

Plate 94

12. Fruits to 7 cm in diameter; cultivated or native.
13. Female inflorescences very short, hidden in the leaf bases.
14. Individual fruits with a brown, spiny, bony outer cover, very large; male inflorescence on separate plants from the female, to 2 m long; native.
 *Phytelephas aequatorialis*
14. Individual fruits red-orange, glabrous, with oily pulp as an outer cover, to 3 cm in diameter; male inflorescence on the same plant as the female, to 40 cm long; cultivated. *Elaeis guineensis*
13. Inflorescences much exceeding the leaf bases.
15. Inflorescences with a central axis, produced from inside the living leafbases, to 2 m long; fruits yellow when ripe, to 4 cm in diameter.
 *Scheelea butyracea*
15. Inflorescences without a central axis, produced from below the living leafbases, to 70 cm long; fruits green-purple when ripe, to 2 cm in diameter. *Jessenia polycarpa*

Astrocaryum standleyanum Bailey

Plate 94-A

Palm with a single trunk, to 10 m tall, covered with stout spines on the trunk and leaves. Leaves pinnate, to 3 m long. Inflorescence surrounded by a spiny spathe to 1 m long; inflorescence to 2 m long. Fruits elliptic, to 3 cm in diameter, orange when ripe. Infrequent, in mature forest. Panama to Ecuador. Common name: "Mocora"+

Bactris sp.

Plate 94-B

Palm with multiple trunks to 8 m tall, to 20 cm in diameter, covered with slender spines on the trunk and leaves, without a crown-shaft. Leaves pinnate, to 3-5 m long. Inflorescence to 60 cm long, surrounded by 2 spiny spathes to 40 cm long. Fruits round, about 1.5 cm in diameter, red when ripe. Common, throughout region.

Catoblastus velutinus Burret

Plate 94-C

Palm with a single trunk, slender, to 20 m tall, to 15 cm in diameter, stilt-rooted. Leaves to 3 m long, forming a crown-shaft at the base, to 1.20 m long; leaflets to 1 m long, attached to the leaf rachis in one plane, triangular-oblique. Fruits oblong, to 3 cm long, dark green and pubescent when ripe. Common, in mature forest. Western Colombia and Ecuador. Common name: "Tontomo"+

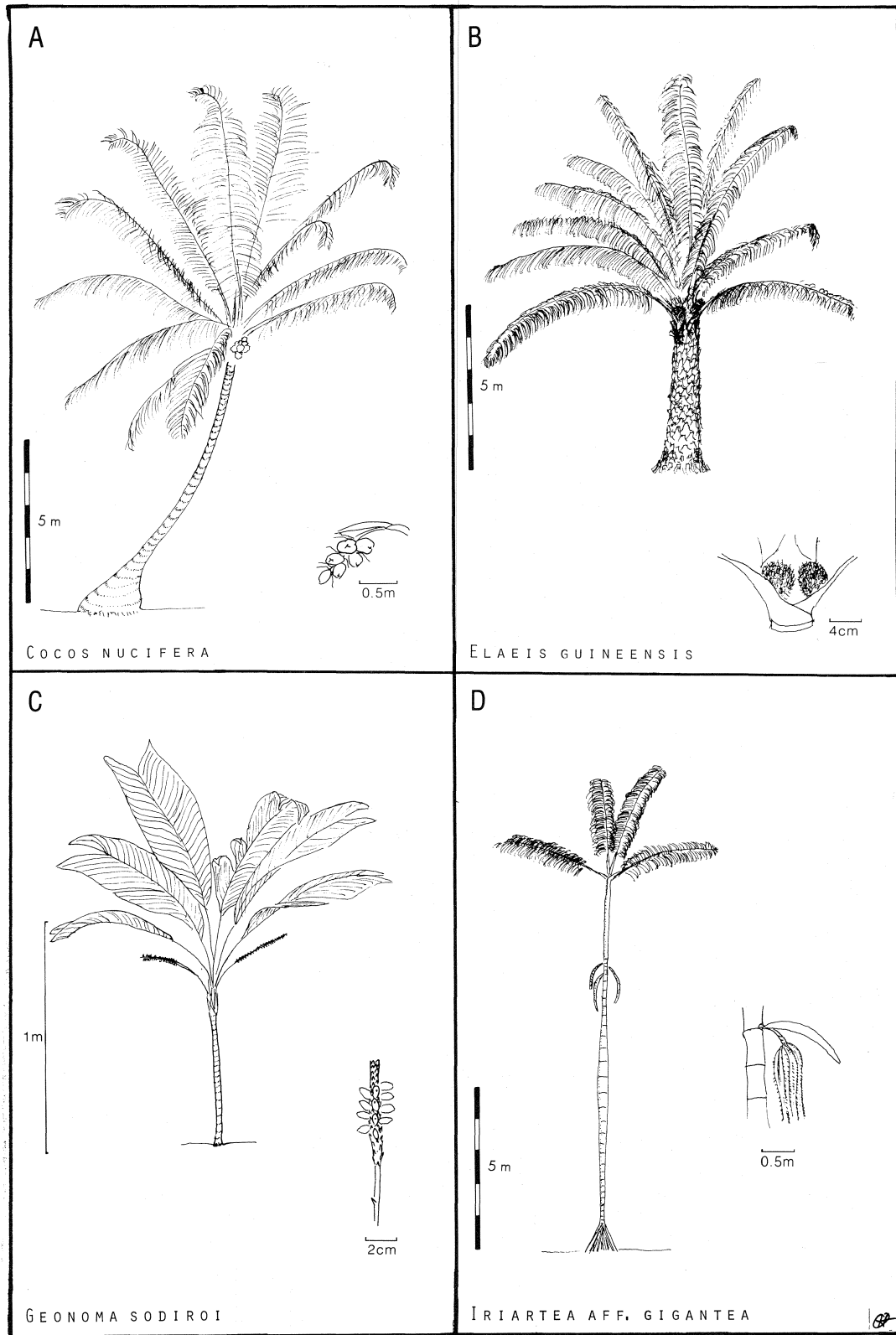


Plate 95

Chamaedorea aff. woodsoniana Bailey

Plate 94-D

Palm with a single trunk, to 5 m tall, to 10 cm in diameter, not obviously stilt-rooted. Leaves to 2 m long, forming a crown-shaft at the base, to 70 cm long; leaflets to 50 cm long, slender. Male inflorescence to 20 cm long, densely branched, white; female inflorescence to 40 cm long, 5- to 7-branched, green. Fruits round, about 1.5 cm in diameter, red when ripe. Uncommon, in mature forest. This species is otherwise known from Panama but our identification is very tentative.

***Cocos nucifera** L.

Plate 95-A

Large tree with a single trunk to 20 m tall, dbh to 40 cm, often semi-reclining and swollen at the base. Leaves pinnate, to 3.5 m long; leaflets to 90 × 6 cm; no crown-shaft produced. Fruits large, to 30 cm in diameter, green or yellow. Typical coconut palm cultivated throughout the region. Pantropical. Specimens in our area tend to be erect and without swollen trunk bases. Common name: "Coco"+, "Cocotero"

***Elaeis guineensis** Jacq.

Plate 95-B

Palm with a stout trunk to 15 m tall, 50 cm in diameter. Leaves to 4 m long, the bases persistent, without a crown-shaft; leaflets joined to the rachis on a single plane, slender, to 70 cm long. Male and female inflorescences separate on the same tree, produced in the axils of young leaves, the female inflorescence to 50 cm broad. Fruits glabrous, seeds covered with an oily red-orange pulp. Cultivated throughout the tropics; native to West Africa. Common name: "Palma Africana"+

Geonoma sodiroi Daummer ex Burret

Plate 95-C

Dwarf palm, with a slender trunk to 1 m in height, 5 cm in diameter. Leaves usually not dissected, occasionally dissected several times in very large specimens, to 2 m long, 50 cm broad; without a crown-shaft. Inflorescence unbranched, to 70 cm long. Fruits elliptic, to 1 cm long, dark blue when ripe. Common, in the understory of mature forest. Western Ecuador.

Iriarteia aff. gigantea H. Wendl.

Plate 95-D

Palm stilt-rooted, to 25 m tall, trunk to 60 cm in diameter, swollen at the mid-point. Crown-shaft to 2.5 m. Leaves 4-18, to 3.5 m long; petiole to 40 cm; leaflets joined to the rachis at different planes, forming a dense mass, 90 cm long, 3 cm wide. Inflorescence to 1 m long; spathe to 90 cm long, curved inward toward the trunk like a large cowhorn. Fruits brown. Rare, on the Science Center. Common closer to Sto. Domingo. Costa Rica to Ecuador.

Common name: "Pambil"+

Jessenia polycarpa Karst.

Plate 96-A

Palm stout, with a single trunk to 10 m tall, 60 cm in diameter, without a crown-shaft. Leaves 10-20, to 5 m long, stiffly erect. Inflorescence produced from the trunk below the existing leaf bases, to 70 cm long, without an elongate, central rachis, the branches having a common origin, broom-like. Fruits elliptic, green-purple when ripe, to 2 cm in diameter. Rare in mature forest. Western Columbia and Ecuador, but perhaps the same as wide-ranging *J. bataua* (Mart.) Burret according to H. E. Moore (Pers. Comm.).

Common name: "Chapil"+, "Mil Pesos"+

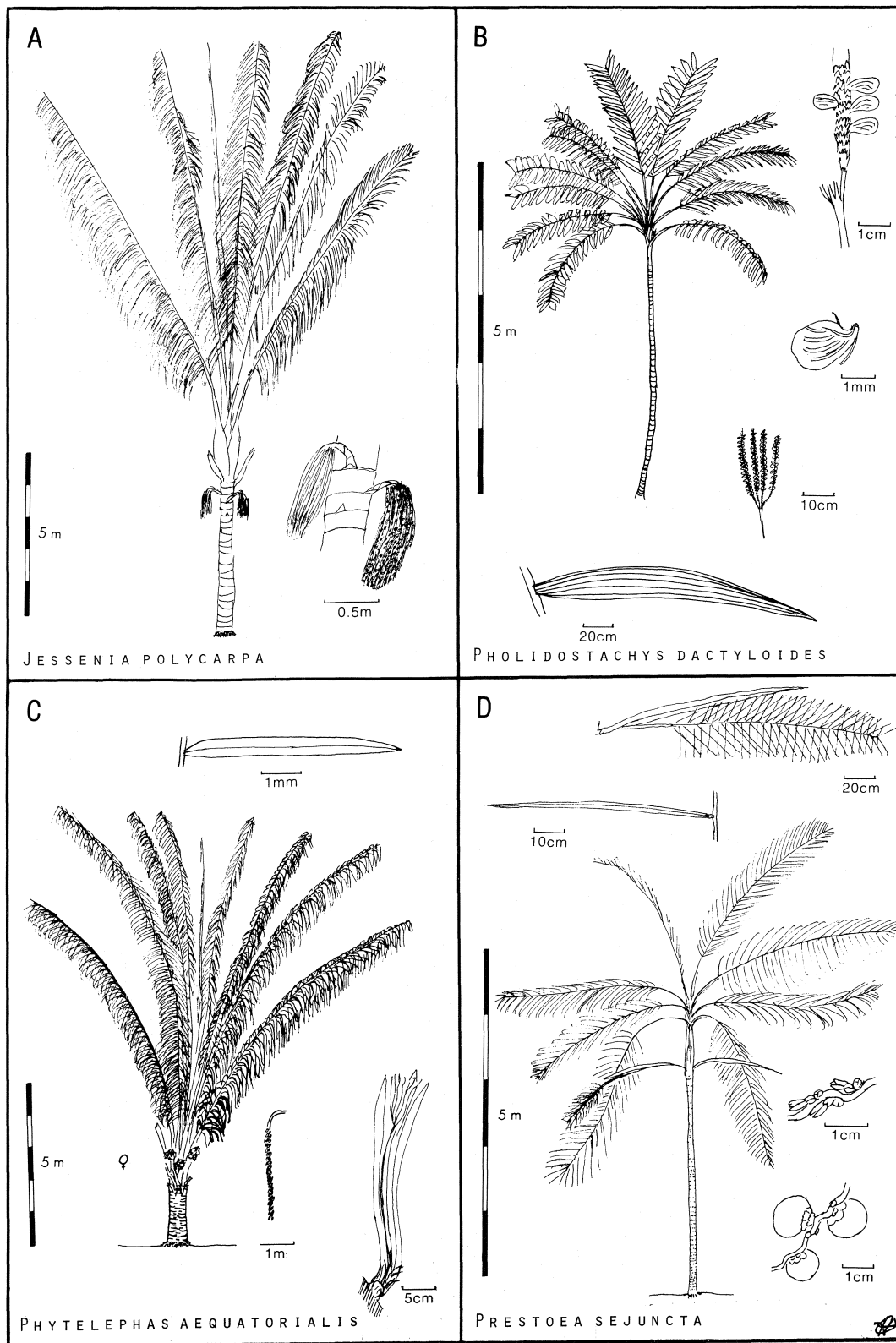


Plate 96

Pholidostachys dactyloides H. E. Moore

Plate 96-B

Palm with a single trunk, to 6 m tall, 10 cm in diameter, without a crown-shaft. Leaves to 2.5 m long, dissected into numerous leaflets. Inflorescence borne in the axils of the leaves and barely visible, to 40 cm long, divided into 4 to 6 branches. Fruits grey when ripe, to 8 mm long. Uncommon, in mature forest. Western Colombia and Ecuador. This genus is usually considered synonymous with *Calyptrogyne*.

Phytelephas aequatorialis Spruce

Plate 96-C

Palandra aequatorialis (Spruce) Cook

Palm with a single trunk, to 20 m tall, 70 cm in diameter, without a crown-shaft. Leaves 15-30, to 4 m long; leaflets united to the rachis on a single plane, slender, to 70 cm long. Male and female inflorescences on separate trees; the male inflorescence to 2 m long, the female inflorescence to 50 cm long, in the axils of fresh leaves, the tepals to 30 cm long. Fruits brown with a spiny, bony, outer cover to 10 cm in diameter. Infrequent, in mature forest, but left in pastures and banana plantations.

Common name: "Tagua"+, "Cadi"+

Prestoea sejuncta Bailey

Plate 96-D

Palm with a single trunk to 12 m tall, 25 cm in diameter, without a crown-shaft. Leaves 15-20, to 3 m long, erect to lax; leaflets to 40 × 4 cm, spreading. Inflorescence borne below the bases of the leaves, to 2.5 m long, with many slender branches, surrounded by a slender, straight spathe to 2 m long. Fruits red-black when ripe, to 1 cm long. Rare, at Río Palenque; frequent, at higher elevations on the western slopes of the Andes. Panama to Western Ecuador.

Scheelea butyracea (Mutis ex L.f.) Karst. ex H. Wendl.

Plate 97-A

Palm with a single trunk to 30 m tall, 70 cm in diameter, without a crown-shaft. Leaves 15-30, to 5 m long, erect. Inflorescence from the axils of fresh leaves, to 2 m long, the branches to 40 cm long, radiating from an elongate rachis. Fruits ovoid, 7 cm long, 5 cm in diameter, surrounded by a thick, oily, orange pulp. The largest palm in the region. Infrequent, in mature forest. Northern South America.

Common name: "Palma Real"+

Socratea hoppii Burret.

Plate 97-B

Palm stilt-rooted, to 20 m tall, the trunk to 40 cm in diameter, not swollen; crown-shaft to 1.5 m. Leaves 5-9, to 3 m long, held outward; petiole to 1 m long; leaflets joined to the rachis at different planes, forming a dense mass, slender, to 70 cm long. Inflorescence to 50 cm long; spathe to 30 cm long. Fruits brown, elliptic, to 4 cm long. Common, throughout the region. Colombia and Western Ecuador.

Common name: "Crespa"+

Synechanthus warscewiczianus H. Wendl.

Plate 97-C

Palm with multiple, slender trunks, to 5 m tall, 8 cm in diameter, without a crown-shaft. Leaves 10-12, to 2.5 m long; petiole to 1 m long; leaflets to 30 cm long, 3 cm broad, joined to the rachis in one plane. Inflorescence to 80 cm long, composed of an elongate, central rachis, with many slender branches. Fruits red when ripe, elliptic, 2 cm long. Common, in mature forest. Costa Rica to Ecuador.

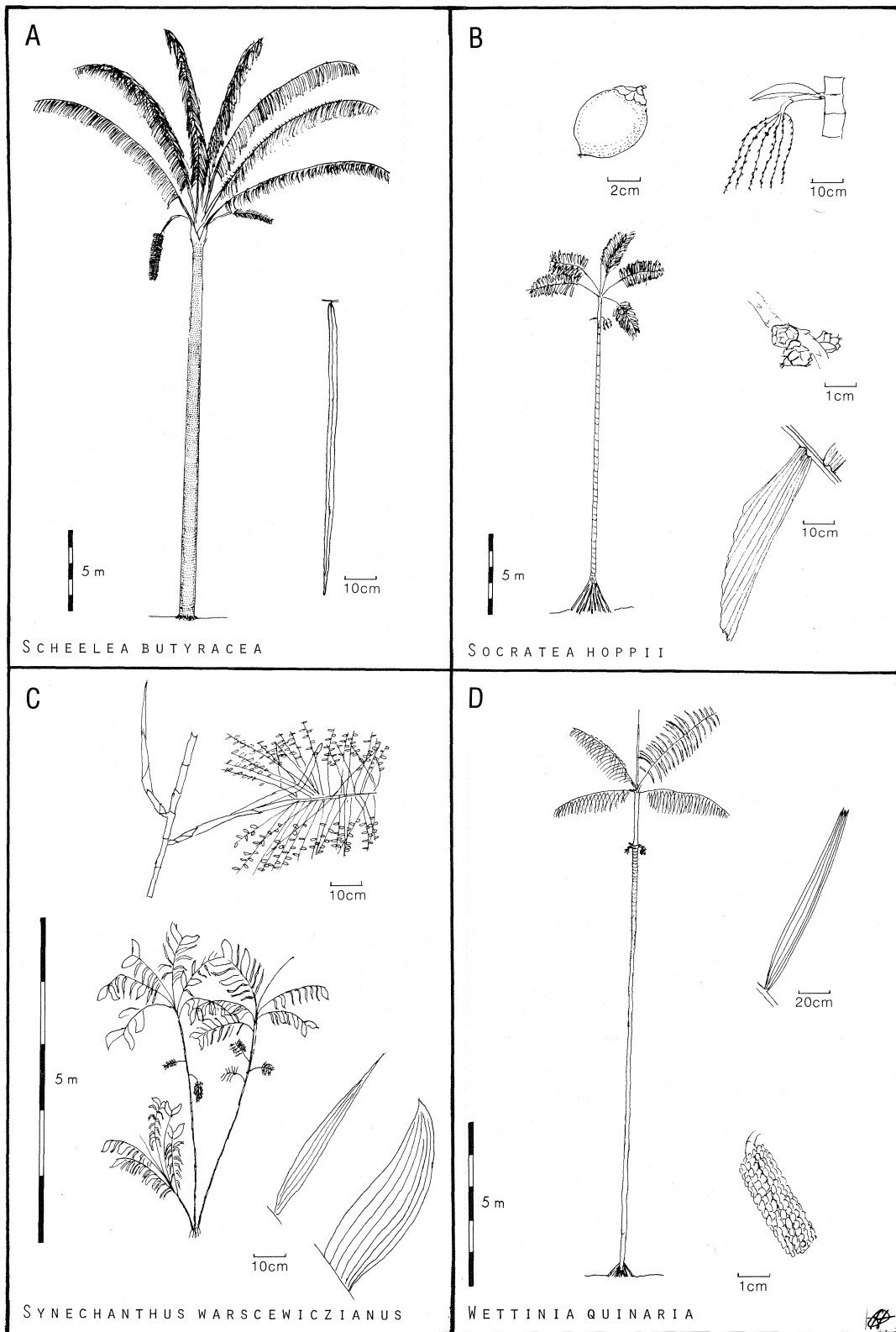


Plate 97

Wettinia quinaria (Cook & Doyle) Burret

Plate 97-D

W. utilis Little

Palm stilt-rooted, to 25 m tall, the trunk to 30 cm in diameter; crown-shaft to 90 cm long. Leaves 4-8, to 3 m long; leaflets joined to the rachis in 1 plane. Inflorescence to 30 cm long, few-branched, each branch to 20 cm long. Fruits forming a large, compressed, segmented mass (hand grenade-like), 30 cm long, 10 cm in diameter. Common, in mature forest near the Dodson house, not seen elsewhere at Río Palenque. Western Ecuador to Panama.

