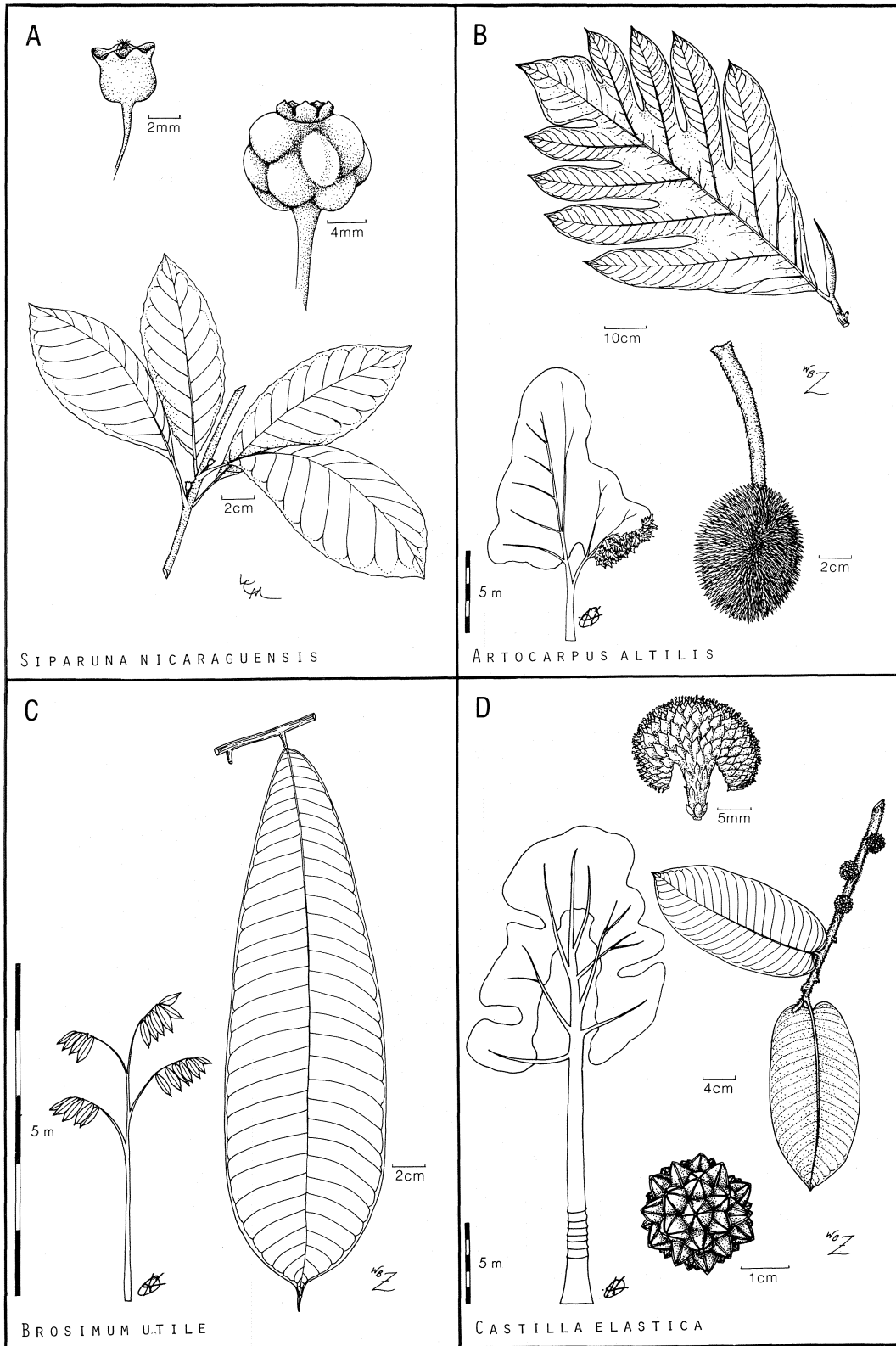


Plate 205

9. Cultivated tree; secondary and tertiary veins parallel, not differentiated, very indistinct; figs oblong, about twice as long as wide; terminal stipule to 15 cm or more long. *Ficus elastica*
9. Native trees, often stranglers; secondary veins prominent, rarely paralleled by tertiary veins; figs globose or depressed globose; terminal stipule less than 6 cm long.
10. Twigs, leaf undersides, and fruits densely villous with golden brownish trichomes ca. 2 mm long *Ficus garcia-barrigae*
10. Glabrous (usually) or variously puberulous throughout but never villous (scattered-pilose in *F. cf. turrialbana*); fruits glabrous or with short or appressed trichomes.
11. Leaves heart-shaped, deeply cordate; figs glabrous, 1.5 cm in diameter. *Ficus nymphaefolia*
11. Leaves oblong to ovate or lanceolate, usually truncate or rounded at the base, rarely narrowly subcordate; figs glabrous or pubescent.
12. Leaves with a sparsely but distinctly pilose petiole, otherwise glabrous except for some scattered trichomes along the midvein below, blades narrowly elliptic, acuminate with a 1-2 cm long acumen *Ficus* sp. (6547)
12. Petiole glabrous or both petiole and leaf undersurface similarly pubescent; blade various, usually obtuse to acute.
13. Figs less than 5 mm in diameter.
14. Leaves elliptic oblong; figs sessile *Ficus schippii*
14. Leaves narrowly lanceolate; figs on 6-8 mm long pedicels *Ficus pertusa*
13. Figs ca. 1 cm in diameter or larger.
15. Figs scabrous, borne singly in the leaf axils; leaves sometimes scabrous, secondary veins nearly perpendicular to the midrib, (1-)1.5-3.5 cm apart; not stranglers.
16. Leaves scabrous; fruits 1-2 cm in diameter.
17. Leaves emarginate at the base *Ficus macbridei*
17. Leaves not emarginate at the base *Ficus maxima*
16. Leaves not scabrous; fruits 2-3 cm in diameter *Ficus tonduzii*
15. Figs glabrous or puberulous, not scabrous, often in pairs in the leaf axils; leaves glabrous to villous but not scabrous, the secondary veins 0.5-1.5(-2.5) cm apart, often ascending; often stranglers.
18. Leaves 7-8 cm long, widest at the middle (elliptic), secondary and tertiary veins parallel, close together and strongly diverging from the midvein. *Ficus* cf. *yoponensis*
18. Leaves (7-)12-30 cm long, widest above or below the middle (oblong-obovate or oblong-ovate), secondary and tertiary veins not parallel, secondary veins further apart and less strongly diverging.

