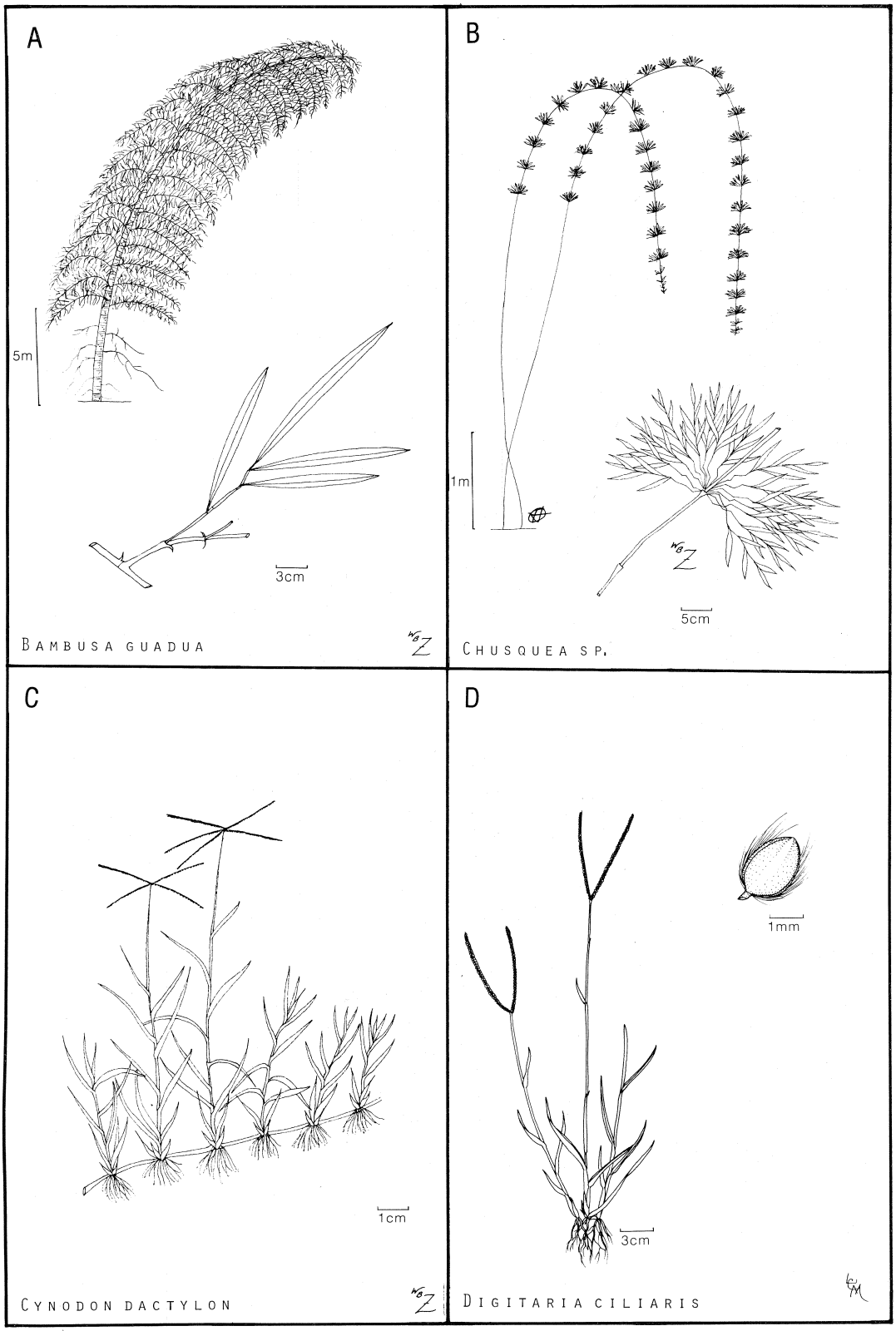
A
5m
3cm
BAMBUSA GUADUA
B
1m
5cm
CHUSQUEA SP.
C
1cm
CYNODON DACTYLON
D
1mm
3cm
DIGITARIA CILIARIS

Plate 49

7. Leaves 2-3.5 cm wide; spikelets pedicellate, the inflorescence a narrow panicle . . . . . *Olyra latifolia*
7. Leaves ca. 1 mm wide; spikelets sessile on a one-sided inflorescence.
   8. Leaves less than 5 cm long; spikelets less than 2 mm long; 4-5 slender racemes per inflorescence . . . . . *Cynodon dactylon*
   8. Leaves more than 5 cm long; spikelets 3 mm long; usually 3 thicker racemes per inflorescence . . . . . *Eleusine indica*