Common name: "Gualte"+

PONTEDERIACEAE

Aquatic herbs, floating or rooting into the substrate; stems short, or erect and unbranched, enveloped by sheathing leaf bases. Leaves distichous, entire. Flowers bisexual, regular or zygomorphic; perianth of 6 segments, distinct, petal-like; stamens 6, 3 or 1; ovary superior, 3- or 1-locular. Fruit a capsule.

Key to the species.

1. Leaf blade less than 3 cm wide, the base cordate; flowers almost regular, petals white. *Heteranthera reniformis*
1. Leaf blade usually more than 4 cm wide, the base not cordate; flowers more than 2 cm across, zygomorphic, petals purple.
 2. Petioles swollen. *Eichhornia crassipes*
 2. Petioles not swollen. *Eichhornia azurea*

Eichhornia azurea (Sw.) Kunth

Plate 98-A

Aquatic herb in shallow water. Leaves broadly elliptical, distichously arranged; petioles hardly swollen. Inflorescences several, from the axils of the leaves; flowers blue-purple, to 3 cm in diameter. Rare at Río Palenque. Widespread in tropical America. Illustration of the flower adapted from "Curtis Botanical Magazine."

Eichhornia crassipes (Mart.) Solms-Laub.

Plate 98-B

Floating aquatic herb growing in slow moving water in backwaters of the river. Leaves orbicular, to 10 cm wide, arranged in a rosette; petioles much swollen, acting as floats. Inflorescence terminal; flowers purple, to 5 cm in diameter. Rare at Río Palenque. Common, in ponds in the region. Pantropical.

Common name: "Lirio de Agua"

Heteranthera reniformis R. & P.

Plate 98-C

Small succulent herb with elongate rhizomes rooted into mud along the river bank and in constantly wet soils. Leaves clustered at each node of the rhizome, broadly cordate, acute at the apex, fleshy, 2 × 1.5 cm; petioles to 5 cm long, swollen or slender. Petals white, to 3 mm long. Common, in marshy areas near the river. Widespread in tropical America. Illustration of the flower adapted from "Flora of Guatemala."

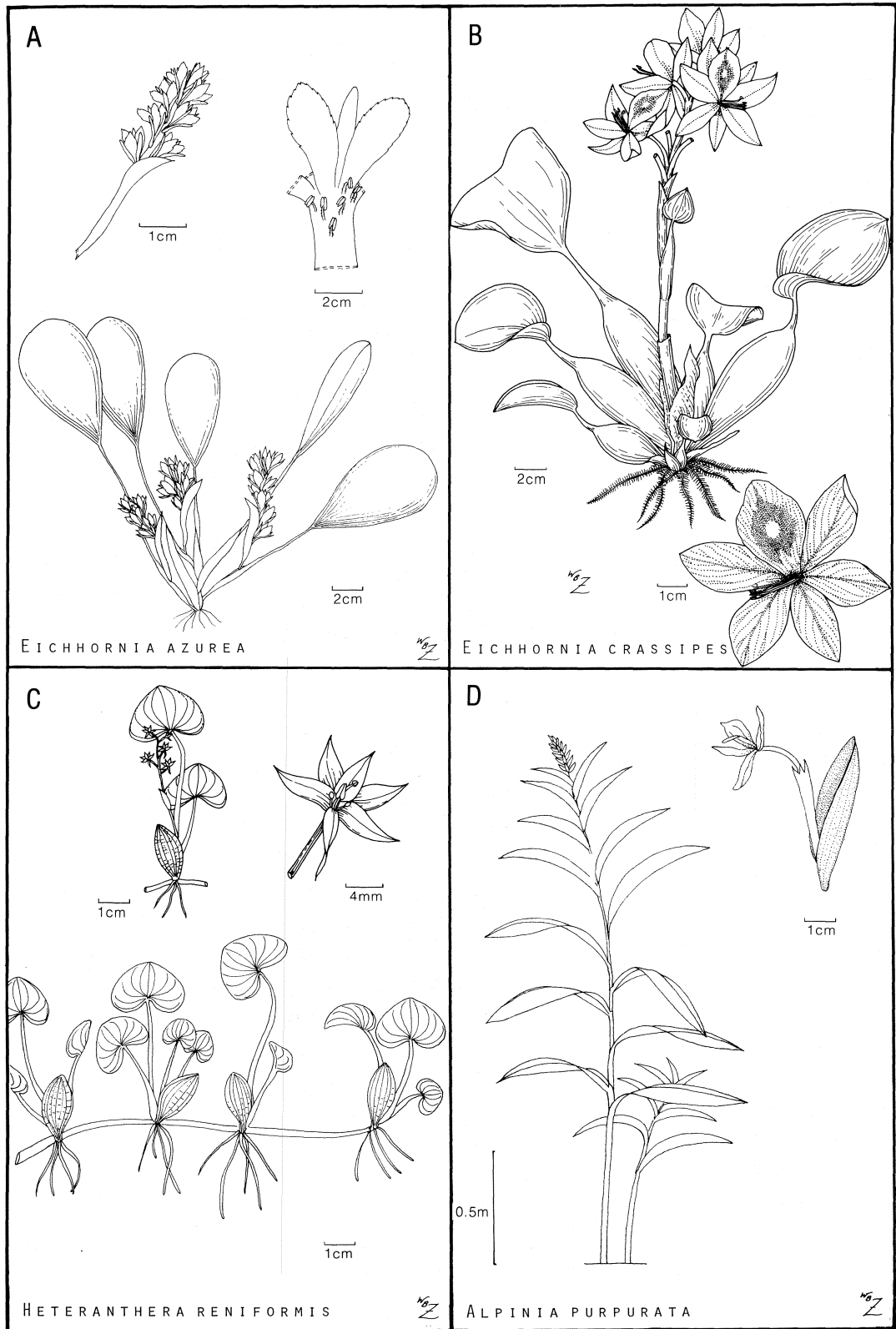


Plate 98

ZINGIBERACEAE

Perennial herbs with creeping horizontal rhizomes and erect leafy stems. Leaves spiraled from the base to the apex, or distichous, sheathing basally, sessile or petiolate. Flowers bisexual, subtended by a bract, irregular; sepals 3; petals 3, unequal to zygomorphic; fertile stamen 1, an infertile stamen frequently larger and showy, and expanded to appear as a lip; ovary inferior. Fruit a 3-valved capsule or berry.

Key to the species.

1. Inflorescence arising from the base of the plant; fertile stems without leaves.
 2. Inflorescence to 2 m tall; flowers and bracts in a compact head at the apex *Nicolaia elatior*
 2. Inflorescence to 40 cm tall; flowers and bracts loosely arranged.
 3. Leaves to 40 cm long; flower bracts to 3 mm long *Renalmia oligosperma*
 3. Leaves to 1 m long; flower bracts to 2 cm long *Renalmia exaltata*
1. Inflorescence terminal on a leafy stem.
 4. Leaves distichously arranged.
 5. Flowers white *Hedychium coronarium*
 5. Flowers red-orange, yellow or purple.
 6. Roots with the odor and flavor of ginger; lip 3-lobed *Zingiber officinale*
 6. Roots without the odor and flavor of ginger; lip not 3 lobed.
 7. Bracts of the inflorescence completely red; flowers red-orange *Alpinia purpurata*
 7. Bracts of the inflorescence white and red; flowers yellow, brown-red inside *Alpinia speciosa*
 4. Leaves spirally arranged.
 8. Flowers red, pink, or white marked with red.
 9. Floral bracts recurved at the tips.
 10. Floral bracts red; flowers red, tubular *Costus lima*
 10. Floral bracts green; flowers white marked with red; lip expanded as in an orchid flower *Costus guaniensis*
 9. Floral bracts erect.
 11. Plant to 2 m tall; flowers clear red to pinkish-red, tubular; floral bracts clear red. *Costus geothyrsus*
 11. Plant to 4 m tall; flowers orange-red, expanded, with an obvious lip; floral bracts wine-red *Costus laevis*
 8. Flowers pure white or yellow.
 12. Plant to 70 cm tall; floral bracts red; flowers yellow; leaves densely soft pubescent *Costus comosus*
 12. Plant to 5 m tall; floral bracts green; flowers white; leaves glabrous *Dimerocostus strobilaceous*

**Alpinia purpurata* (Vieill.) K. Schum.

Plate 98-D

Rhizomatous herb with leafy stems to 3 m tall. Leaves elliptic, to 70 × 30 cm. Inflorescence terminal on the stem, often pendulous, to 50 cm long; bracts red, spirally arranged, loose; flowers in the axils of bracts, orange-red to white. Cultivated around homesites. Pacific islands, widely cultivated in tropical regions. Illustration of flower adapted from "Die Natürlichen Pflanzenfamilien."

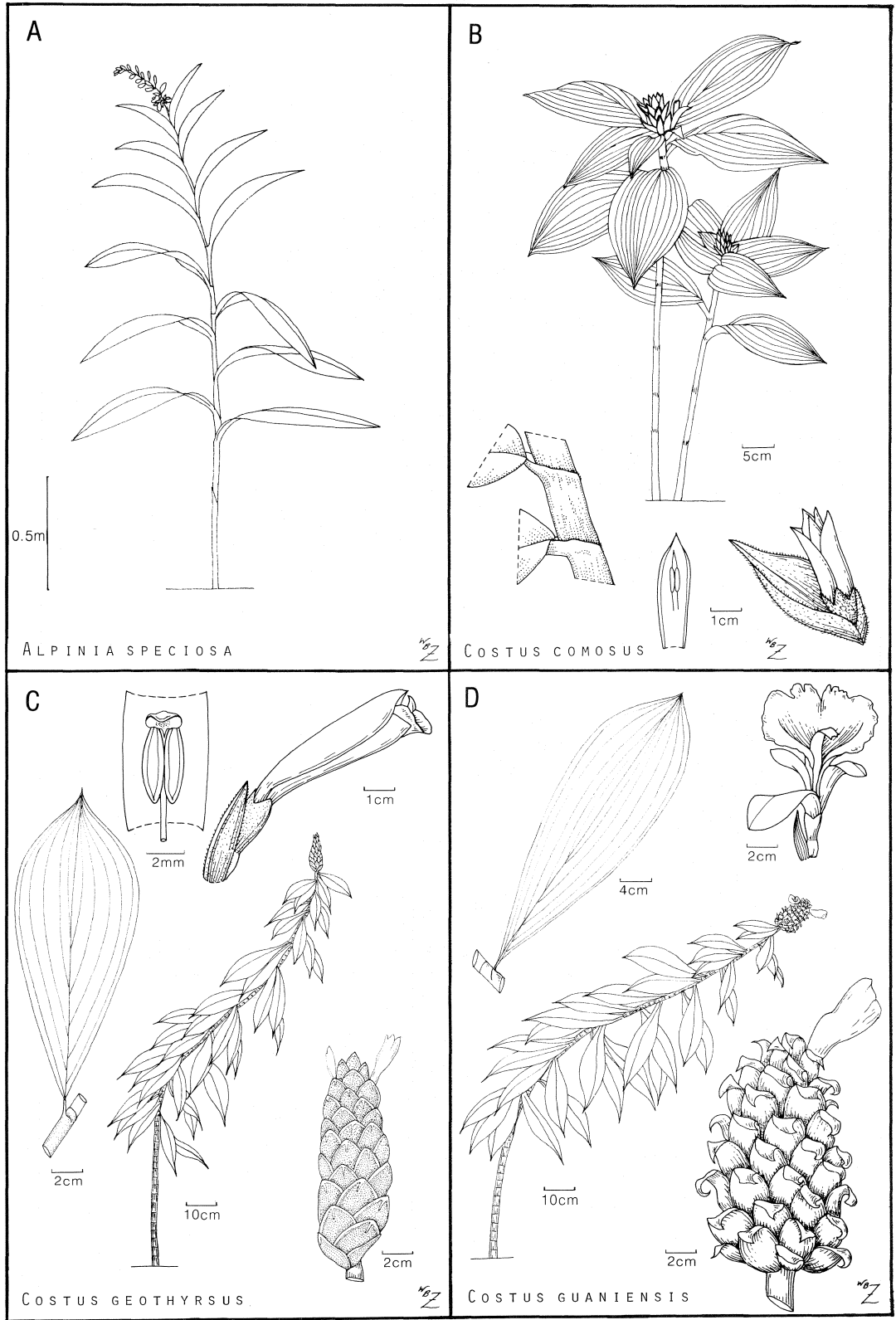


Plate 99

****Alpinia speciosa* (H. Wendl.) K. Schum.**

Plate 99-A

Rhizomatous herb with leafy stems to 2 m tall. Leaves narrowly ovate, to 30 × 12 cm. Inflorescence terminal on the leafy stem, pendulous, to 30 cm long; bracts white and red; lip yellow, marked with red-brown inside. Cultivated around homesites. Native of the East Indies.

***Costus comosus* (Jacq.) Roscoe**

Plate 99-B

Stems to 70 cm tall. Leaves to 40 × 24 cm, densely soft puberulent on both sides, spirally arranged. Inflorescence to 10 cm long; floral bracts red; appendages erect but flaring; corolla yellow, tubular, to 5 cm long. This species has been collected on the hillside across the river at an elevation of 200 m. It may not be present at Río Palenque. Previously known from Mexico to northwest Venezuela, not reported from Ecuador.

***Costus geothyrsus* K. Schum.**

Plate 99-C

Rhizomatous herb. Stems to 2 m tall; leaves to 30 × 12 cm, spirally arranged. Inflorescence to 15 cm long; floral bracts red, appressed and erect, not recurving at the tips; corolla red to pinkish-red, tubular, to 5 cm long. Common in mature forest and in second growth. This species is apparently intermediate between *C. geothyrsus* and *C. pulverulentus* Presl. Maas (pers. comm.) suggested that it might be of hybrid origin but later indicated that it might be a valid species.

Common name: "Caña Agria"+

***Costus guaniensis* Rusby**

Plate 99-D

Stems to 5 m tall. Leaves to 60 × 25 cm, reduced to swollen bracts surrounding the lower three-fourths of the stem, spirally arranged. Inflorescence to 35 cm long; floral bracts green, the apices recurved, green; corolla white to whitish-pink, labiate, resembling an orchid flower, to 10 × 5 cm. Uncommon, in second growth and along the river bank. Belize and Guatemala to Bolivia. Note original spelling.

Common name: "Caña Agria"+

***Costus laevis* R. & P.**

Plate 100-A

Stems to 5 m tall. Leaves to 50 cm long, 20 cm wide, spirally arranged. Inflorescence to 30 cm long; floral bracts wine-red, appressed and erect, not recurving at the tips; corolla reddish-yellow, partially expanded, to 7 cm long, 2 cm broad at the apex. Rare, along the river bank. Guatemala to Peru.

***Costus lima* K. Schum.**

Plate 100-B

Stems to 3 m tall. Leaves to 45 cm long, 15 cm wide, spirally arranged. Inflorescence to 15 cm long; floral bracts red, the apices recurved; corolla red, tubular, to 4 cm long. Common, along the roadsides in mature forest and in second growth. Nicaragua to Peru.