19. Figs sessile or subsessile, often pilose or puberulous, the subtending bracts large, at least 4-5 mm long; leaves rounded or obtuse at the apex or narrowly subcordate at the base.
20. Figs glabrous; petiole less than 3 cm long; persistent stipules or bracts often present.
21. Leaves narrowly oblong, acuminate at the apex and narrowly subcordate at the base; petiole 1-1.5 cm long
Ficus peroblonga
21. Leaves oblong-ovate to obovate, obtuse at the apex and rounded to truncate at the base; petiole 1.5-3 cm long.
22. Leaves oblong-ovate, glabrous; bracts absent in leaf axils
Ficus pittieri
22. Leaves obovate, often conspicuously pilose beneath; bracts present in the sterile leaf axils.
Ficus costaricana
20. Figs conspicuously pubescent; petiole (2-)3-8 cm long; persistent stipules or bracts always absent.
23. Leaves beneath and figs distinctly pilose with erect rather scattered trichomes; petioles 5.5-8 cm long, pilose
Ficus cf. turrialbana
23. Leaves glabrous; figs densely appressed-pubescent; petioles 2-6 cm long, glabrous.
24. Figs appressed-pilose, subtended by acute bracts almost as long as the fig; leaves more than 24 by 13 cm
Ficus romeroi
24. Figs appressed-puberulous, subtended by blunt bracts shorter than the fig; leaves less than 25 by 16 cm
Ficus obtusifolia
19. Figs pedicellate, more or less glabrous, the subtending bracts small (to 2 mm long); leaves obtuse to short-acuminate at the apex, truncate to acute at the base.
25. Leaves acute at the base, oblong-obovate
Ficus greiffiana
25. Leaves rounded or truncate at the base, ovate-oblong.
26. Small tree; leaves membranaceous; fruits usually depressed-globose
Ficus citrifolia
26. Large tree; leaves coriaceous; fruits globose (presumably)
Ficus dugandii
8. Inflorescence not a fig; inflorescence paniculate, spicate or racemose or globose with the flowers on the outside of the receptacle.
27. Leaf undersides and twigs densely golden-brownish villous; leaf bases cordate; leaves 2-ranked on the branches.
Castilla elastica
27. Leaves glabrous to very shortly puberulous, spirally arranged on the branches.
28. Inflorescences paniculate or umbellate; leaves strongly 3-to 5-veined from the base, the secondary veins strongly ascending, making a 45° angle with the midvein.
29. Leaves rotund, cordate at the base
Coussapoa rotundata
29. Leaves elliptic, ovate or obovate, truncate to rounded at the base.
30. Inflorescence umbellate; stipule finely puberulous
Coussapoa eggertii
30. Inflorescence paniculate; stipule densely sericeous-villous
Coussapoa herthae

28. Inflorescence racemose, spicate, or subglobose; leaves pinnately veined, the secondary veins more weakly ascending.
31. Inflorescence racemose or spicate (female inflorescence globose but pedunculate and many-flowered in *Chlorophora*).
32. Branchlets usually with thorns; female inflorescence globose with minute congested sessile flowers *Chlorophora tinctoria*
32. Branchlets unarmed; female flowers distinct and more or less pedicellate, the inflorescence racemose or spicate.
33. Leaves serrate; female inflorescence racemose, many-flowered; small tree *Sorocea sarcocarpa*
33. Leaves entire; female inflorescences usually one-flowered; canopy tree.
34. Leaves caudate-acuminate, the tip 1.5-2 cm long; secondary veins mostly ca. 0.5 cm apart, not well differentiated from prominent tertiary veins which parallel them *Clarisia racemosa*
34. Leaves acuminate, the tip ca. 1 cm long, secondary veins ca. 1 cm apart *Clarisia biflora*
31. Inflorescences (male and female) contracted, sessile or very shortly rarely to 6 mm) pedunculate, usually globose or the female inflorescence one-flowered-to few-flowered.
35. Stipule and branchlets with short spines; leaves broadly ovate, obtuse at the apex. *Poulsenia armata*
35. Plants unarmed; leaves narrowly oblong-ovate to narrowly oblong-obovate; acuminate or apiculate at the apex.
36. Leaves strongly scabrous beneath *Olmedia aspera*
36. Leaves smooth beneath, not at all scabrous.
37. Monoecious tree; inflorescence globose with a single female flower embedded in the receptacle and surrounded by numerous minute staminate flowers; leaves with more than 15 secondary veins on each side. *Brosimum utile*
37. Dioecious tree; pistillate flowers single or with several free flowers per inflorescence; staminate inflorescence discoid or globose-discoid; leaves with less than 12 secondary veins on each side.
38. Stipule scar completely surrounding the twig.
39. Pistillate inflorescences 1-flowered; fruits 1 per infrutescence; petioles 5-7 mm long *Pseudolmedia rigida*
39. Pistillate inflorescences several-flowered; fruits several per inflorescence; petioles 1-1.2 cm long *Naucleopsis chiguila*
38. Stipule scar not surrounding the twig.
40. Fruits glabrous; leaves oblong, petioles mostly ca. 1 cm long; male peduncle 2-3 mm long; middle story tree to ca. 15 m tall *Maquira costaricana*
40. Fruits puberulous; leaves obovate, petioles mostly 1.5-2 cm long; male peduncle ca. 6 mm long; canopy tree ca. 30 m tall. *Maquira guianensis*