5. Leaves more than 2 mm wide if linear to lanceolate, if broadly lanceolate then less than 2 cm wide and 10 cm long; spikelets with 1 perfect, terminal floret and a sterile or staminate flower beneath it; articulation below the glumes (except *Arundinella).*
   9. Glumes coriaceous; fertile lemma membranaceous; spikelets in pairs, one sessile and fertile, the other pedicellate and staminate . . . . . *Sorghum bicolor*
   9. Glumes membranaceous; fertile lemma chartaceous or coriaceous; spikelets all fertile, not in pairs.
      10. Fertile lemma with a 1 cm long bent awn . . . . . *Arundinella berteroniana*
      10. Fertile lemma awnless or awn-tipped.
         11. Spikelets subtended by bristles; inflorescence an unbranched raceme or panicle, leaves more than 4 cm wide.
            12. Inflorescence a raceme; leaves less than 2 cm wide.
               13. Bristles persistent; short grass to 50 cm tall . . . . . *Setaria geniculata*
               13. Bristles falling with the spikelet; tall grass to 3 m tall . . . . . *Pennisetum purpureum*
            12. Inflorescence a panicle . . . . . *Setaria paniculifera*
         11. Spikelets not subtended by bristles; inflorescence paniculate; leaves less than 3 cm wide.
            14. First glume with a 1 cm long awn . . . *Oplismenus hirtellus*
            14. Glume awnless.
               15. The ultimate rachises spike-like racemes with the spikelets borne close together along one side of the rachis.
                  16. Inflorescence of 2 (very rarely in part 3) opposite racemes, these almost horizontal to the ground . . . . . *Paspalum conjugatum*
                  16. Inflorescence of 3 or more racemes (rarely only 2 in *Paspalum standleyi* but these ascending at a 45° angle).
                     17. Central inflorescence rachis much shorter than the racemes; the inflorescence broader at the top, the ascending racemes at an angle of less than 45° to perpendicular.
                        18. Racemes about 2 cm long . . . . . *Paspalum standleyi*
                        18. Racemes more than 7 cm long.
                           19. Lower glume present . . . . . *Digitaria ciliaris*
                           19. Lower glume absent . . . . . *Digitaria setigera*

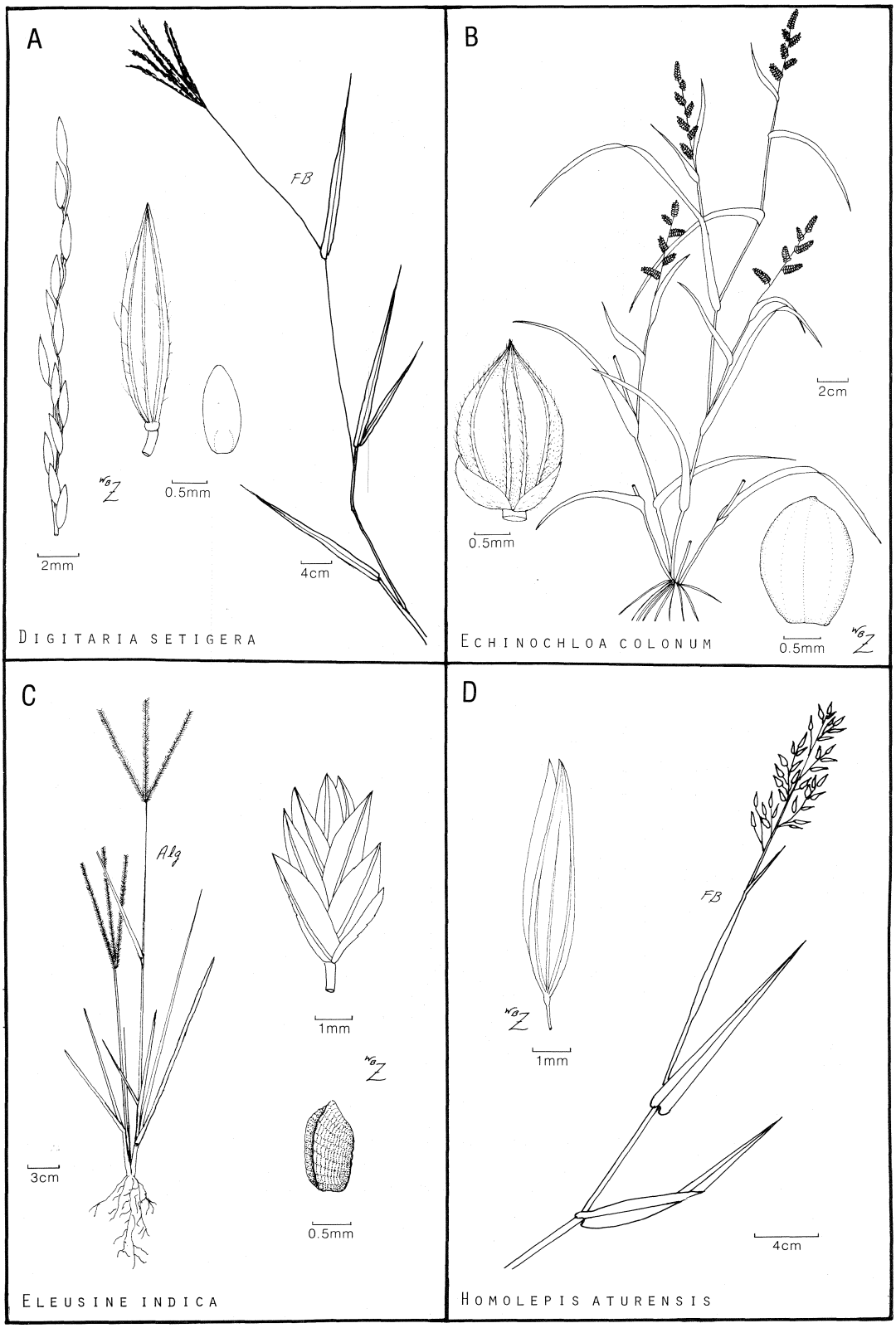
A
FB
0.5mm
2mm
4cm
DIGITARIA SETIGERA
B
2cm
0.5mm
0.5mm
ECHINOCHLOA COLONUM
C
Alg
1mm
3cm
0.5mm
ELEUSINE INDICA
D
FB
1mm
4cm
HOMOLEPIS ATURENSIS