Common name: "Caña Agria"+

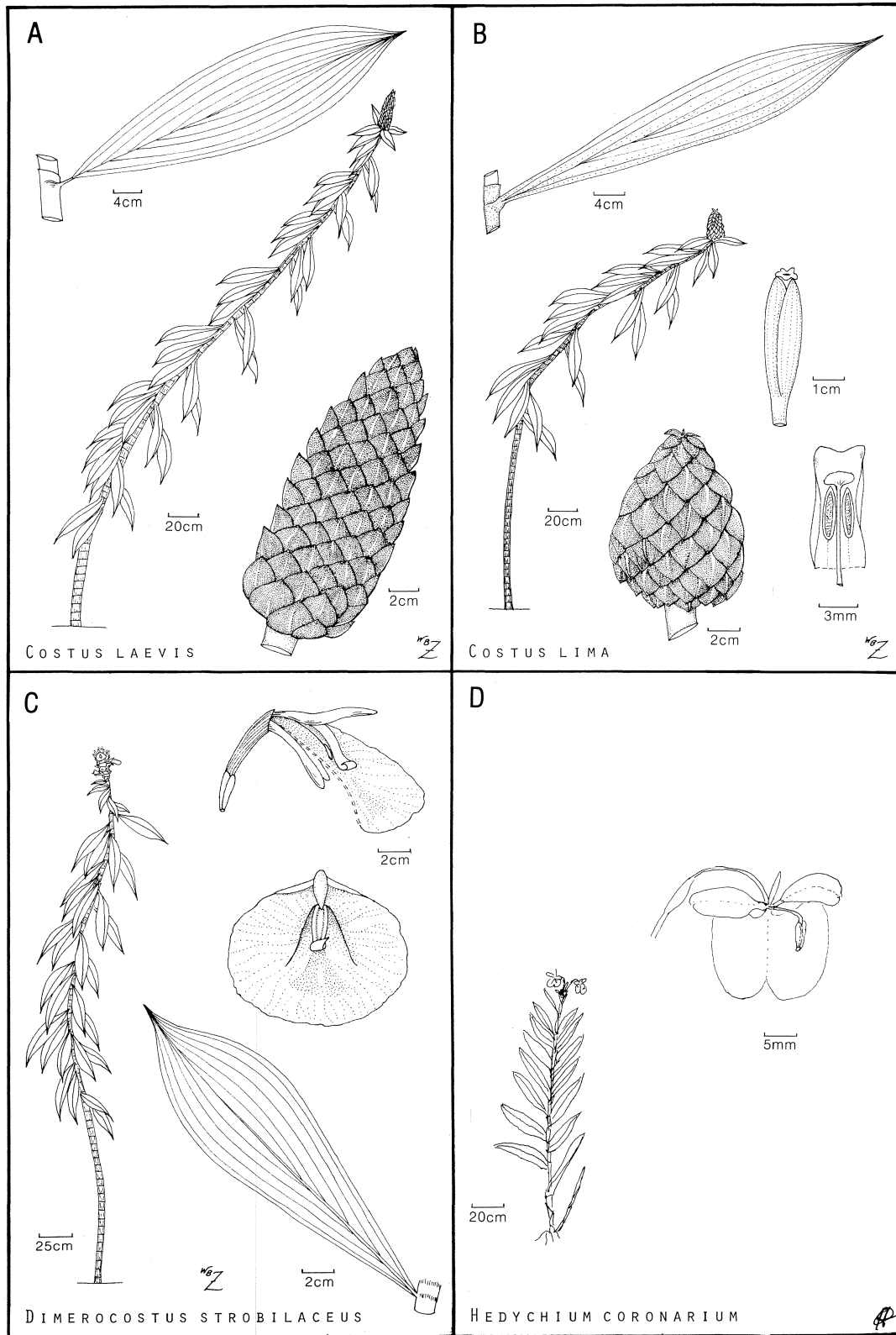


Plate 100

Dimerocostus strobilaceus Kuntze

Plate 100-C

Stems to 5 m tall. Leaves to 55 cm long, 20 cm wide, spirally arranged. Inflorescence loosely arranged in a spiral form at the apex of the stem; floral bracts green, not recurved at the tips, surrounding the ovary and not overlapping; corolla white, to 10 cm long, broadly expanded to 8 cm in diameter. Plantlets produced commonly at the upper nodes of the stem above the inflorescence. Rare, along the river bank. Honduras to Surinam, south to Bolivia.

Hedychium coronarium König

Plate 100-D

Stems erect, leafy, to 2 m tall. Leaves to 60 cm long, distichously arranged. Inflorescence at the apex of the leafy stems, cone-like with overlapping green bracts; flowers white with an elongate perianth tube, the segments to 5 cm broad. Common, along the river bank. Pantropical; native to the Old World.

***Nicolaia elatior** (Jack) Horan

Plate 101-A

Stems erect, leafy, to 6 m tall. Leaves to 1 m long, distichously arranged. Inflorescence on a leafless, bracteate stem arising from the base of the plant, cone-like, pink; flowers yellow. Cultivated plant around the buildings. Native to the Old World.

Common name: "Bastón del Emperador"+

Renealmia exaltata L. f.

Plate 101-B

Stems leafy, to 5 m tall. Leaves to 90 cm long, distichously arranged. Inflorescence narrowly paniculate, borne on a leafless bracteate stem arising from the base of the plant, the branches of the inflorescence subtended by bracts to 2 cm long; flowers pink. Fruit black. Uncommon, in lowlands near the river. Widespread in tropical America.

Common name: "Platanillo Oloroso"+

Renealmia oligosperma K. Schum.

Plate 101-C

Stems leafy, to 3 m tall. Leaves to 35 × 9 cm, distichously arranged. Inflorescence narrowly paniculate, borne on a leafless bracteate stem arising from the base of the plant, the branches of the inflorescence subtended by bracts to 3 mm long; flowers white. Fruits reddish. Uncommon, in mature forest. Western Ecuador, mostly at higher elevations.

***Zingiber officinale** Roscoe

Plate 101-D

Stems leafy, to 1 m tall. Leaves to 15 × 2 cm, distichously arranged. Inflorescence (rare) on leafy stems, about 5 cm long; flowers purple; lip with yellow spots. Cultivated for the rhizomes which produce commercial ginger. Native to tropical Asia. Illustration adapted from "Das Pflanzenreich."

Common name: "Jengibre"+, "Ginger"

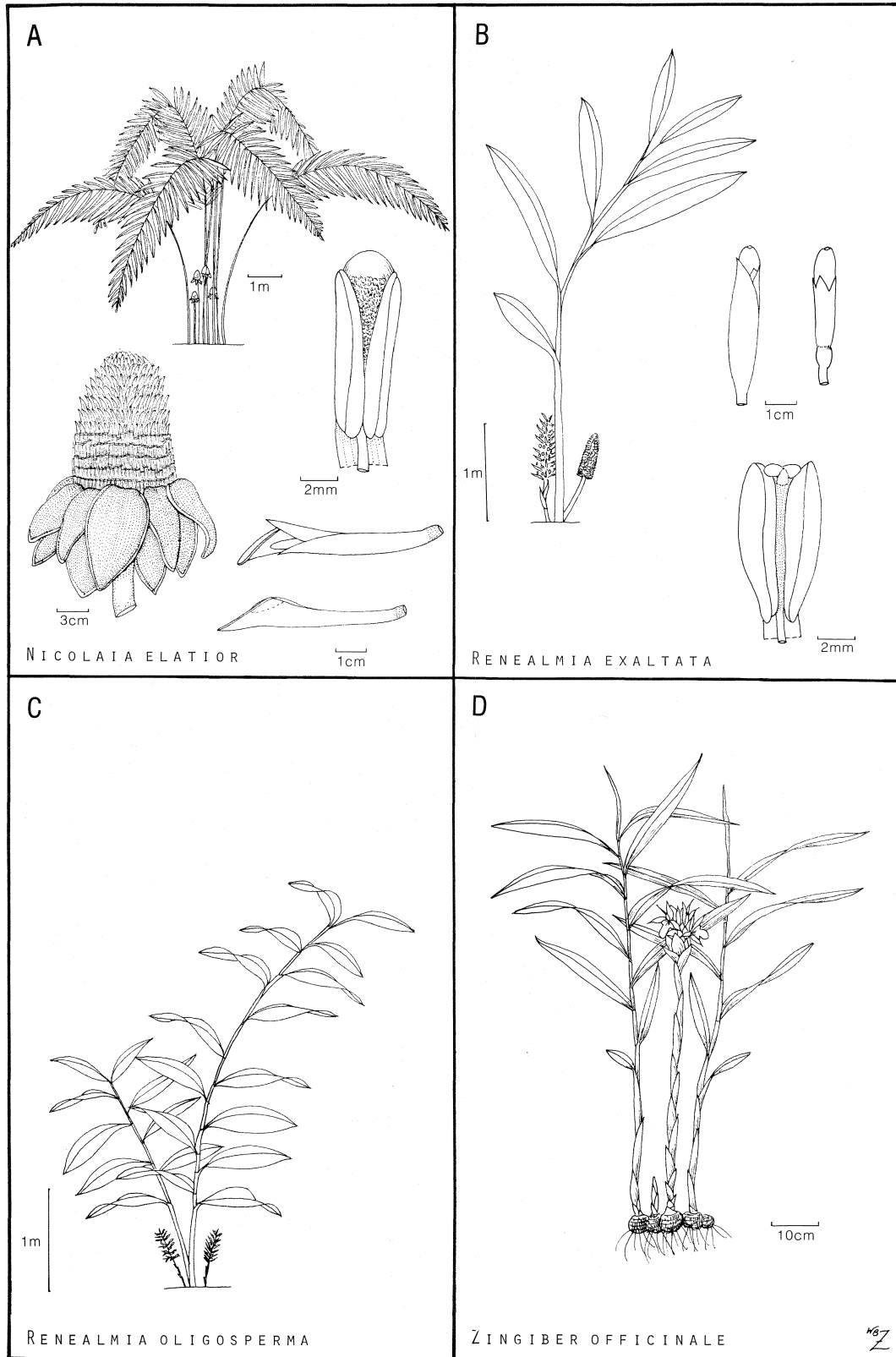
DICOTYLEDONAE

ACANTHACEAE

Herbs, shrubs, vines, or small trees. Leaves opposite, simple, without stipules. Flowers tubular, gamopetalous; corolla 5-lobed, or 2-lipped; stamens 4 or 2, mounted on the corolla. Bracts around the flowers often well developed and often colored. Capsules bivalvate, elastically dehiscent.

Key to the species.

1. Veins of the leaves strikingly marked silver-green; low herb *Fittonia verschaffeltii*
1. Veins of the leaves concolor; shrubs, vines, or herbs.
 2. Vines; each flower subtended by a pair of foliaceous bracteoles.
 3. Inflorescence pedunculate. *Dicliptera dodsonii*
 3. Inflorescence sessile, several pedicels arising separately from the leaf axils.
 4. Flowers to 4.5 cm long, dark reddish inside; bracteoles more than 2 cm long *Mendoncia retusa*
 4. Flowers to 1.5 cm long, pink; bracteoles 0.5 cm long *Mendoncia brenesii*
 2. Herbs, shrubs or small trees.
 5. Flowers 1.5 cm or less in length.
 6. Flowers sessile in the leaf axils *Hygrophila guianensis*
 6. Flowers in terminal or axillary panicles or spikes.
 7. Inflorescence spicate, the bracts more than 4 mm long.
 8. Bracts ca. 4 mm long. *Justicia riopalenquensis*
 8. Bracts leaf-like, ca. 15 mm long. *Blechum brownei*
 7. Inflorescence paniculate, the bracts minute.
 9. Flowers white with purple dots, 3 mm long *Justicia comata*
 9. Flowers greenish or purple with pink chevron-like marks on the lip, 8-10 mm long.
 10. Leaves narrowly elliptic, petiole 2 mm long; flowers purple *Justicia pectoralis*
 10. Leaves broadly elliptic, petiole 2 cm long; flowers green *Justicia pectoralis* var. *ovata*
 5. Flowers 2-7 cm long.
 11. Floral bracts large (1 cm or more in length) and broad.
 12. Flowers red or orange; tall herbs to 2 m tall; stems glabrous.
 13. Floral bracts green, loosely enclosing the bases of the flowers *Pachystachys riedeliana*
 13. Floral bracts red, tightly appressed to the rachis *Aphelandra attenuata*
 12. Flowers purple with white nectar-guides; low herb to 60 cm tall; stems pilose *Justicia ianthina*
 11. Floral bracts small (to 7 mm long), slender.



14. Stamens long-exserted; inflorescence short, few-flowered *Trichanthera gigantea*
14. Stamens more or less included; inflorescence long, narrow, usually many-flowered.
15. Flowers bright red or orange; stamens 2.
16. Flowers red; calyx lobes less than 5 mm long.
17. Native; flowers bilabiate, the lobes more or less fused; anthers monothealous (with 1 fertile cell) *Razisea spicata*
17. Cultivated; flowers rotate, the lobes free; anthers dithealous *Odontonema strictum*
16. Flowers orange (pale scarlet elsewhere), the calyx lobes to 1.5 cm long *Sanchesia parviflora*
15. Flowers purple; stamens 2 or 4.
18. Leaves obtuse at the tip, rounded at the base, less than 7 cm long; cultivated *Pseuderanthemum atropurpureum*
18. Leaves acuminate at the tip, acute to obtuse at the base, mostly more than 7 cm long; native.
19. Stamens 2; corolla regular *Pseuderanthemum leptorhachis*
19. Stamens 4; corolla subbilabiate *Ruellia riopalenquensis*

Aphelandra attenuata Wassh.

Plate 102-A

Shrub to 3 m tall. Leaves ovate to oblanceolate, the margin crenate, to 27 × 7 cm, tapering to a long, winged, poorly differentiated petiole. Inflorescence spicate, bracteate, the blunt overlapping bracts ca. 1 × 0.7 cm. Flowers bright red or orange, strongly bilabiate, 6-7 cm long. Uncommon and local, in mature forest. Known only from Río Palenque region.

Blechnum brownei Juss.

Plate 102-B

Herb to 30 cm tall. Leaves ovate, acute at the apex, more or less rounded at the base, to 4 × 2.5 cm, sparsely appressed-pubescent. Inflorescence terminal, spicate, with conspicuous, ovate, foliaceous bracts to 1.5 cm long. Flowers white to purplish, ca. 1.5 cm long. Rare, on rocky gravel bars along river. Mexico and the West Indies to northern South America; sporadically introduced in the Old World. Flower illustration adapted from "Flora of Guatemala."

Dicliptera dodsonii Wassh.

Plate 102-C

Rambling herbaceous vine. Leaves narrowly ovate, to 13 × 5 cm; petioles 1-4 cm long. Inflorescence lateral, the peduncle to 5 cm long, bracteate with ovate, green bracts to 4 × 1.5 cm. Corolla bilabiate, orange, to 5 cm long. A single plant is known on the path to the generator. Blooms in October and November. Known only from Río Palenque.

Fittonia verschaffeltii (Lem.) Coem.

Plate 102-D

Low, creeping herb. Leaves oval, dark green with the veins strikingly outlined in silver-green. Inflorescence to 20 cm long, spicate, the floral bracts oval, to 1 cm long. Flowers yellow. Uncommon, but locally abundant on the forest floor in deep shade. Colombia to Bolivia.

Hygrophila guianensis Nees

Plate 103-A

Herb to 1 m tall. Leaves very narrowly elliptic, to 6.5×2 cm, tapering to an indistinct petiole. Inflorescence verticillate, the small white flowers in sessile clusters in the leaf axils. Locally very common in esteros. Mexico to Argentina.

Justicia comata (L.) Lam.

Plate 103-B

Weedy herbaceous plants, rooting at the nodes of the prostrate stems. Leaves elliptic, to 8 cm long, the petiole to 3 mm long. Flowers in congested panicles, white with purple dots, the corolla to 4 mm long. Common, along the beaches, infrequent in the palm plantation. Throughout tropical America.

Justicia ianthina Wassh.

Plate 103-C

Low herbs to 60 cm tall. Stems and leaves hirsute. Leaves elliptic, to 10 cm long, the petiole 2 cm long. Inflorescence 5 cm long, the floral bracts large, expanded, ovate, 1 cm long, green. Flowers purple with white nectar-guides, 1.5 cm long. Uncommon, along the river bank. Known only from western Ecuador.

Justicia pectoralis Jacq.

Plate 103-D

Semiaquatic herbs to 60 cm tall. Leaves narrowly elliptic, to 13×1.5 cm, the petiole indistinct. Flowers to 1 cm long; corolla light purple or white with pink chevron-like marks. Common, on rocks and rocky beaches of the river. Widespread in tropical America.

Justicia pectoralis Jacq. var. *ovata* Wassh.