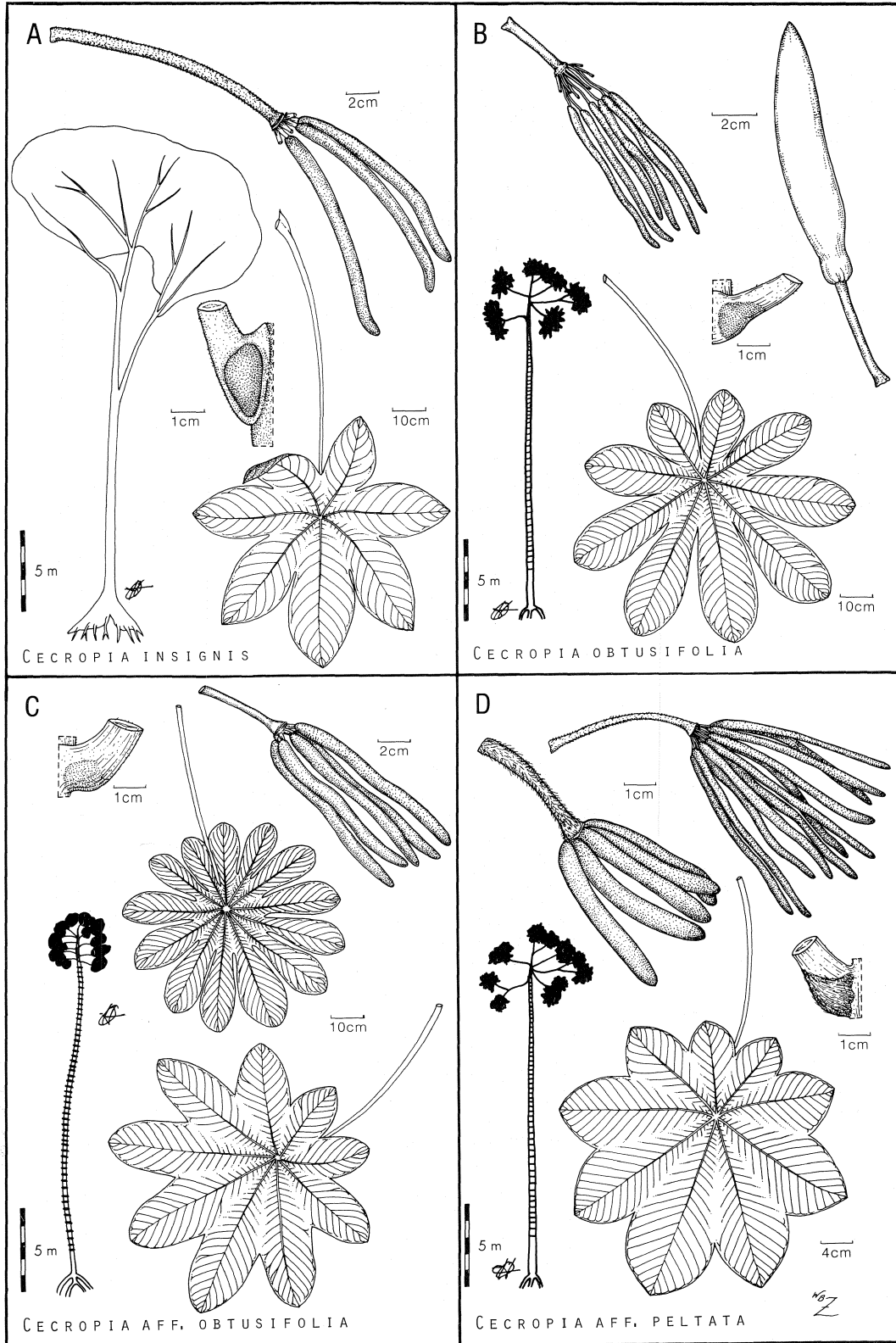


Plate 206

****Artocarpus altilis* (Parkinson) Fosberg**

Plate 205-B

Tree to 20 m tall with milky sap. Leaves 30-80 cm long, deeply pinnately lobed. Male inflorescence densely spicate; pistillate inflorescence subglobose, long-pedunculate. Fruits subglobose, to 30 cm in diameter. Cultivated around homesites. Native to the South Pacific islands.

Common name: "Fruta de Pan"+, "Bread Fruit"

***Brosimum utile* (HBK) Pitt.**

Plate 205-C

Monoecious canopy tree 25 m tall, latex white, copious. Petiole ca. 1 cm long; leaves at maturity 10-25 × 3-10 cm, glabrous or glabrate except at the base of the midvein beneath. Inflorescence globose, with a single pistillate flower surrounded by numerous minute staminate flowers. Fruit single-seeded, fleshy. Rare, in mature forest; at Río Palenque known only from a sterile 3 m tall sapling with 35-50 × 10-14 cm leaves. Costa Rica to northern Venezuela and northwest Ecuador.

Common name: "Sande"+

***Castilla elastica* Sesse in Cerv.**

Plate 205-D

Monoecious (or dioecious) canopy tree to 25 m tall. Branchlets golden brownish villous. Leaves oblong-obovate, cordate at the base, villous below and on the petioles, 15-50 cm long. Inflorescences ramiflorous below the leaves; staminate inflorescences usually 4 together, 1-2 cm broad and high; female inflorescences solitary, 1-2 cm in diameter, the 15-30 congested flowers 2-3 mm high. Fruiting inflorescence 2.5-3 cm in diameter. Very common, in mature forest. Mexico to Pacific Ecuador.