Plate 50

17. Central inflorescence rachis well-developed, longer than the racemes; the inflorescence more or less pyramidal, the racemes usually at an angle of 45°-90° to perpendicular.
    20. Spikelets and rachis hispid with stiff trichomes; leaves less than 7 mm wide . . . . . *Echinochloa colonum*
    20. Spikelets and rachis glabrous or puberulous; leaves more than 8 mm wide.
        21. Longest racemes to 1.5 cm long; leaves narrowly lanceolate . . . . . *Panicum frondescens*
        21. Longest racemes more than 4 cm long; leaves linear.
            22. Spikelets 2-3 mm long . . . . . *Paspalum paniculatam*
            22. Spikelets 1 mm long . . . . . *Paspalum virgatum*
15. The spikelets paniculately arranged, not immediately adjacent to each other, the inflorescence branches not 1-sided. (Main branches superficially 1-sided in *Hymenachne donacifolia*).
    23. Spikelets 6-7 mm long . . . . . *Homolepis aturensis*
    23. Spikelets less than 4 mm long.
        24. Stem with spongy pith; main inflorescence branches somewhat 1-sided, superficially racemose . . . . . *Hymenachne donacifolia*
        24. Stem hollow; main inflorescence branches not at all 1-sided, openly branched.
            25. Spikelets 3 mm long; plant often climbing . . . . . *Lasiacis sorghoidea*
            25. Spikelets 1-2 mm long; plant prostrate or erect.
                26. Low prostrate grass; spikelets less than 1 mm long . . . . . *Panicum trichoides*
                26. Tall erect grass to 2.5 m; spikelets ca. 2 mm long . . . . . *Panicum maximum*

Arundinella berteroniana (Schult.) Hitchc. & Chase Plate 48-D

Plant to 40 cm tall. Leaves 2-3 cm wide. Inflorescence broom-like, to 60 cm long, the racemes slender; lemma with a geniculate awn to about 1 cm long. Locally uncommon, growing on cliffs and rocks along the river in full sun. Mexico and the West Indies to Brazil.