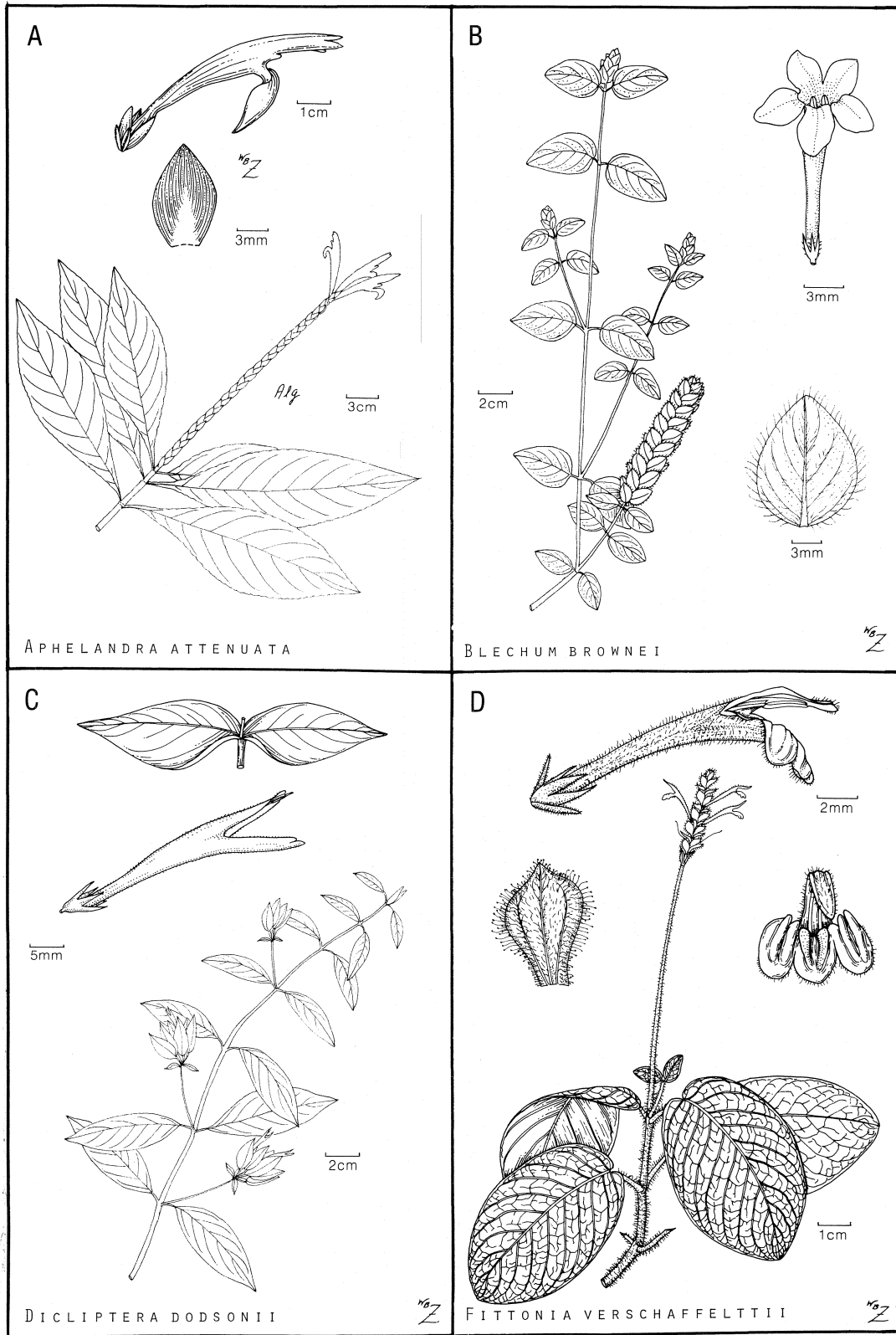
Plate 104-A

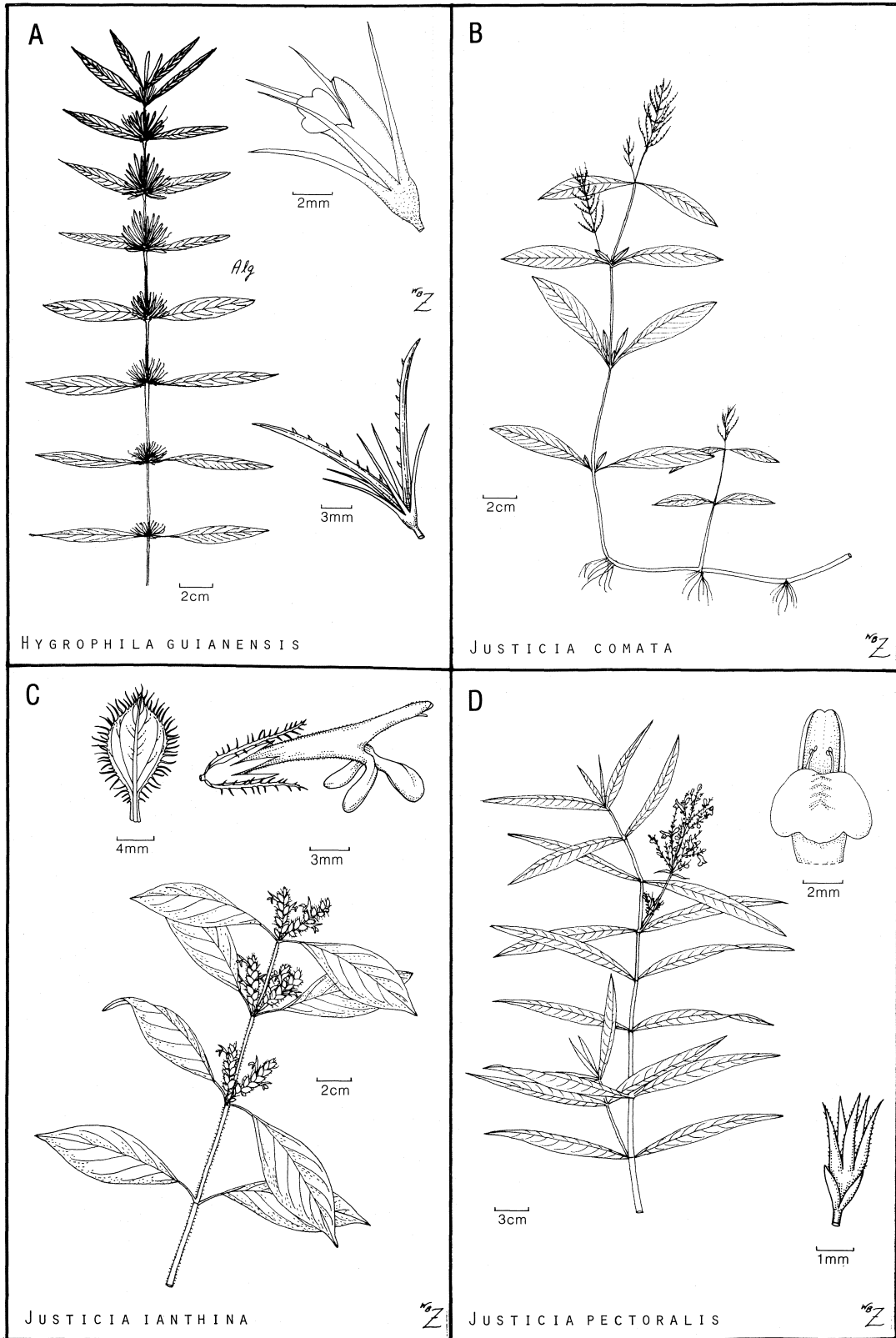
Weedy herbaceous plants. Leaves broadly elliptic, to 8×2.5 cm, the petiole to 2 cm long. Flowers to 1 cm long; corolla light green with pink chevron-like marks. Rare, in the palm plantation. The variety is only known from Río Palenque.

Justicia riopalenquensis Wassh.

Plate 104-B

Semiprostrate herb. Leaves ovate, to 5×3.5 cm, the petiole 2-3 mm long. Inflorescence terminal, spicate, bracteate with subulate bracts. Flowers pink with chevron markings on the lip. Rare, known from a single population along Dodson road. Known only from Río Palenque.





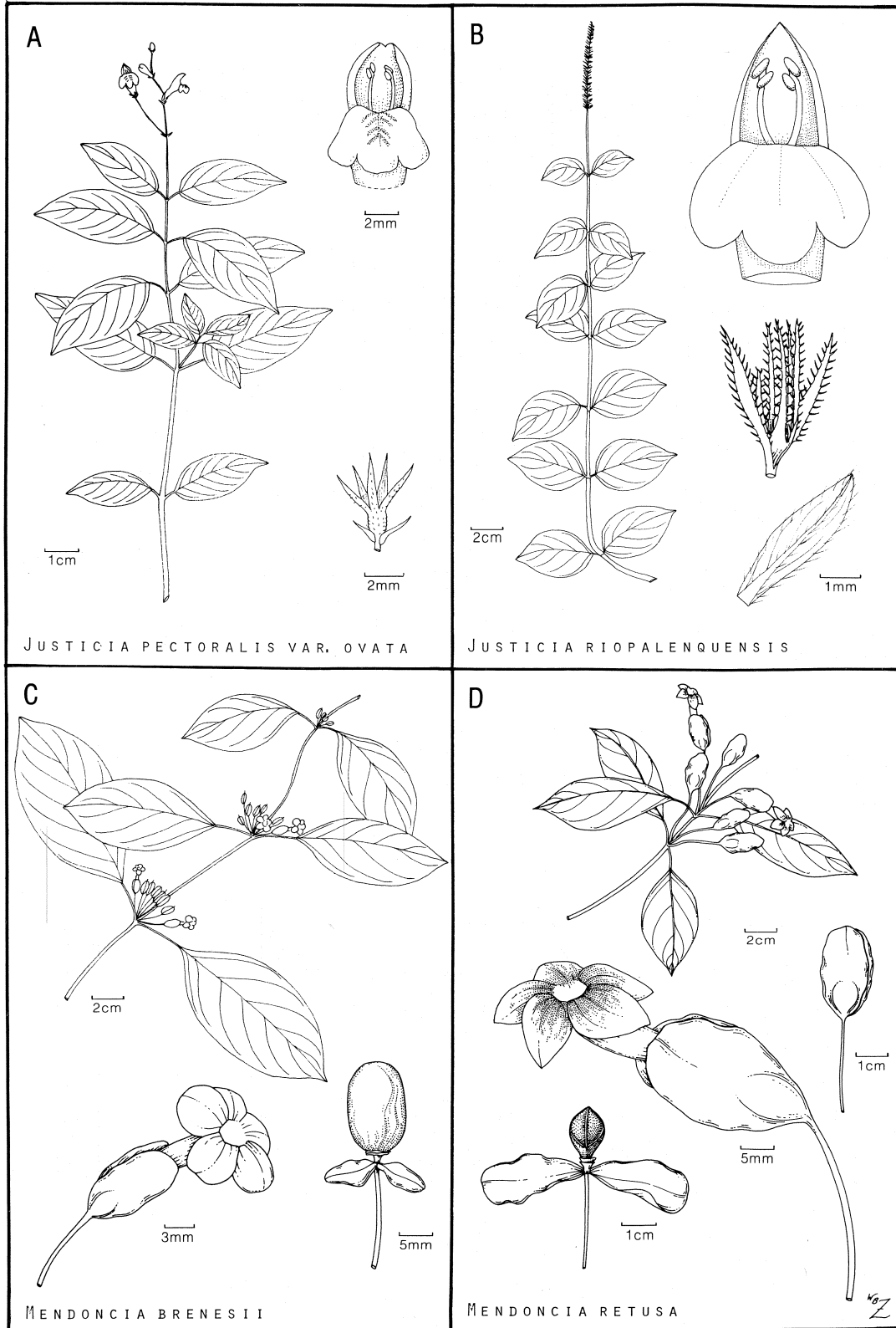


Plate 104

Mendoncia brenesii Standl. & Leonard

Plate 104-C

Vine. Leaves ovate-elliptic, to 15 cm long. Flowers to 1.5 cm long, smaller than *M. retusa* and more per node (usually 7-9), pink. Infrequent, often in cane and forest edges. Previously known from Costa Rica and Panama; the Río Palenque plant is *M. microchlamys* Leonard, previously known only from Colombia, which is probably conspecific with the northern plant.

Mendoncia retusa Turrill

Plate 104-D

Vine. Leaves, elliptic, to 10 cm long. Flowers to 4.5 cm long, white outside, red-brown inside, 2-4 produced per node, the base subtended by 2 large calyx-like floral bracteoles; stamens 4. Fruit black when ripe; subtended by the reflexed bracteoles. Infrequent, in mature forest. Previously reported from southern Mexico to Panama.

***Odontonema strictum** (Nees) Kuntze

Plate 105-A

Shrub ca. 1 m tall. Leaves elliptic, acute to acuminate at the base and apex, 11-15 × 4-6 cm, the petiole less than 1 cm long. Floral bracts minute, subulate. Flowers tubular, ca. 2.5 × 0.5 cm, red; stamens 2. Cultivated near homesites. Southern Mexico to Panama. This species was synonymized with *O. callistachyum* (Schlecht. & Cham.) Kuntze in the Flora of Guatemala but is retained by Wasshausen and in the Flora of Panama.

Pachystachys riedeliana Nees

Plate 105-B

Herbaceous shrub to 2 m tall. Leaves elliptic, 30 cm long, the petioles to 7 cm long. Floral bracts large, expanded, elliptic, 2 cm long, green. Flowers red, 7 × 4 cm. Uncommon, mostly along the river. Flowers in September and October. West Indies and northern South America south to Brazil.

***Pseuderanthemum atropurpureum** (Bull.) Bailey

Plate 105-C

Small woody shrubs to 1 m tall. Leaves and stems glabrous, the leaves 5-7 cm long, the petiole to 1 cm long. Floral bracts small, triangular. Flowers to 1 cm broad, 2 cm long, purple; stamens 2. Cultivated near homesites. Now widespread in tropical America, mostly in cultivation; native to Polynesia.

Pseuderanthemum leptorhachis Lindau

Plate 105-D

Shrub or subshrub 0.5-1.5 m tall. Leaves to 30 or 40 cm long, glabrous, elliptic, the petioles short, to 5 mm long. Inflorescence sparsely branched, the floral bracts small, subulate. Flowers 2 cm long, 1 cm broad, lavender; fertile stamens 2. Infrequent, local in mature forest. Brazil and Ecuador, a trans-Andean disjunction.

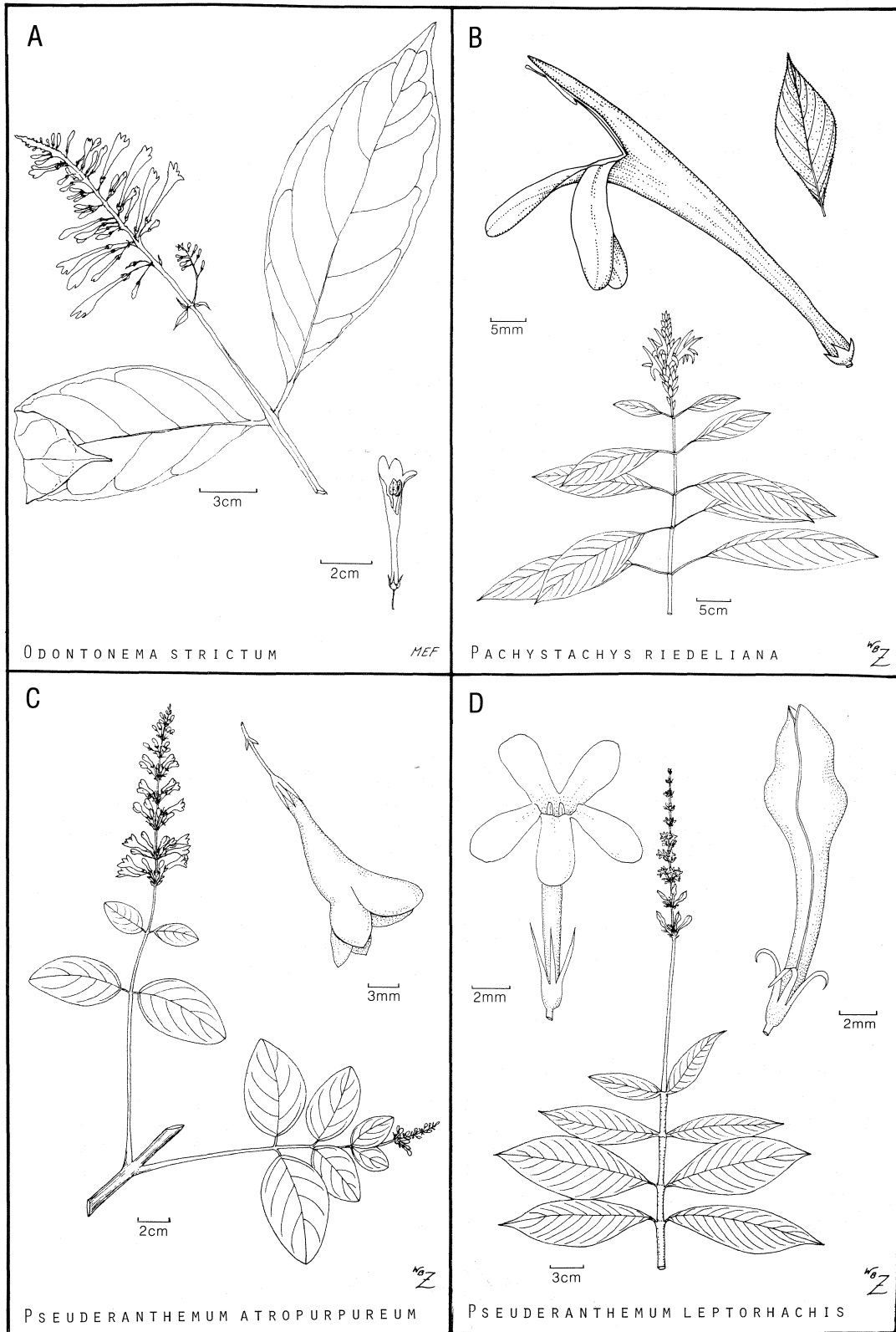


Plate 105

Razisea spicata Oerst.

Plate 106-A

Woody shrubs to 2.5 m tall. Stems and leaves glabrous, the leaves to 15 cm long, elliptic. Inflorescence elongate, spicate; floral bracts small, triangular. Flowers tubular, red, to 2.5 cm long; stamens 2. Common, in mature forest. Costa Rica to Ecuador; this is the first Ecuadorian record.

Common name: "Coral"

Ruellia riopalenquensis Wassh.

Plate 106-B

Herb less than 50 cm tall. Leaves sometimes red-violet beneath, elliptic-ovate, acuminate, acute to obtuse at the base, 4-14 × 2-5 cm, the petiole to 2 cm long. Inflorescence few-flowered, the bracts and bracteoles linear, to 7 mm long. Sepals linear-subulate; corolla funnel-shaped, 2.5-3 cm long, lavender; stamens 4. Common, in mature forest. Known only from the region of Río Palenque.

Sanchesia parviflora Leonard

Plate 106-C

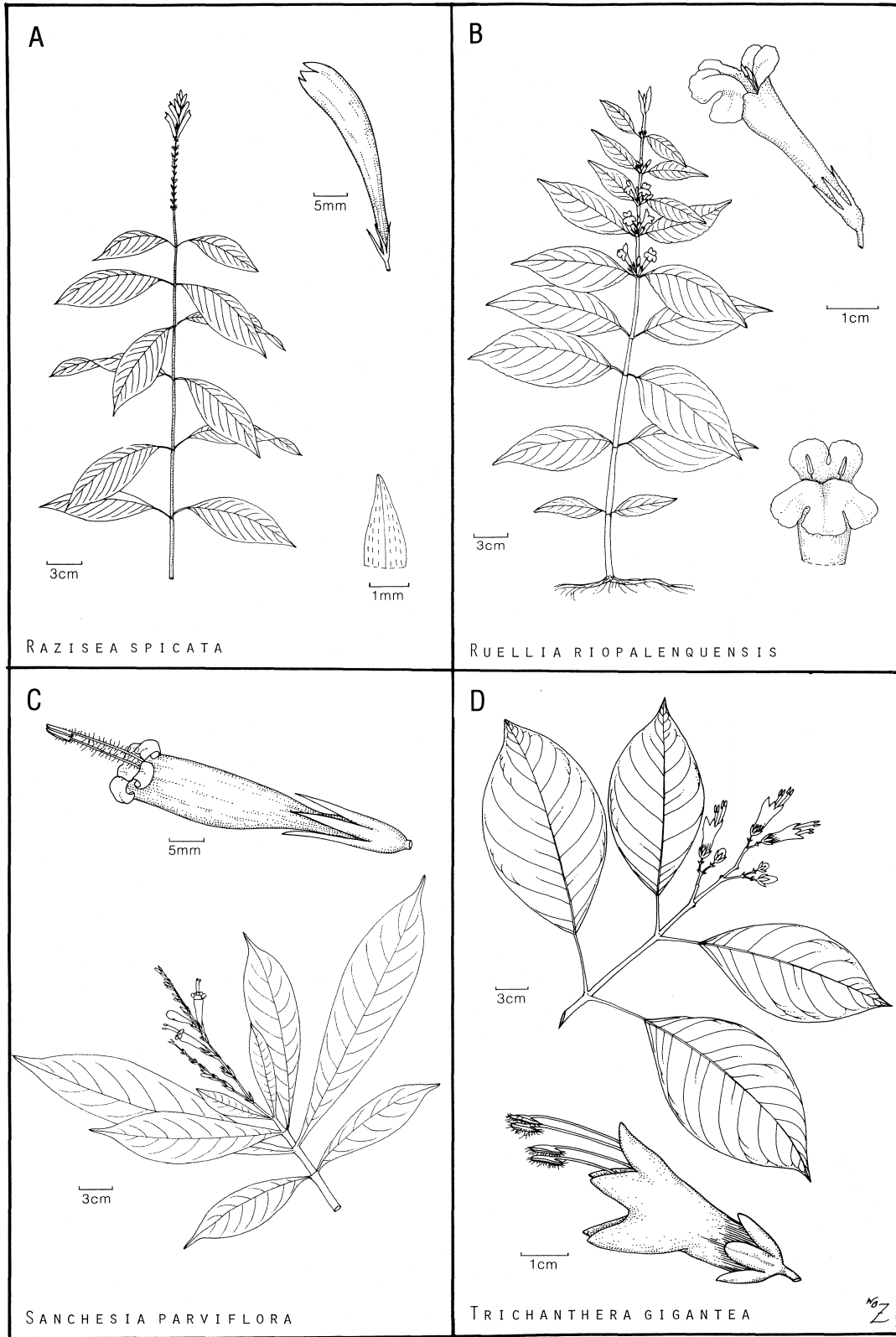
Shrub to 2 m tall. Leaves narrowly obovate-elliptic, long-acuminate, long-tapering at the base to a poorly differentiated petiole. Inflorescence spicate, rather one-sided, bracteate, the bracts of a pair unequal, the shorter subtending a flower; corolla orange (pale scarlet elsewhere); stamens 2. Uncommon and local, in mature forest. Endemic to Ecuador.