Common name: "Caucho"+

***Cecropia insignis* Liebm.**

Plate 206-A

C. eximia Cuatr.

Dioecious canopy tree to 40 m tall; trunk and branches without prominent rings; internodes without ants in mature specimens. Leaves peltate, to 1 m in diameter, palmately (5-)7- to 8-lobed 1/3 to 1/2 way to the base, silvery beneath; petiole to 1 m long; pulvinal region keeled. Pistillate inflorescence several-spiked, the spikes 10 cm long and 1 cm thick, the peduncle 12 cm long. Male inflorescence not yet known at Río Palenque. Infrequent, in mature forest. The field station plant is less hirsute than Panamanian material of this species, otherwise known from Costa Rica to Colombia.

Common name: "Guarumo Macho"+

***Cecropia obtusifolia* Bertol.**

Plate 206-B

Dioecious tree to 10-15 m tall. Trunk and branches with noticeable rings; internodes containing ants. Petiole 40-50 cm long; leaves peltate, ca. 90 cm in diameter, palmately and deeply ca. 9-lobed ca. 2/3 of way to the base. Male inflorescences many-spiked, the slender spikes ca. 3 mm in diameter, the enclosing spathe 9-12 cm long. Infrequent, in secondary forest, especially along the river. Southern Mexico to Ecuador. The Río Palenque plant has spikes and spathe somewhat shorter than in the Central American material, but otherwise agrees with it.

Common name: "Guarumo"+

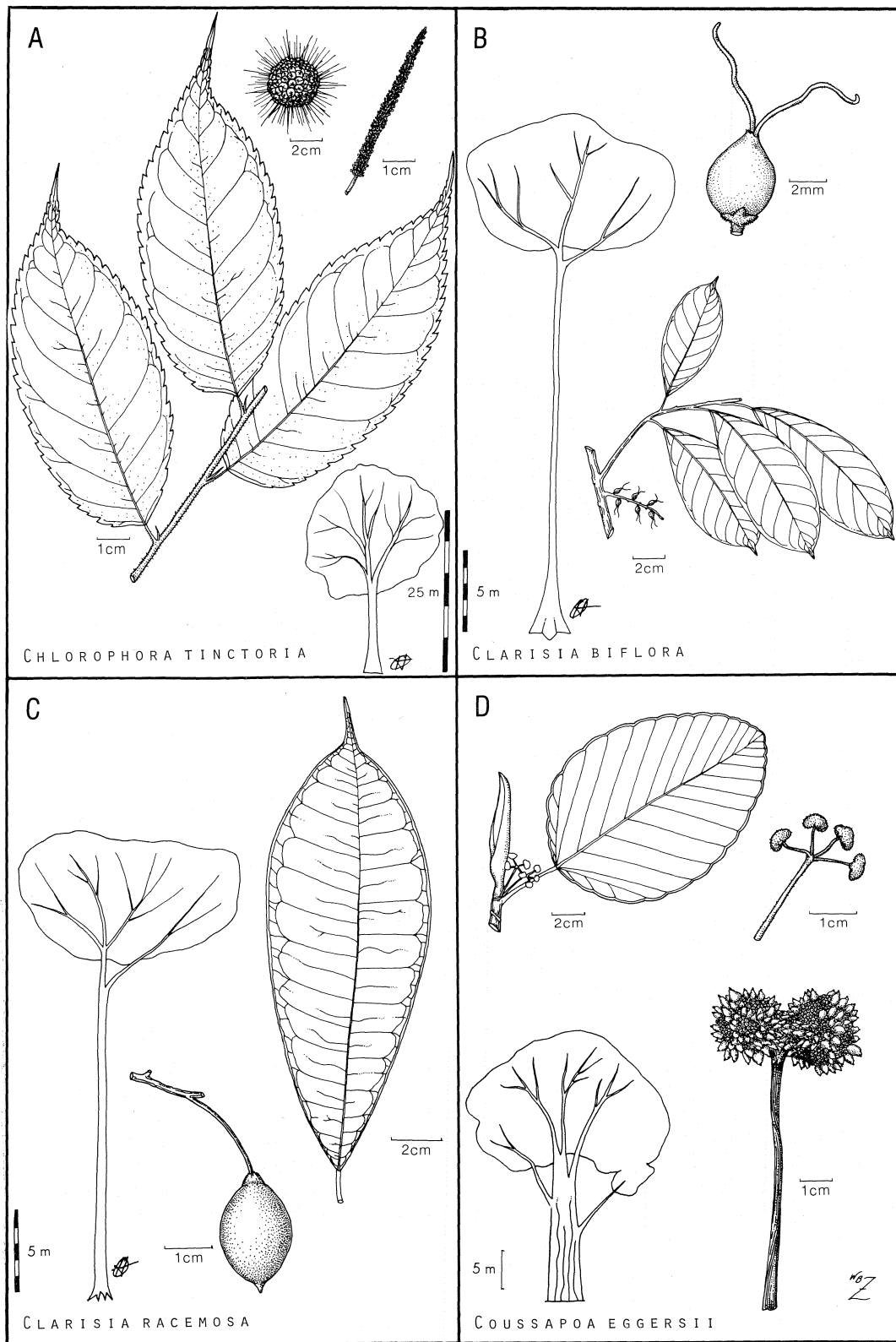


Plate 207

Cecropia aff. obtusifolia Bertol.

Plate 206-C

Dioecious tree to 15 m tall. Trunk and branches with very prominent rings (more prominent than in the other 3 *Cecropia* species); internodes containing ants. Leaves peltate, mostly 50-80 cm in diameter, dimorphic, on young unbranched trees deeply ca. 13-lobed 2/3 of way to base, shallowly 9-to 10-lobed on branches, red-veined beneath with green ground color. Spathes pink, red-speckled. Male inflorescence many-spiked, the enclosing spathe 12 cm long; female inflorescence ca. 5-spiked, the spikes 10 cm long, peduncle ca. 4 cm long. Common, in second growth areas. This is probably an undescribed species.

Common name: "Guarumo"+

Cecropia aff. peltata L.

Plate 206-D

Slender dioecious tree to 20 m tall. Trunk and branches with prominent rings; internodes containing ants. Leaves peltate near the middle, mostly ca. 30-40 cm in diameter, palmately but shallowly ca. 9-lobed less than 1/3 of way to base. Male inflorescence many-spiked, the slender spikes ca. 6 cm long; female inflorescence with 4-5 spikes each 4-6 cm long. Uncommon, in disturbed areas in mature forest. The extremely shallowly-lobed leaves suggest *C. longipes* Pitt., known only from Panama, but the short-pedunculate inflorescence is different from that species.

Common name: "Guarumo"+

Chlorophora tinctoria (L.) Gaud.

Plate 207-A

Medium-sized or canopy tree to 30 m tall. Roots spreading, conspicuously reddish. Branchlets armed with spines several mm long in many leaf axils. Leaves ovate, long-acuminate, rounded at the base, conspicuously serrate, to 12 cm long (including the tip). Male inflorescence a slender pendulous spike several cm long; female inflorescence a pedunculate globose head ca. 5 mm in diameter. Fruit compound, green, irregularly 12-20 mm in diameter. Uncommon, in mature forest. Mexico and the West Indies to Argentina.

Common name: "Moral Fino"+

Clarisia biflora R. & P.

Plate 207-B

Dioecious canopy tree to 35 m tall with milky latex. Leaves obovate-elliptic, short-acuminate, rounded to acute at the base, entire, to 15 cm long. Male inflorescence a slender spike 2-10 cm long. Female inflorescence of one or two axillary greenish flowers or occasionally in alternate pairs on a leafless shoot; stigmas 2, each ca. 1 cm long. Fruit a drupe, ellipsoid, 2-2.5 cm long. Uncommon, in mature forest. Southern Mexico to Bolivia and Brazil.

Common name: "Tillo Serrano"+, "Zavalita"

Clarisia racemosa R. & P.

Plate 207-C

Dioecious canopy tree to 30 m tall. Bark covered with red pustules. Petiole 5-8 mm long; leaves entire, obovate, caudate-acuminate (the slender tip 1.5-2 cm long), rounded to acute at the base, 6-11 cm long (without the tip). Flowers not seen at Río Palenque. Fruit a drupe, ellipsoid, 2-2.5 cm × 1.5 cm, on a pedicel 2 cm long. Infrequent, in mature forest. Apparently disjunct from Amazonia to Pacific Ecuador. *Clarisia racemosa* usually has more coriaceous leaves lacking the distinctive acumen of the Río Palenque plant.