Trichanthera gigantea (H. & B.) Nees

Plate 106-D

Small, usually several-stemmed tree ca. 5 m tall. Leaves elliptic, to 17 × 11 cm. Inflorescence paniculately branched, the minute bracts and bracteoles triangular, ca. 2 mm long. Sepals round-tipped, separate almost to the base; corolla ca. 4 cm long and 1.5 cm wide at the mouth, thick-textured, maroon with yellowish lobes; 4 stamens long-exserted. Rare, near ancient homesite, possibly persisting from cultivation. Guatemala to Brazil and Bolivia.

Common name: "Palo de Agua"



AMARANTHACEAE

Herbs, shrubs or vines. Leaves alternate or opposite, simple, without stipules. Bracts of the inflorescence scarious. Flowers usually dry, small, congested, yellow, white or green; stamens 5, usually connate at the base; ovary superior, unilocular, usually with a single ovule. Fruit usually a utricle or nutlet, rarely fleshy.

Key to the species.

1. Leaves alternate; subshrubs or glabrate vines.
 2. Vine or liana without spines; seeds black, arillate *Chamissoa altissima*
 2. Subshrub to 3 m tall with prominent spines in leaf axils; seeds reddish brown, without arils. *Amaranthus spinosus*
1. Leaves opposite; herbs or pilose vines.
 3. Inflorescence an elongate (3-30 cm long) spike.
 4. Fruits with hooked processes; inflorescence 3-15 cm long. *Cyathula achyranthoides*
 4. Fruits without hooked processes; inflorescence 4-30 cm long. *Achyranthes aspera*
 3. Inflorescence head-like (less than 1 cm long) or open and paniculate.
 5. Inflorescence an open panicle *Iresine celosia*
 5. Inflorescence head-like, congested.
 6. Inflorescences sessile in axils of the leaves. *Alternanthera sessilis*
 6. Inflorescence produced on pedicels to 4 cm long.
 7. Inflorescence 9-15 mm wide; sepals pubescent.
 8. Leaves (at Río Palenque) narrowly elliptic; stem puberulous; erect herb. *Alternanthera pubiflora*
 8. Leaves ovate; stem pilose; herbaceous vine *Alternanthera villosa*
 7. Inflorescence 6-7 mm wide; sepals glabrous. *Alternanthera mexicana*

***Achyranthes aspera* L.**

Plate 107-A

Herb to 1 m tall. Leaves opposite, elliptic, 4-10 cm long, acuminate at the base and the apex. Inflorescence elongate, spicate, 4-30 cm long. Fruits ca. 5 mm long, without hooked processes. Locally common, weed in disturbed areas. Pantropical weed.

Common name: "Cadillo"+, "Rabo de Chanco"

***Alternanthera mexicana* (Schlecht.) Hieron.**

Plate 107-B

Herb to 70 cm tall, sprawling in mats. Leaves elliptic, opposite, green or red. Inflorescences on peduncles to 4 cm long. Very common, in mature forest and the palm plantation. This species ranges north to Mexico; this is apparently the first Ecuadorian record.

Common name: "Escances"+

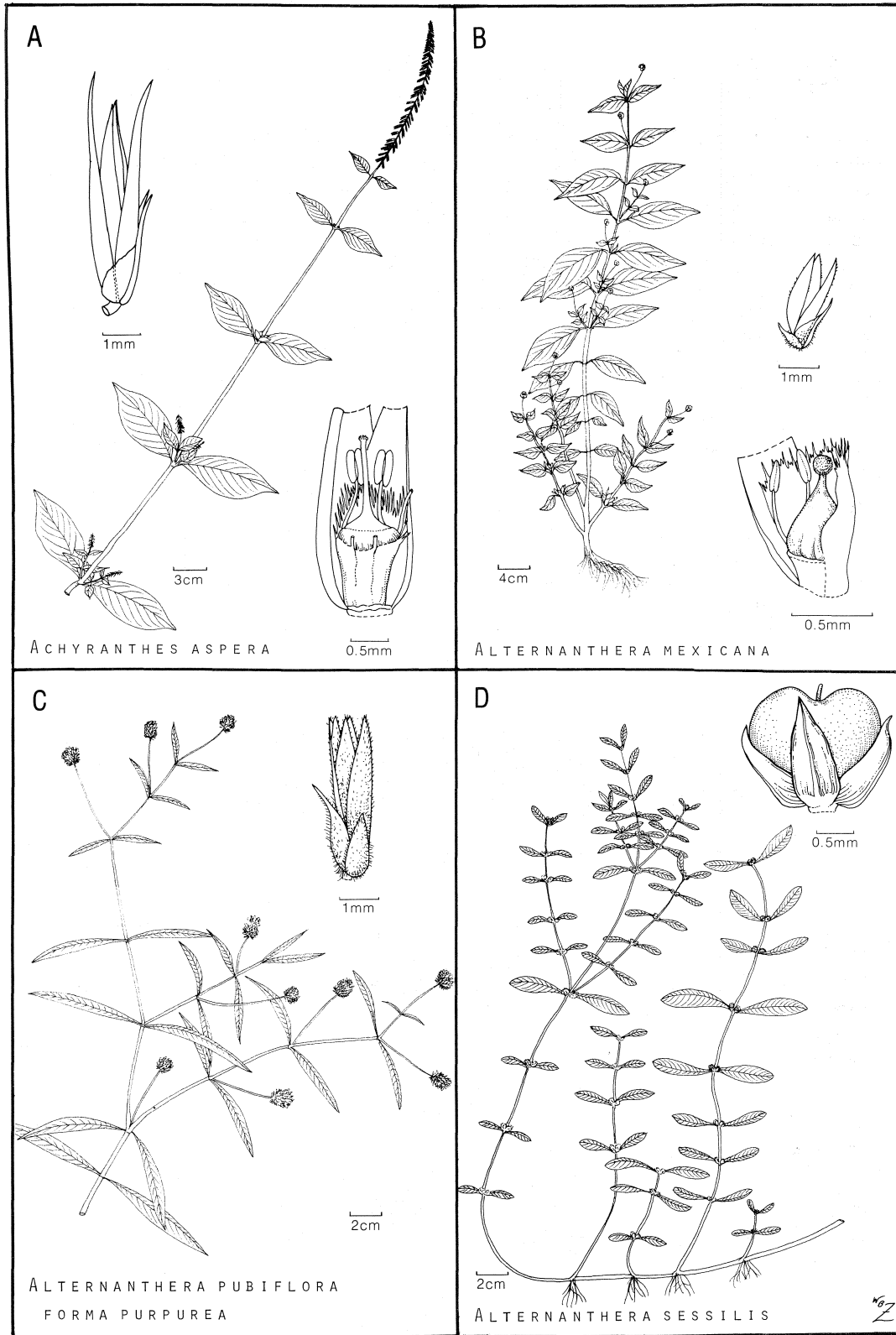


Plate 107

Alternanthera pubiflora (Benth.) Kuntze forma **purpurea** (Standl.) Dodson
& Gentry, comb. nov. Plate 107-C

A. williamsii Standl. forma *purpurea* Standl. Journ. Wash. Acad. Sci.
15:458.1925.

Herb to 60 cm tall, sprawling in mats. Leaves opposite, narrowly ovate, red-violet, to 7 × 1 cm. Inflorescences whitish, 7-8 mm across; peduncles to 4 cm long. Probably escaped, mostly near homesites. Pacific coastal areas of Ecuador and adjacent Peru north (as *A. williamsii*) through Central America to southern Mexico. Svenson's arguments for synonymizing *A. williamsii* with the narrow-leaved, more pubescent, Ecuadorian plant seem well-founded. The Río Palenque population of the species has the red leaves of form *purpurea* Standl. and a new combination is needed if this variant is to be recognized under *A. pubiflora*.

Common name: "Escances Morado"+

Alternanthera sessilis (L.) R. Br.

Plate 107-D

Low prostrate herb. Leaves glabrous, opposite, narrowly obovate, obtuse at the apex, tapering to the base, to 4 × 1 cm. Inflorescences sessile in the leaf axils, whitish, ca. 5 mm across. Common, on rocky beaches and gravel roadways. This species, widespread in tropical America from Honduras to Brazil, may be told from its sessile-inflorescenced relatives by its acute 1-nerved glabrous sepals.

Alternanthera villosa HBK

Plate 108-A

Herbaceous vine, stem pilose with 2 mm long trichomes. Leaves opposite, ovate, acute, rounded at the base, pilose, to 6 × 2.5 cm. Inflorescence pale green, 1.2-1.5 cm across; peduncles to 5.5 cm long. Calyx pubescent. Rare, in second growth along river. Western Ecuador and adjacent Peru, mostly in uplands.

Amaranthus spinosus L.

Plate 108-B

Large subshrub to 3 m tall with spines in the leaf axils. Leaves alternate, glabrous, to 15 cm long. Inflorescence dense, green, the flowers minute. Common, weed in disturbed habitats. Widespread with a nearly cosmopolitan distribution.

Common name: "Bledo"

Chamissoa altissima (Jacq.) HBK

Plate 108-C

Large vine or liana. Leaves alternate, narrowly ovate, glabrous, to 15 × 4.5 cm, the petiole ca. 3 cm long. Inflorescence paniculate, many-flowered, the tiny flowers greenish-white. Common, mostly at forest edge. Mexico to Argentina.

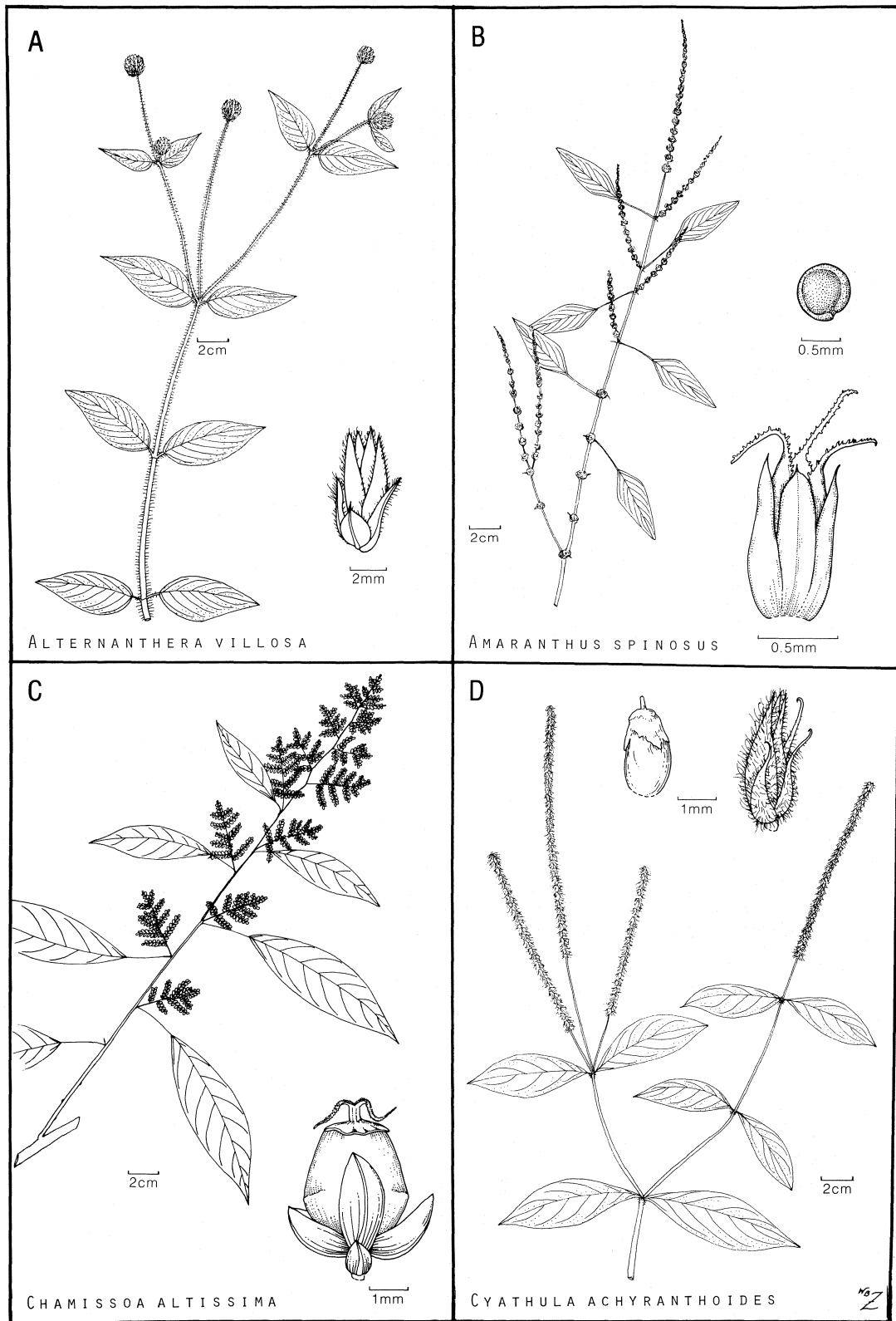


Plate 108

Cyathula achyranthoides (HBK) Moq. in DC.

Plate 108-D

Weedy herb to 1.5 m tall. Leaves opposite, narrowly elliptic, 5-12 cm long, acuminate at the apex and the base. Inflorescence spicate, elongate, to at least 15 cm long. Fruits ca. 5 mm long, catching on clothing by hooked processes. Common, mostly at forest edge. Widespread from Mexico and the West Indies to Brazil.

Common name: "Cadillo Piche de Gato"+

Iresine celosia L.

Plate 109-A

Herb to 30 cm tall. Leaves rhombic-ovate, acute, cuneate at the extreme base, to 4 × 2.5 cm. Inflorescence paniculate, the flowers minute, reddish green. Infrequent, on gravel bars along the river. Widespread in tropical and subtropical America.

Common name: "Camarón"

ANACARDIACEAE

Trees or shrubs. Leaves alternate, simple or compound, without stipules, aromatic. Flowers regular; sepals 3 to numerous, free; petals 3-7 or absent, free; disc present; stamens twice the number of the petals, filaments free; ovary superior, unilocular. Fruit a drupe, often fleshy.

Key to the species:

1. Leaves simple; fruit large (to 10 cm long) *Mangifera indica*
1. Leaves compound; fruit small (to 3 cm long) *Spondias purpurea*

***Mangifera indica** L.

Plate 109-B

Tree to 10 m tall. Foliage dense; leaves entire, glossy green. Flowers in large terminal panicles, greenish-white. Fruits large, yellow. Cultivated in cacao plantation near the river. Cultivated pantropically; native to tropical Asia.

Common name: "Mango"+

***Spondias purpurea** L.

Plate 109-C

Small tree to 4 m tall. Leaves pinnately compound; deciduous during part of the year. Flowers in small axillary racemes, white. Fruits oblong, fleshy, yellow or red. Used as living fence posts throughout the region. Native from Mexico and the West Indies to Brazil and Peru.