Common name: "Moral Bobo"+

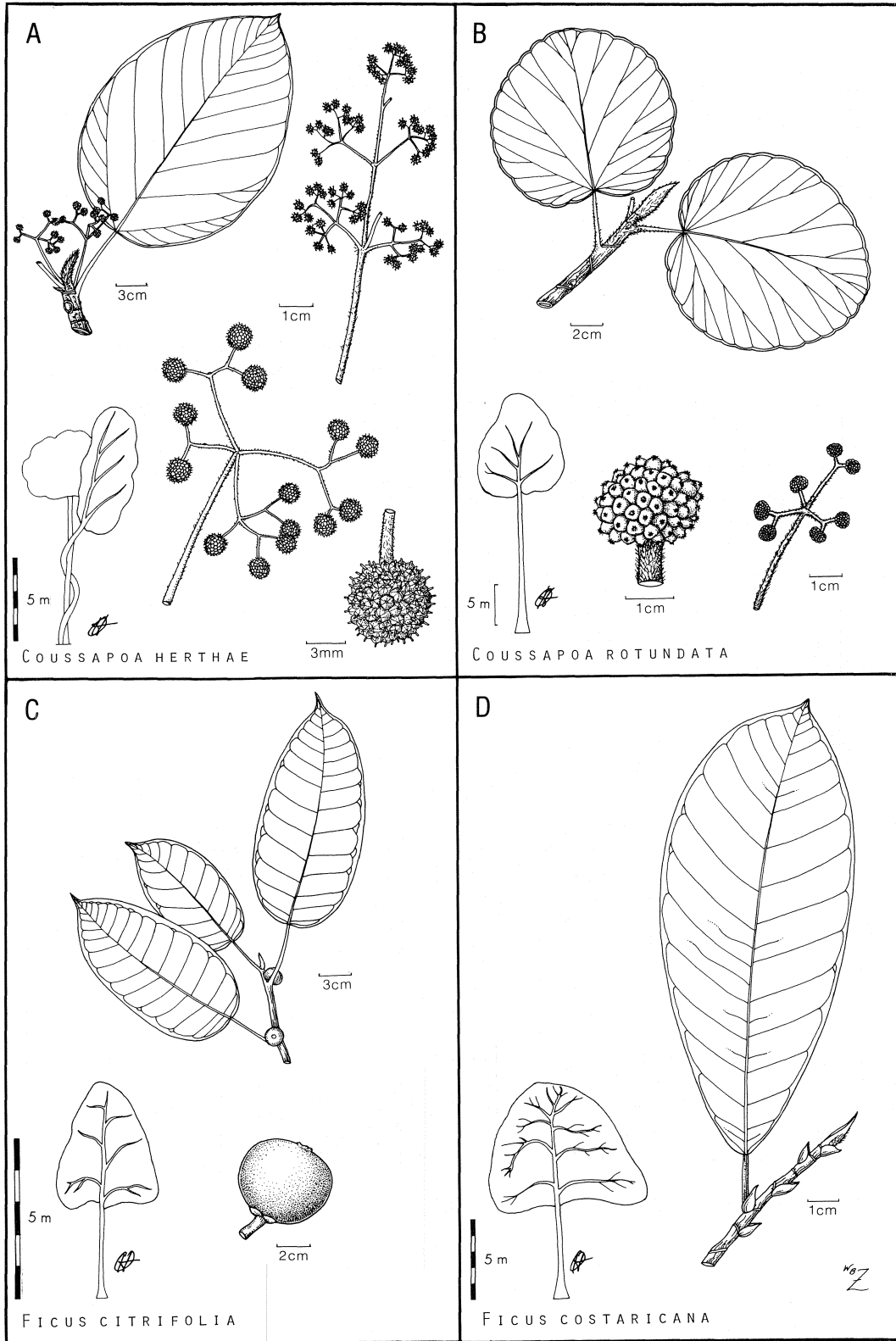


Plate 208

***Coussapoa eggersii* Standl.**

Plate 207-D

Hemiepiphytic strangler becoming an enormous canopy tree to 40 m tall with irregular, tortuously anastomosing trunk. Terminal stipule to 8 cm long, appressed puberulous. Leaves undulate-margined, ovate, obtuse at the apex, truncate at the base, 9-18 × 6-12 cm, the secondary veins very straight, making an angle of 45° with the midvein, all parallel except the basal pair. Male inflorescence 2-4 umbellately arranged pedunculate heads, these cream, irregularly globose, to 7 mm in diameter. Female inflorescence one or two globose pedunculate heads. Fruit compound, globose, ca. 3 cm across. Very common, in mature forest. Endemic to Pacific Ecuador. Used for charcoal. Common name: "Matapalo"+

***Coussapoa herthae* Mildbr.**

Plate 208-A

Hemiepiphytic, becoming a large strangler. Terminal stipule woolly-sericeous. Leaves elliptic to obovate, obtuse, rounded at the base, to 30 × 16 cm, the secondary veins very straight, making an angle of 45° with the midvein, all more or less parallel. Male inflorescence paniculately branched, multicapitulate, the globose heads ca. 3 mm in diameter. Female inflorescence composed of several globose heads. Fruit compound, globose, ca. 2 cm across. Uncommon, in mature forest. Endemic to Pacific Ecuador. Common name: "Matapalo"+

***Coussapoa rotundata* Little**

Plate 208-B

Tree to 25 m tall. Terminal stipule very sparsely short pubescent. Leaves round, to very broadly ovate, cordate at the base, to 12 × 10 cm, secondary nerves mostly branched. Female inflorescence of several globose heads, greenish. Fruit globose. Not yet found at Río Palenque but occurs in the forest across the river at 170 m elevation. Coastal Ecuador. Common name: "Matapalo"+

***Ficus citrifolia* Mill.**

Plate 208-C

Tree to 10 m tall; strangler. Leaves oblong-ovate to oblong-obovate, apiculate to short-acuminate at the apex, truncate at the base, glabrous, membranaceous, 11-22 × 5-11 cm. Petiole 1-5 cm; terminal stipule ca. 6 mm long. Figs usually flattened-globose, ca. 1.5 cm in diameter and 1 cm long, on pedicels ca. 5 mm long. Infrequent, in mature forest. Southern Florida to Paraguay. The leaves are much more membranaceous than in Panamanian material of *F. citrifolia*.

***Ficus costaricana* (Liebm.) Miq.**

Plate 208-D

Strangler to 25 m tall. Axils with more or less persistent cucullate bracts. Petiole 1.5-3 cm; leaves obovate, apiculate to rounded, obtuse at the base, softly pilose to subglabrescent beneath with rather stiff trichomes, 12-19 × 6-9.5 cm. Figs (in Panama) globose, sessile, glabrous, smooth, to 1.5 cm diameter. Rare, in mature forest along trail 1. Previously known from Guatemala to Panama.

Common name: "Higueron"

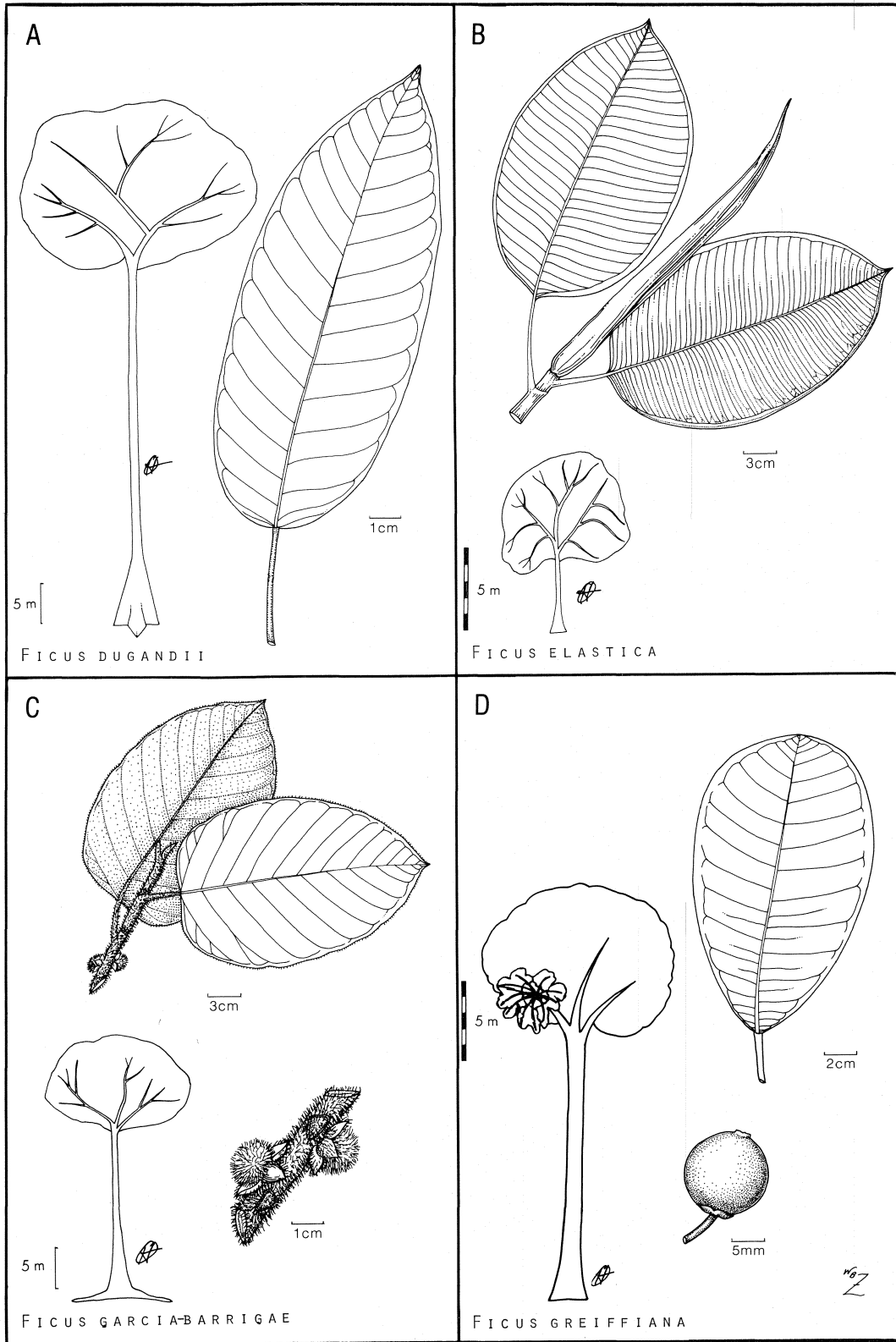


Plate 209

Ficus dugandii Standl.

Plate 209-A

Giant emergent tree to 75 m tall; strangler when young; the largest tree at Río Palenque is this species. Latex milky; buttresses large and flat. Leaves narrowly oblong-ovate, subacute at the tip, rounded to truncate at the base, 7-15 × 2.5-6 cm. Petiole 2.5-5 cm long. Uncommon, in mature forest. Formerly known from Costa Rica to Colombia. Only the fallen leaves have been collected and they seem to match best this species.

***Ficus elastica** Roxb.

Plate 209-B

Tree to 20 m tall; not a strangler. Terminal stipule to 20 cm long. Leaves elliptic, short-acuminate, rounded at the base, the secondary and tertiary veins subequal, parallel, very indistinct, to 23 × 14 cm. Petiole to 6 cm. Figs oblong, twice as long as wide, sessile. Cultivated around homesites. Native to Southeast Asia.

Ficus garcia-barrigae Dug.

Plate 209-C

Tree to 35 m tall, 3 m in diameter; strangler. Branchlets villous. Leaves ovate to obovate, obtuse, truncate at the base, golden brownish-villous below. Figs ca. 12 mm in diameter, densely villous, subtended by broadly ovate 7-8 mm long bracts. Uncommon, in mature forest. Previously known only from Colombia at somewhat higher altitudes.
Common name: "Matapalo"+

Ficus greiffiana Dug.

Plate 209-D

Strangler. Leaves obovate, rounded or obtuse at the apex, asymmetrically acute at the base, glabrous, to 17 × 7 cm. Figs 8-10 mm in diameter, on peduncle 6-9 mm long, sparsely subpuberulous, subtended by a pair of fused 2 mm long bracts. Rare, in mature forest. Otherwise known from Vaupes, Colombia, a rather unusual disjunction, but Holdridge 6405 from Portobelo, Panama is probably conspecific.

Ficus macbridei Standl.

Plate 210-A

Tree to 15 m tall; not a strangler. Leaves ovate, subacute, basically rounded at the base, but distinctly emarginate-cordate at the top of the petiole, scabrous (especially below), to 40 × 22 cm. Figs 10-12 mm in diameter, strongly scabrous. Infrequent, in mature forest. Costa Rica to Peru; this is the first record for Ecuador.

Ficus maxima Mill.

Plate 210-B

Tree 8-10 (or more?) m tall; non-strangler. Leaves oblong-elliptic, acute, obtuse at the base, scabrous (especially below), 15-25 × 6-10 cm. Figs to 2 cm in diameter (when dried), strongly scabrous, short-pedunculate, the basal bracts minute. Infrequent, at the forest edge, especially along the esteros. Southern Mexico and the West Indies south through Amazonia.
Common name: "Higueron"