Common name: "Ciruelo"+

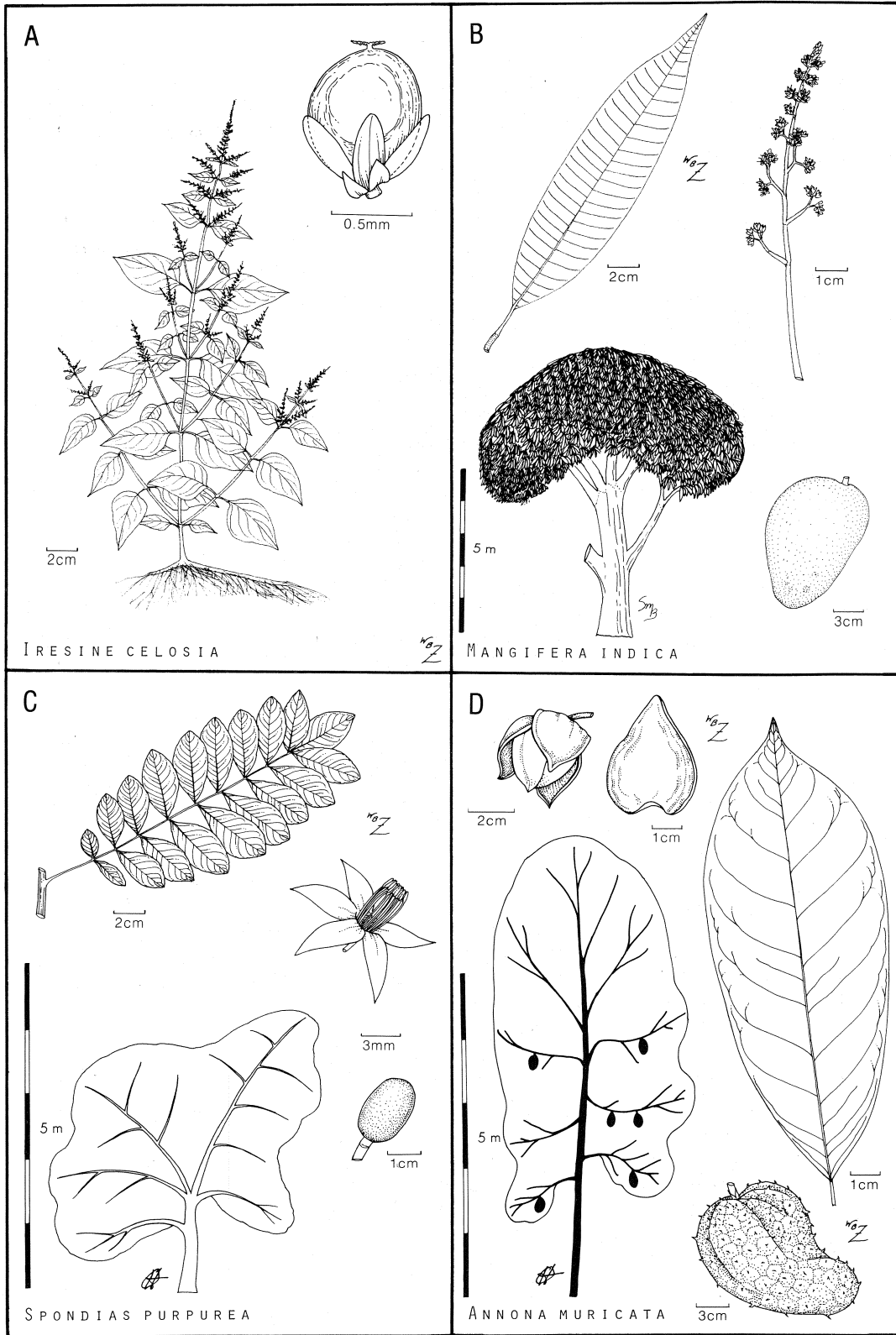


Plate 109

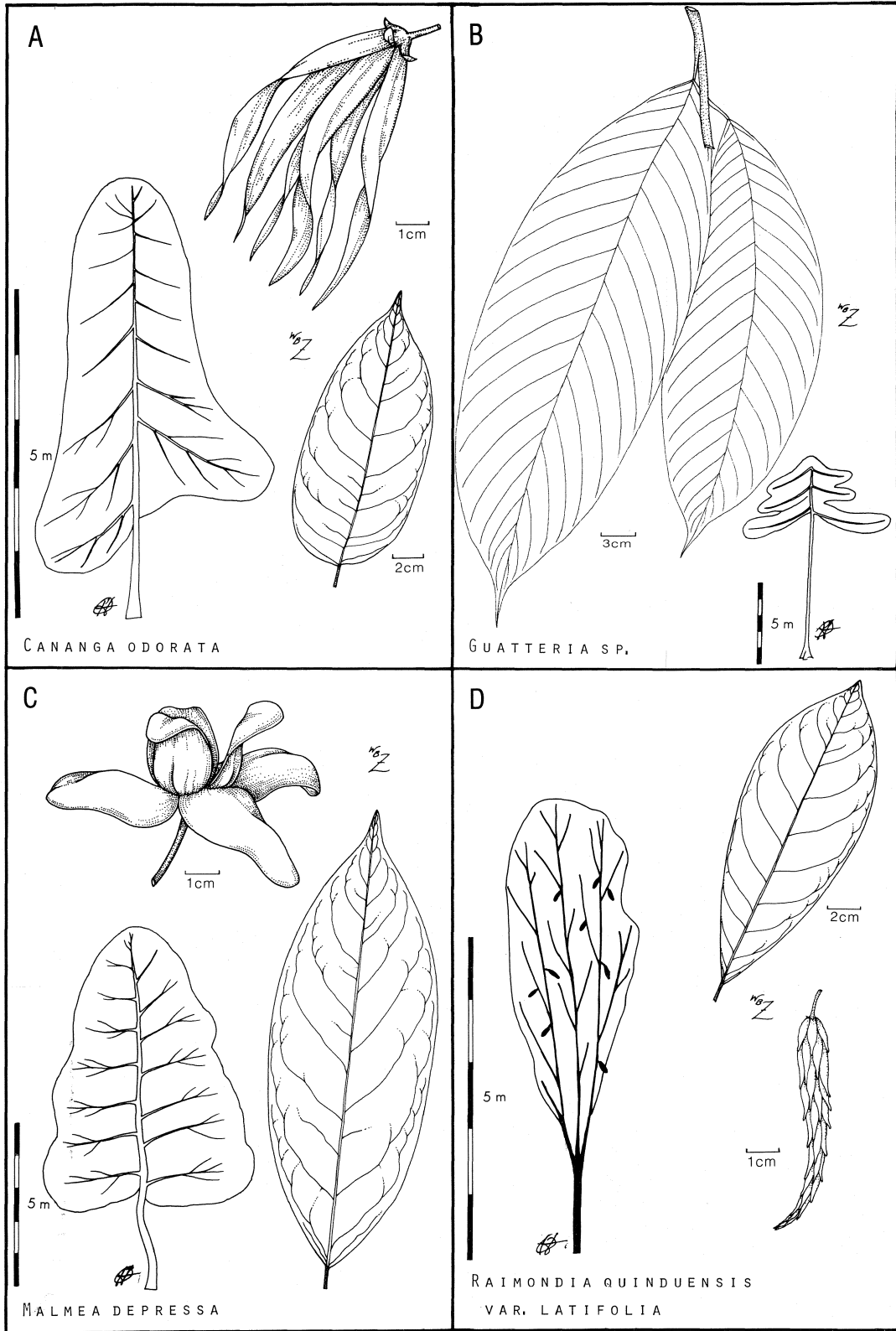


Plate 110

Guatteria sp. (6441)

Plate 110-B

Midcanopy tree to 10 m tall with "myristicaceous" branching. Leaves aromatic, elliptic, abruptly acuminate, obtuse at the base, 30-47 × 15-19 cm, finely puberulous along the veins below, the petiole 1.5-2 cm long. Rare, in mature forest. Known only in sterile condition at Río Palenque and quite unmatched at MO.

Malmea depressa (Baill.) R. E. Fries

Plate 110-C

Medium-sized tree. Leaves to 16 × 5.5 cm, acute at the base and the apex. Flowers green. Fruits composed of a receptacle bearing numerous ellipsoid long-stipitate monocarps. Rare. Southern Mexico to Ecuador; apparently the first record of the genus for Ecuador.

Raimondia quinduensis (HBK) Safford var. **latifolia** (R. & P.) R. E. Fries

Plate 110-D

Small tree to 4 m tall. Leaves oblong to narrowly obovate, abruptly acute at the apex, acute to rounded at the base, 15-18 × 5-9 cm. Flowers greenish-yellow; sepals narrow, more than 4 times as long as wide. Fruits fleshy, elongate, to 12 cm long, yellow. Infrequent, in mature forest. Ecuador and Colombia.

Rollinia mucosa (Jacq.) Baill.

Plate 111-A

Medium-sized tree ca. 20 m tall. Leaves ovate-elliptic, acute. Flowers greenish-yellow, the outer petals forming conspicuous wings. Fruits green, of fused carpels, rough-surfaced with rather blunt tubercles. Uncommon, in mature forest and around old homesites. Venezuela and the West Indies to Peru. *Rollinia jimenezii* Saff. of southern Mexico to Panama (Costa Rica, fide Fries but *R. permensis* Standl. of Panama is indistinguishable) is hardly specifically distinct; Fries appears to have accorded inordinate importance to minor variations in pubescence.

Common name: "Chirimoya"+

Unonopsis magnifolia (R. & P.) R. E. Fries

Plate 111-B

Medium-sized tree to 20 m tall. Leaves large, oblong, to 30 cm long, cordate at the base, red when immature. Fruits composed of a receptacle bearing 4 to 8 ovoid or globose stipitate monocarps, these red when ripe. Infrequent, in mature forest. Endemic to western Ecuador.

Common name: "Candelo"+

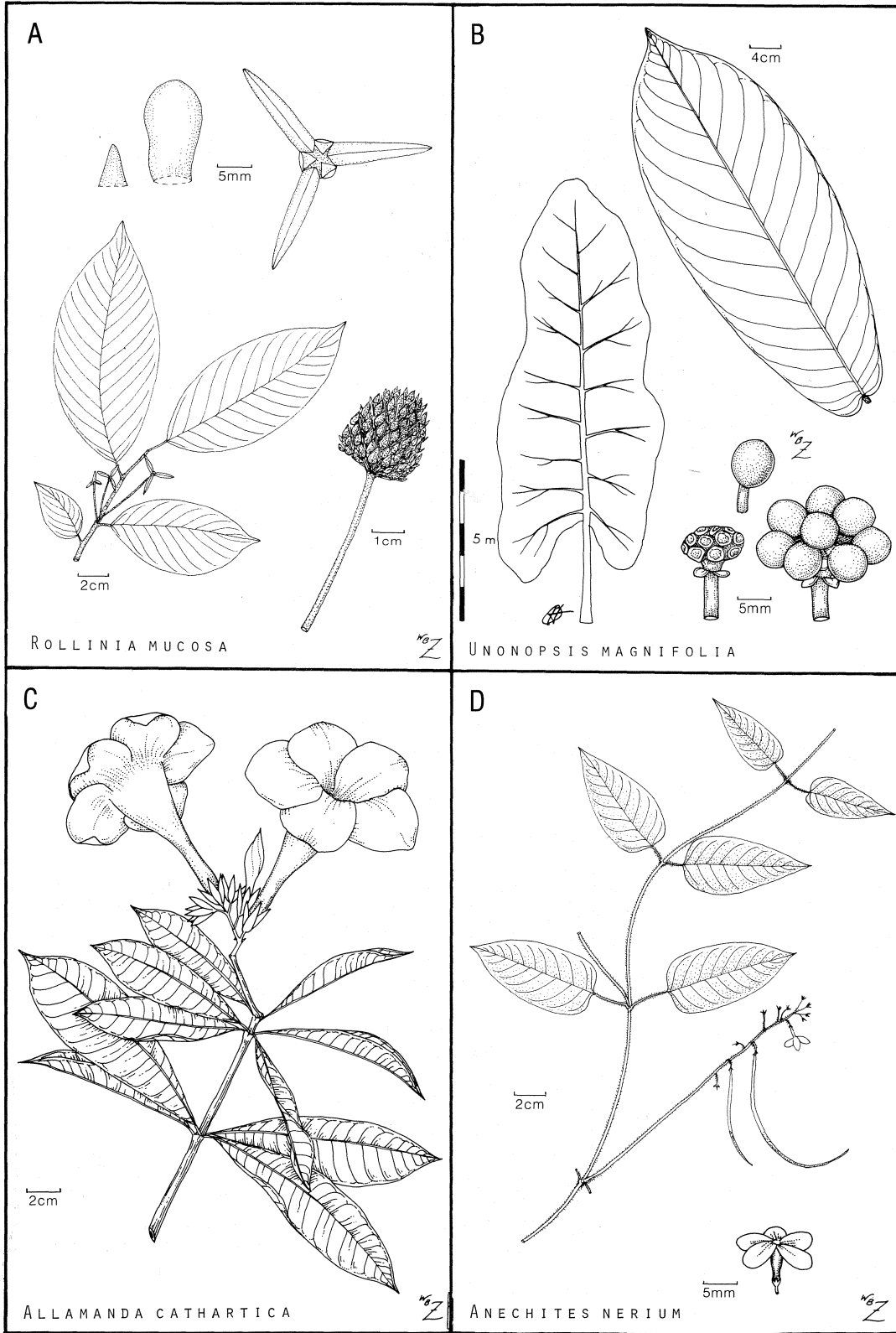


Plate 111

APOCYNACEAE

Herbs, shrubs, vines or trees, usually with milky sap. Leaves usually opposite, entire, usually without stipules. Flowers bisexual, tubular, regular, 5-parted; petals contorted in the bud; stamens as many as the corolla lobes and alternate with them, borne on the corolla tube, the anthers usually sagittate, often appressed to the stigma, forming a cone; pistil of 2 distinct superior ovaries, 1 style, the stigma variously enlarged; corona and pollinia absent. Fruit a follicle, berry, or drupe.

Key to the species.

1. Trees, shrubs or herbs.
 2. Herb; flowers pink or white. *Catharanthus roseus*
 2. Trees or shrubs; flowers white or yellow.
 3. Fruit apocarpous; leaves broadly elliptic; flowers white (sometimes with orange center); native.
 4. Flowers white; leaves to 20 cm long.
 5. Calyx lobes linear, 4-5 mm long; fruit echinate.
 *Stenosolen eggersii*
 5. Calyx lobes rounded-ovate, ca. 2 mm long; fruit smooth.
 6. Anthers tinted blue-green
 *Tabernaemontana amygdalifolia*
 6. Anthers yellow, without blue-green tint
 *Tabernaemontana* aff. *costaricensis*
 4. Flowers with orange center and cream lobes; leaves to 35 cm long. *Bonafousia* aff. *longituba*
 3. Fruit syncarpous; leaves narrowly elliptic to linear; flowers yellow; cultivated. *Thevetia peruviana*
1. Vines.
 7. Flowers white; peduncle with tiny, hooked hairs
 *Anechites nerium*
 7. Flowers yellow, pink, or grey-purple; inflorescence without hooked hairs.
 8. Leaves whorled; flowers large (to 10 cm across), campanulate; fruit echinate, short and thick; cultivated . . *Allamanda cathartica*
 8. Leaves opposite; flowers less than 4.5 cm across, salverform to funnel-shaped; fruit smooth, elongate; native.
 9. Flowers grey-purple, funnel-shaped; leaves cordate.
 *Mandevilla veraguasensis*
 9. Flowers yellowish to pink, salverform; leaves not cordate.
 10. Flowers pink; calyx lobes long-acuminate.
 *Laubertia boisieri*
 10. Flowers yellowish; calyx lobes acute to obtuse.
 11. Leaves acute at apex, chartaceous; nectaries thin at least on the margins, surpassing the ovary
 *Prestonia portobellensis*
 11. Leaves obtuse or rounded at apex, coriaceous; nectaries thick and fleshy, shorter than the ovary
 *Prestonia rotundifolia*

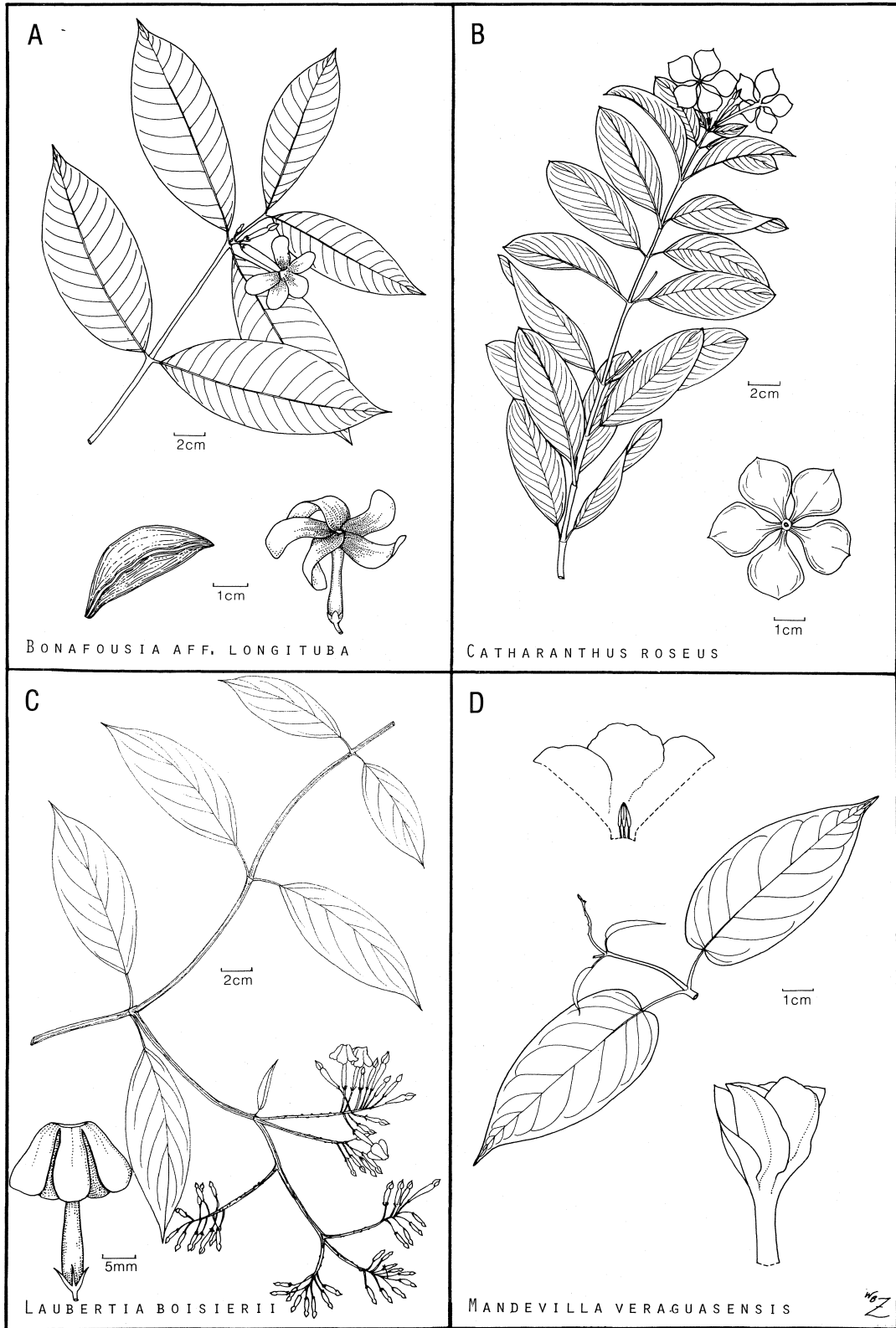


Plate 112

***Allamanda cathartica** L.

Plate 111-C

Vine. Leaves whorled, elliptic-obovate, acute to acuminate at the apex, cuneate at the base. Flowers yellow, campanulate, the tube ca. 6 cm long. Capsule 2-3 cm in diameter, subglobose, echinate. Flowers throughout year. Cultivated around homesites. Probably native only to eastern South America but widely cultivated and escaped.

Common name: "Bejuco de San Jose"

Anechites nerium (Aubl.) Urb.

Plate 111-D

Slender herbaceous vine, conspicuously pubescent; trichomes of the inflorescence hooked, those of the upper surface of the leaf with enlarged multicellular bases. Leaves ovate, acute to acuminate, obtuse to subcordate at the base, to 9 × 4 cm. Flowers small, white, funnel-shaped, the tube 4 mm long, the lobes ca. 6 mm long. Follicle 1-seeded by abortion, prolonged into a sterile barbate tip. The plant sticks to clothing in the fashion of the North American bedstraw. Uncommon and local, at forest edge. Panama and the West Indies to Ecuador.

Bonafousia aff. **longituba** Markgr.

Plate 112-A

Small tree, 3-4 m tall, with profuse white latex. Leaves elliptic, acute to acuminate, cuneate at the base, to 27 × 8 cm. Inflorescence axillary, few-flowered. Calyx lobes oblong, ca. 2 mm long; corolla salverform, cream with an orange center, the tube slightly larger near the base; stamens included. Fruit apocarpous, fleshy, each follicle acute, 4-4.5 × 2 cm. Uncommon and local, in mature forest. Identification is tentative; our species (whatever its correct name) also occurs in eastern Panama and upper Amazonia.