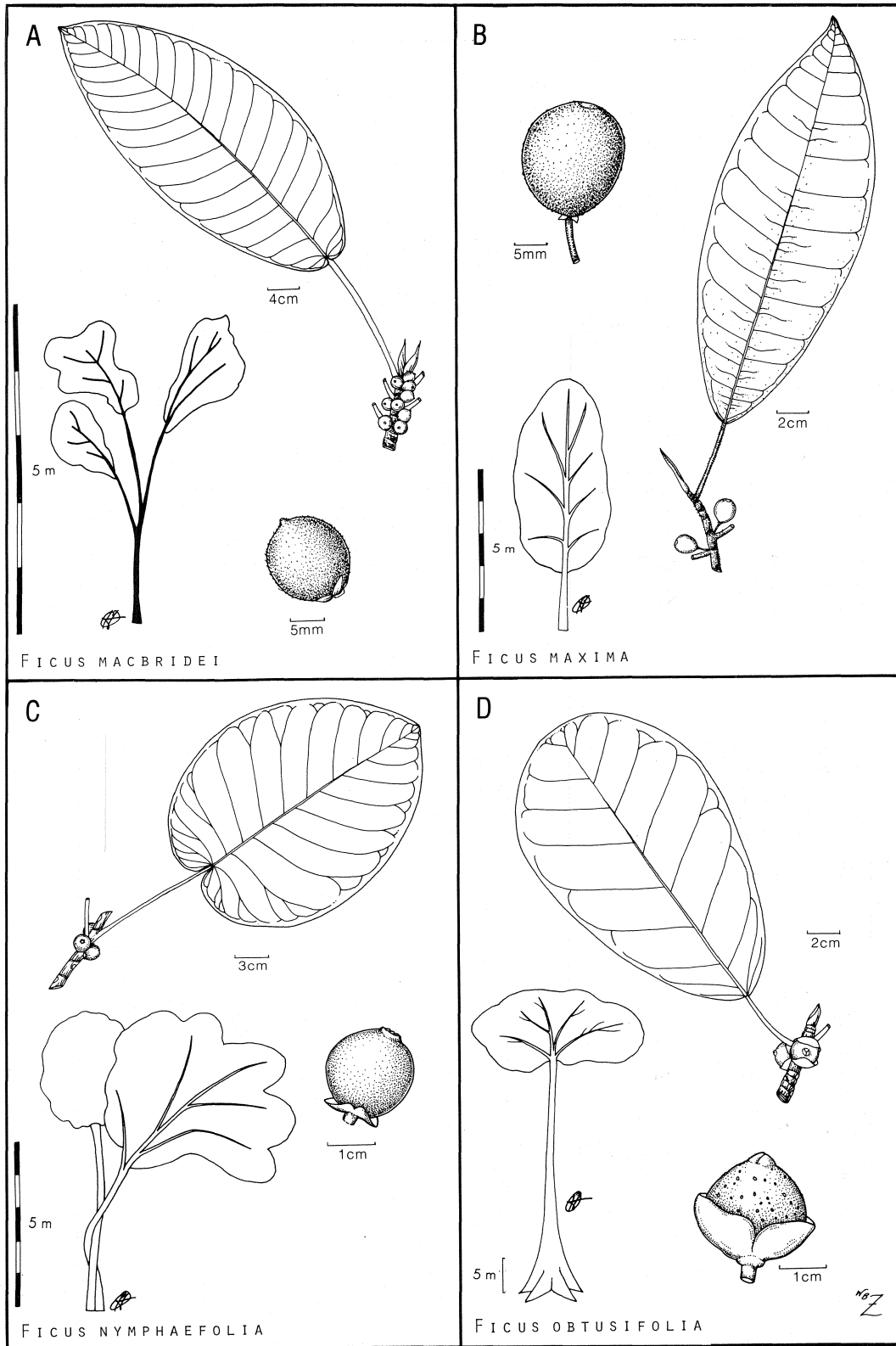


Plate 210

Ficus nymphaefolia Mill.

Plate 210-C

Strangler. Leaves broadly ovate, rounded at the apex, deeply and broadly cordate at the base, glabrous, to 27 × 20 cm. Figs 15-17 mm in diameter, glabrous, subtended by a fused pair of bracts ca. 5 mm long. Rare, in mature forest. Costa Rica to Brazil; this is apparently the first Ecuadorian record.

Ficus obtusifolia HBK

Plate 210-D

Canopy tree to 50 m tall. Petiole 2-5 cm long; leaves obovate, rounded at the apex, obtuse at the base, essentially glabrous, 16-24 × 9-14 cm, coriaceous. Figs sessile, globose with a slightly raised ostiolar region, minutely puberulous, to 2 cm in diameter, subtended by two large broad obtuse bracts ca. 1 cm long. Rare, in mature forest. Southern Mexico to Peru.

Ficus peroblonga Dug.

Plate 211-A

F. manabiensis Standl., ined.

Tree to 10 m tall. Stipules more or less persistent, subulate. Leaves very narrowly obovate-oblong, cordate at the base, acuminate at the apex, 13-27 × 5.5-9 cm, minutely puberulous throughout below. Figs subsessile, ca. 1 cm in diameter. Uncommon, in mature forest. Known only from Pacific Ecuador and adjacent Colombia, but probably synonymous with widespread *F. paraensis* (Miq.) Miq. of southern Mexico to Brazil and Peru according to Berg (pers. comm.).

Ficus pertusa L.

Plate 211-B

Strangler to 6 m tall, with little latex. Leaves narrowly ovate, acuminate, rounded at the base, glabrous, 4-9 × 1-2 cm. Petiole 0.5-1.5 cm. Figs globose with a conspicuously protuberant osteole, 4-5 mm in diameter; peduncle 6-8 mm long. Rare, in mature forest. Southern Mexico and Jamaica to Paraguay. The Río Palenque plant differs from Panamanian material of this species in the protuberant osteole which is more similar to *F. trachelosyce* Dug., a related species but with larger leaves.

Ficus pittieri Standl.

Plate 211-C

F. campbellii Johnston

Canopy tree to 35 m tall; apparently not a strangler. Leaves oblong-ovate, obtuse to subacute, more or less truncate at the base, 16-25 × 7.5-14 cm. Figs subsessile, 1 cm in diameter, subtended by a pair of broad, fused, 5-6 mm long bracts, the terminal pore elevated. Rare, along Dodson road. This plant, illustrated as *Ficus* sp. by Little, is referable to *F. pittieri* according to Berg (pers. comm.). The first Ecuadorian record of a Central American species which was lumped with widespread *F. trigonata* L. in the Flora of Panama.