***Catharanthus roseus** (L.) G. Don

Plate 112-B

Herbs with milky sap. Leaves obovate-elliptic, apiculate, cuneate to attenuate at the base, less than 5 cm long. Inflorescence sessile, terminal, few-flowered. Calyx lobes subulate, mostly 3-4 mm long, corolla white or pink, salverform. Follicles paired, linear, longitudinally ridged, less than 3 cm long. Cultivated around homesites. Native to Madagascar, widely cultivated and introduced in the tropics and subtropics.

Laubertia boisieri Standl.

Plate 112-C

Large vine. Leaves elliptic, acute to acuminate at the apex, cuneate at the base, to 12 × 4.5 cm. Inflorescence apical, pendent from hanging branches. Calyx lobes elongate and setaceous-tipped, corolla pink, salverform. Rare, at forest edge. Ecuador and Peru, on both sides of the Andes.

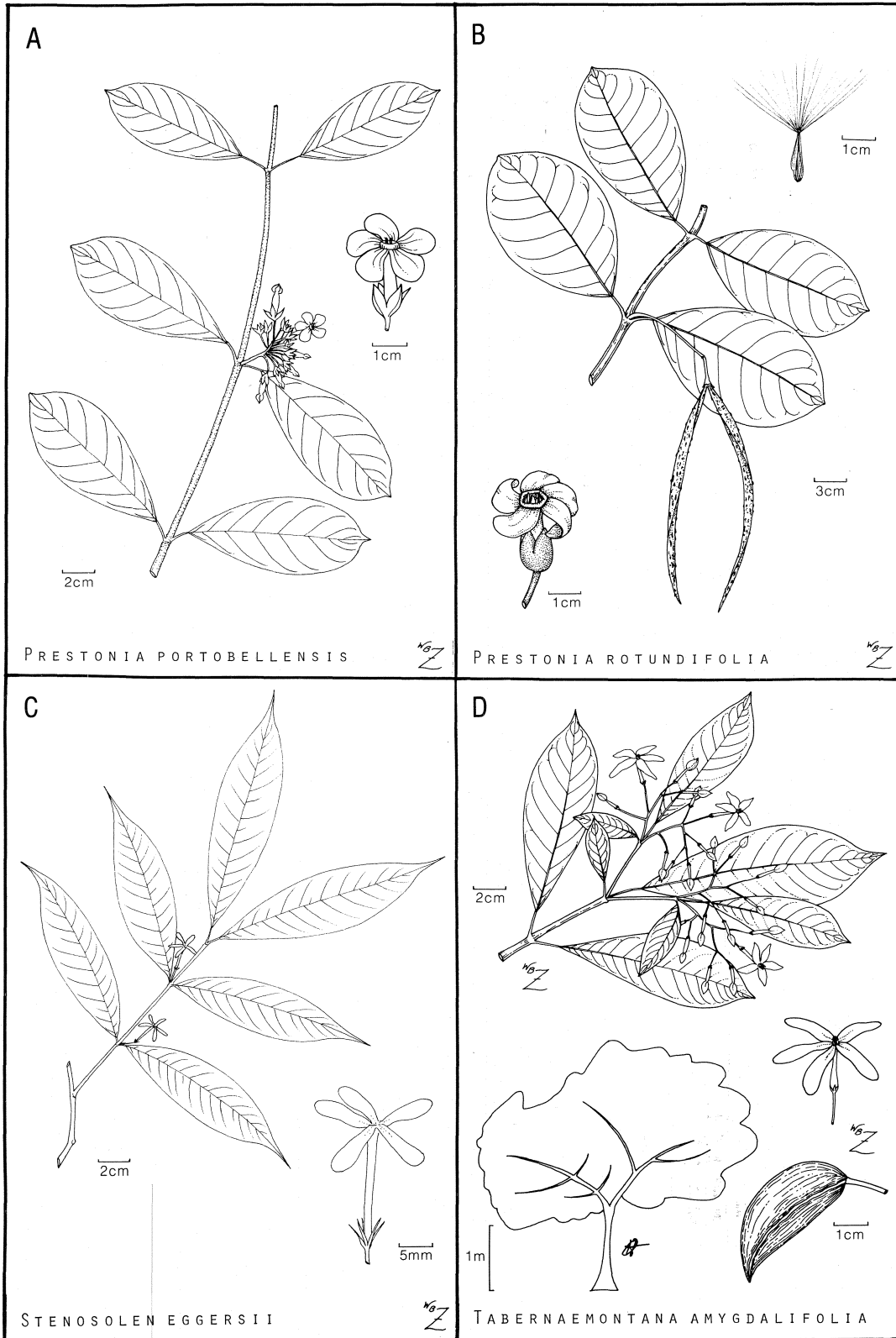


Plate 113

Mandevilla veraguasensis (Seem.) Hemsl.

Plate 112-D

Large vine with milky sap. Leaves oblong-ovate, acute to short-acuminate at the apex, cordate at the base, to 10 × 4 cm, with conspicuous tufts of trichomes in the axils of the secondary nerves beneath. Inflorescence racemose, few-flowered; calyx lobes ovate, obtuse, ca. 5 mm long; corolla greyish-purple with a yellow center, funnel-shaped, ca. 6 cm long. Follicles unknown. Rare, in mature forest along entrance road 100 m from building. Costa Rica to northwestern Venezuela and western Ecuador.

Prestonia portobellensis (Beurl.) Woodson

Plate 113-A

P. peregrina Woodson

Vine with non-corky stem. Leaves elliptic, acute, chartaceous. Calyx lobes narrowly triangular, 10-13 mm long; corolla tubular with salverform lobes, yellow with purple markings at the base of the lobes and with a yellow ring around the mouth of the tube, with 5 epistaminal appendages, the nectaries thin-margined. Follicles slender with numerous comose seeds. Uncommon, in mature forest. Ranges north to southern Mexico. Ecuadorian *P. peregrina* does not seem separable from *P. portobellensis*.

Prestonia rotundifolia K. Schum. ex Woodson

Plate 113-B

Large vine with somewhat corky stem. Leaves coriaceous, obovate-elliptic, obtuse at base and apex, ca. 15 × 10-12 cm. Inflorescence bracteate. Flowers yellow; calyx lobes triangular, 10-15 mm long; corolla salverform, with 5 epistaminal appendages, the tube ca. 1.5 cm long, with a thickened ring at the apex. Follicles long, slender, with numerous comose seeds about 2 cm long. Infrequent, in mature forest. Endemic to Pacific Ecuador but closely allied to *P. obovata* Standl. of Panama.

Stenosolen eggertii Markgr.

Plate 113-C

Shrub 1-2 m tall. Leaves membranaceous, narrowly elliptic, long-acuminate, to 17 × 4 cm. Calyx lobes linear, 4-5 mm long; corolla white, salverform, the tube 1.5 cm long, the narrow lobes ca. 1 cm long. Follicles thick, echinate. Infrequent, in mature forest. Endemic to western Ecuador.

Tabernaemontana amygdalifolia Jacq.

Plate 113-D

Small tree, 3 to 5 m tall. Leaves obovate, acuminate, tapering to the base, to 17 × 5.5 cm, the petiole to 2 cm long. Inflorescence terminal, paniculate; calyx lobes ca. 2 mm long and wide; corolla white, salverform, the tube 1-1.3 cm long, the lobes ca. 1.5 cm long; anthers half-exserted, tinged blue-green. Fruit thick, acute, 4 cm long, 2 cm in diameter, with a longitudinal ridge on one side. Infrequent, in mature forest. Ranges north to southern Mexico, Colombia and Venezuela, previously unreported for Ecuador. Common name: "Huevo de Berraco"+, "Cojon"

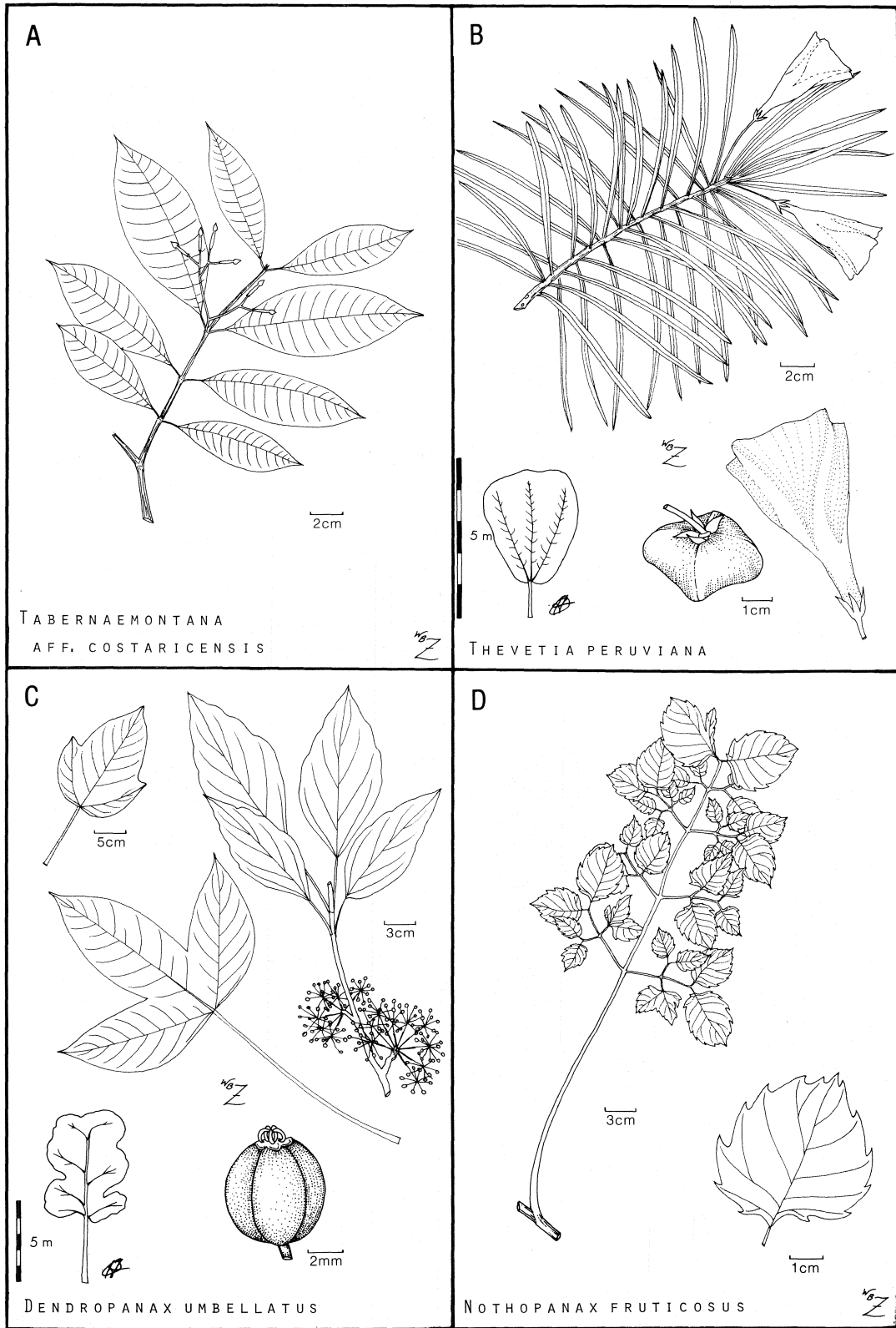


Plate 114

Tabernaemontana aff. costaricensis Markgr.

Plate 114-A

Small tree, similar to *T. amygdalifolia* but with the leaves more elliptic, broadest near the middle, and tapering more abruptly to a cuneate base. The anthers half-exserted and yellow with no blue-green tint. Rare, in mature forest. This may be *T. costaricensis* of which we have seen no specimens. Based on Markgraf's key, the Costa Rican species seems closest; it is allied to *T. amygdalifolia*, but has no description of the anther color.

***Thevetia peruviana** (Pers.) K. Schum.

Plate 114-B

Shrub or small tree, to 4 m tall. Leaves very narrowly elliptic, to 12 cm long. Flowers yellow; corolla to 8 × 6 cm. Fruit fleshy and syncarpous. Cultivated around homesites. Probably native to Mexico but widely cultivated throughout the tropics.

Common name: "Chirea"

ARALIACEAE

Trees or shrubs, sometimes epiphytic. Leaves alternate, simple or palmately or pinnately compound, with prominent stipules. Flowers in umbels, 5-parted; stamens as many as the petals and alternate with them; ovary inferior. Fruit a berry.

Key to the species.

1. Leaves bipinnately compound; cultivated shrub . . . *Nothopanax fruticosus*
1. Leaves simple or palmately compound; native trees, treelets, or epiphytic shrubs.
 2. Leaves palmately compound; umbels of inflorescence many, racemously arranged.
 3. Leaflets evenly distributed in a whorl; umbels of the inflorescence open, flowers on pedicels 4-5 mm long, white *Schefflera sphaerocoma*
 3. Leaflets arranged in a whorl but with one leaflet erect from the center of the whorl; umbels of the inflorescence congested, capitate, flowers sessile, red *Schefflera quinduensis*
 2. Leaves simple; umbels of inflorescence few, umbellately arranged *Dendropanax umbellatus*

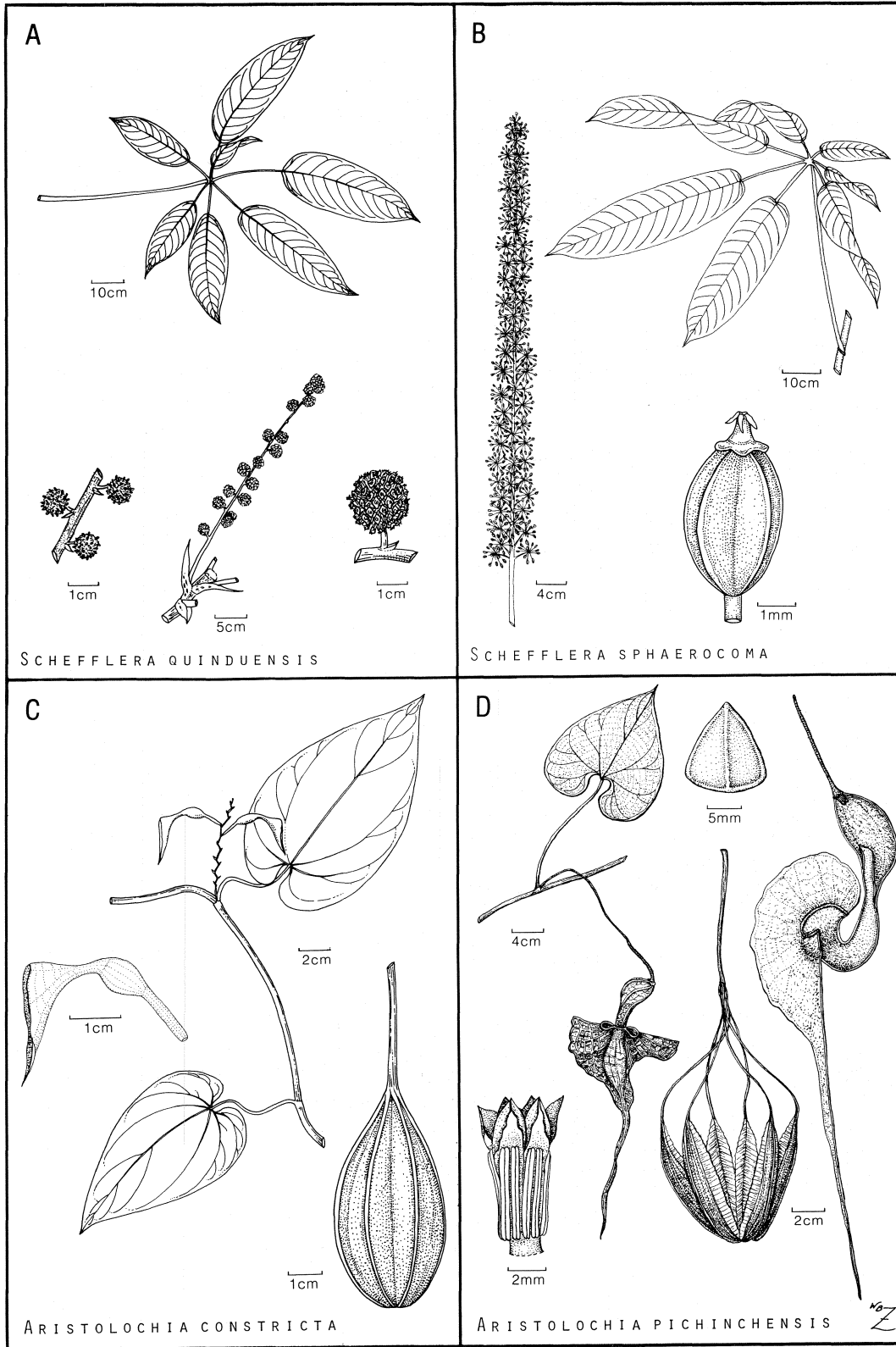


Plate 115

Dendropanax umbellatus (R. & P.) Decne. & Pl.

Plate 114-C

Small tree to 8 m tall. Mature leaves simple, to 25 cm long, 3-nerved from the base, subacute at the apex, basally cuneate. Immature leaves deeply 3-lobed, midlobe to 40 cm long, lateral lobes to 20 cm long. Flower cluster 2 cm in diameter, 3-4 cm in diameter in fruit; petals caducous; stamens white. Infrequent and rather local, in mature forest. Panama to Peru. Following Macbride (Flora of Peru), *D. umbellatus* differs from *D. arboreus* (L.) Decne. & Pl. primarily in the conspicuously articulated peduncles which are clearly evident in the Río Palenque plant. The leaves of the Río Palenque plant are larger, more coriaceous, more prominently veined beneath, and more conspicuously 3-veined from the base than in *D. arboreus*; the umbels of the inflorescence of this plant are themselves umbellately arranged unlike those of *D. arboreus* which have a racemose arrangement of umbels. The Ecuadorian plant is perhaps closer to *D. stenodontis* (Standl.) A. C. Sm., a common small Panamanian tree or shrub which has articulated peduncles and coriaceous often strongly 3-nerved leaves with prominent venation beneath.

***Nothopanax fruticosus** (L.) Miq.

Plate 114-D

Shrub. Leaves bipinnate; leaflets sharply serrate, to 4 cm long and wide. Cultivated around homesites. Probably native to Malaya; cultivated throughout the tropics.

Common name: "Pestaña de Viejo"+

Schefflera quinduensis (HBK) Harms

Plate 115-A

Epiphytic shrub. Leaves palmately compound, 8-9-foliolate, one of the leaflets erect from the center of the leaflet whorl, the leaflets elliptic-oblong, acuminate, truncate to broadly subcordate at the base, to 50 × 17 cm, minutely lepidote, otherwise glabrous, the petiolules to 16 cm long. Inflorescence branches racemiform with numerous capitate flower clusters, each 5-6 mm in diameter with a peduncle ca. 5 mm long, each head with 50 or more minute wine-red flowers with white stamens. Fruiting inflorescence with the heads ca. 1.5 cm across, the individual fruits ca. 5 mm long. Rare, in mature forest. Western Ecuador and Colombia.

Schefflera sphaerocoma (Benth.) Harms

Plate 115-B

Schefflera multiflora Cuatr.

Epiphytic shrub. Leaves palmately compound, 7-foliolate, the leaflets narrowly ovate-oblong, acuminate, truncate at the base, ca. 30 × 12 cm, almost completely glabrous; petiolules ca. 2 cm long, sparsely sericeous with appressed trichomes. Inflorescence a raceme compounded of several branches of racemosely arranged umbels, each branch ca. 30 cm long with the ultimate umbels ca. 10-12-flowered, the flowers ca. 2 mm long, white. Rare, in mature forest. Panama to Pacific Ecuador.

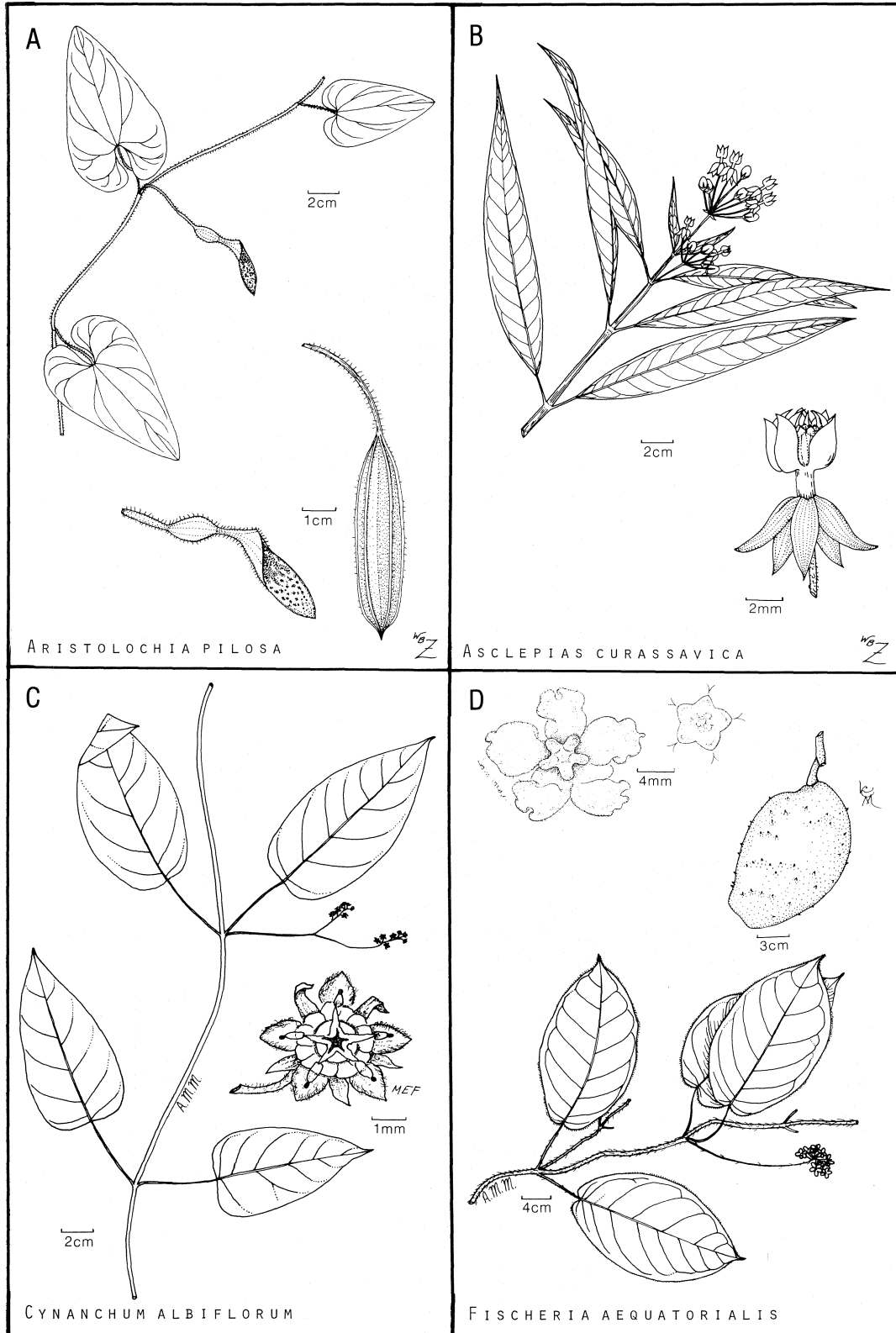


Plate 116

ARISTOLOCHIACEAE

Vines. Leaves simple, alternate, entire, petiolate, often conspicuously cordate, without stipules or tendrils. Flowers tubular, zygomorphic, luridly colored and foetid, trumpet or bell-like. Fruits pendent, forming a hanging basket from which the thin winged seeds are shaken.

Key to the species.

1. Stem and petioles pilose with long (to 1 mm) spreading hairs
 *Aristolochia pilosa*
1. Stem and petioles puberulous with subappressed trichomes (macroscopically glabrate).
 2. Flowers large (more than 15 cm long) with a long, filiform appendage; leaves glabrate beneath, with appressed trichomes along the veins when young, broadly ovate (as broad as long)
 *Aristolochia pichinchensis*
 2. Flowers small (about 5 cm long), not appendaged; leaves densely puberulous beneath, ovate (longer than broad)
 *Aristolochia constricta*

***Aristolochia constricta* Griseb.**

Plate 115-C

Vine. Leaves ovate, cordate, densely puberulous beneath. Inflorescence jointed. Flowers small, the floral tube not widely flared, without an elongate appendage at its apex, green outside, yellow with red flecks inside. Common, in mature forest. North to Nicaragua, also on the Lesser Antilles.

***Aristolochia pichinchensis* H. Pfeifer**

Plate 115-D

Large vine. Leaves broadly ovate, deeply cordate, glabrate beneath. Flowers giant (to 20 cm long), maroon and cream with a long pendent filament. Uncommon, at the forest edge. Known only from western Ecuador. The only large-flowered species at Río Palenque.

***Aristolochia pilosa* HBK**

Plate 116-A

Herbaceous vine. Stem and petiole pilose with brownish hairs. Leaves ovate, cordate, softly pilose beneath. Flower small, yellow-green blotched with maroon, with black markings. Uncommon, in disturbed areas. Widespread in tropical America, north to southern Mexico.

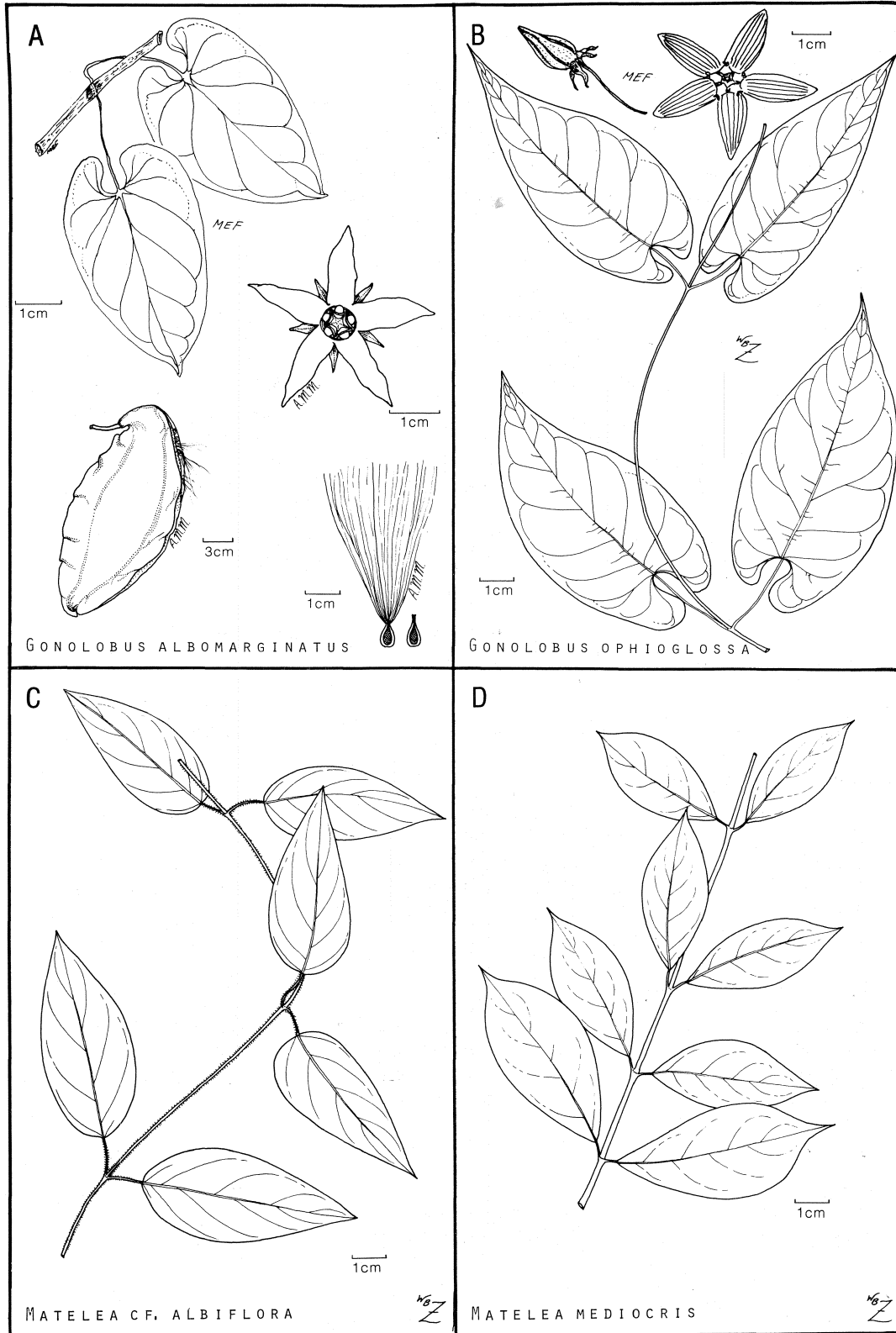


Plate 117

ASCLEPIADACEAE

Perennial herbs or vines with milky sap. Leaves simple, entire, opposite, with stipules. Flowers in umbels or cymes; sepals 5; petals 5; stamens or petals forming a corona; stamens 5, the anthers united to form a cone which is attached to the stigma; pollen united into waxy pollinia; the ovary superior, carpels 2. Fruit a follicle, the seeds with a tuft of silky hairs at one end. At Río Palenque rarely found with flowers or fruit.

Key to the species.

1. Erect herb; flowers red-orange *Asclepias curassavica*
1. Vines; flowers white to green.
 2. Stems conspicuously pubescent.
 3. Leaves cordate at the base, more than 8 cm long.
 4. Fruit unwinged; flowers white, corolla lobes conspicuously crispate *Fischeria aequatorialis*
 4. Fruit with conspicuous wings; flowers green, corolla lobes not crispate *Gonolobus albomarginatus*
 3. Leaves rounded at the base, less than 7 cm long.
 5. Leaves ovate, truncate at the base; drying grayish above and below; stem pilose *Matelea* cf. *albiflora*
 5. Leaves elliptic, obtuse to acute at the base; drying conspicuously yellowish-green below; stem appressed puberulous *Matelea mediocris*
 2. Stems glabrous.
 6. Leaves deeply cordate at maturity. *Gonolobus ophioglossa*
 6. Leaves truncate at the base.
 7. Leaves broadly ovate or elliptic; to 30 cm long *Cynanchum albiflorum*
 7. Leaves narrowly ovate; to 7 cm long . . . *Sarcostemma clausum*

***Asclepias curassavica* L.**

Plate 116-B

Erect, weedy herb, to 1 m tall. Leaves entire, glabrous, lanceolate, to 15 cm long. Inflorescence terminal, cymose-umbellate; petals red-orange; corona yellow. Fruit an erect capsule dehiscent on one side. Rare, in disturbed areas. Florida, the West Indies and Mexico south throughout tropical South America.

Common name: "Viborana"

***Cynanchum albiflorum* (Urb.) Woodson**

Plate 116-C

High-climbing, glabrous vine. Leaves large, to 30 cm long, ovate, acute, truncate at the base. Flowers greenish-white, small. Fruits inflated, to 20 cm long, unwinged. Infrequent, mostly on trunks of young balsa trees. Ranges from Peru to Venezuela, mostly east of the Andes.

***Fischeria aequatorialis* Spellman**

Plate 116-D

Large vine. Stems and leaves conspicuously pubescent. Leaves oblong-elliptic, cordate at the base, pilose. Flowers greenish-white, flecked with brown. Uncommon, in tree tops at forest edge. Endemic to western Ecuador.

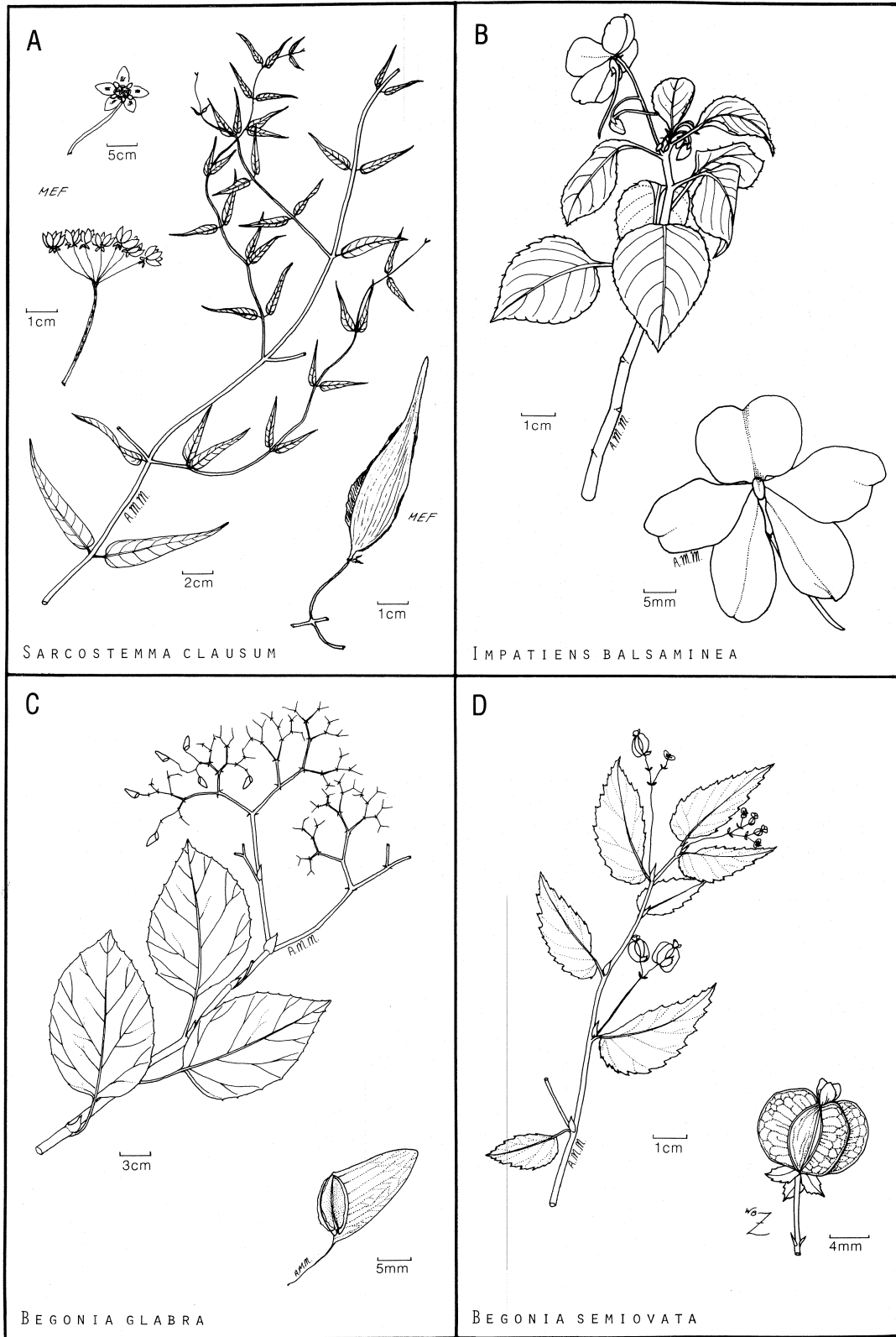


Plate 118

Gonolobus albomarginatus (Pittier) Woodson

Plate 117-A

Large vine. Stems conspicuously yellow-pubescent. Leaves ovate to oblong-ovate, acuminate, deeply cordate, to 13 cm long. Flowers green, ca. 3 cm in diameter. Fruits flattened, to 30 cm long with longitudinal wings. Rare, in mature forest. Ranges north to Panama.

Gonolobus ophioglossa Woodson

Plate 117-B

Herbaceous vine. Stem glabrate. Leaves narrowly oblong-elliptic to narrowly ovate, acuminate, distinctly cordate at the base, glabrous, 9-13 × 3-6 cm. The Río Palenque material is sterile. Flowers (in Panama) green, 3-4 cm in diameter. Rare, in mature forest. Previously known only from Panama.

Mateleia cf. albiflora (Karst.) Woodson

Plate 117-C

Slender vine. Stem finely but conspicuously pilose. Leaves ovate, acute, truncate at the base, to 7 × 3.5 cm, drying greenish-gray. Rare, along the river. Otherwise known from northern Venezuela and Colombia. The generic placement of the sterile Río Palenque collection is tentative.

Mateleia mediocris Woodson

Plate 117-D

Slender vine. Stem appressed puberulous. Leaves elliptic, acuminate, acute to obtuse at the base, to 7 × 3.5 cm, drying light yellow-green beneath and dark greenish-gray above. Flowers (in Panama) green with darker venation, 8-9 mm in diameter, with lobes reflexing. Rare, along Cayman estero. Panama to Guyana; the first record for Ecuador.

Sarcostemma clausum (Jacq.) R. & S.

Plate 118-A

Glabrous vine, noticeably grayish when fresh. Leaves narrowly ovate, acuminate, rounded at the base, to 7 × 1.5 cm. Inflorescence an axillary umbel. Flowers greenish-white, ca. 1 cm in diameter. Fruits terete, smooth, ca. 6 cm long and 1 cm wide. Uncommon and local, forming dense patches on weeds in frog pond along the entrance road during the dry season. Mexico and the West Indies to Argentina. (Fertile material illustrated from Panama.)