Bambusa guadua H. &. B. Plate 49-A

Guadua angustifolia Kunth

Canes to 20 m tall, with axillary branches without leaves near the ground, armed with straight spines, to 4 cm long, and hooked spines, to 1.5 cm long, the culm internodes hollow. Very common bamboo, in moderately disturbed areas of the forest forming impenetrable thickets. Panama through N. E. South America.
Common name: "Caña brava"+, "Gadúa"

Chusquea sp. Plate 49-B

Unarmed scandent bamboo. Leaves on small branches clustered at nodes, the culm internodes not hollow. Not observed in fertile condition. Infrequent, in mature forest and on the forest edge. Often associated with *Bambusa guadua.*
Common name: "Carrizo"+

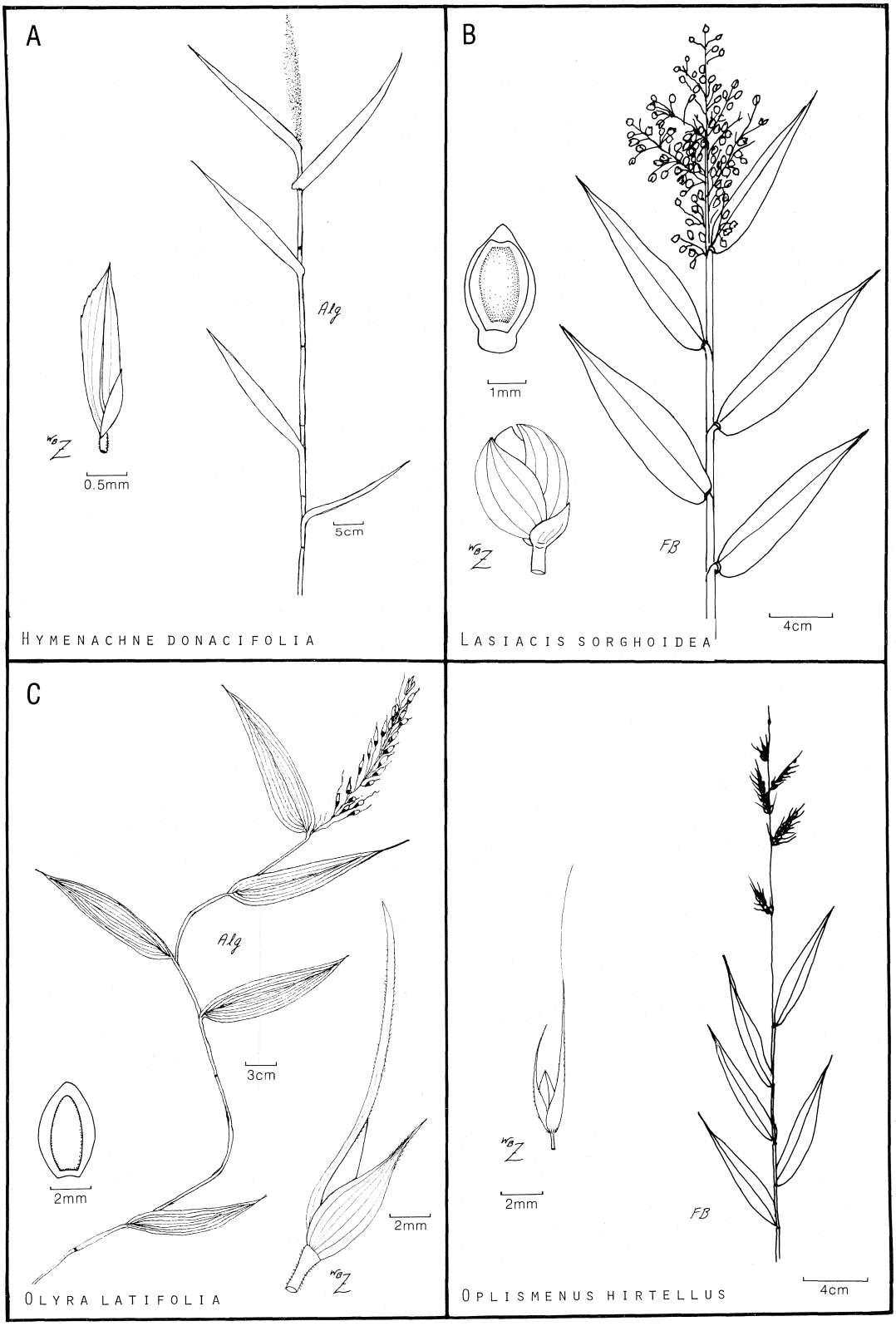
A
Alg
WBZ
0.5mm
5cm
HYMENACHNE DONACIFOLIA
B
1mm
WBZ
FB
4cm
LASIACIS SORGHOIDEA
C
Alg
3cm
2mm
2mm
WBZ
OLYRA LATIFOLIA
WBZ
2mm
FB
4cm
OPLISMENUS HIRTELLUS

Plate 51

Cynodon dactylon (L.) Pers. Plate 49-C

Low, stoloniferous weed to 5 cm tall. Leaves linear, 1 mm wide, 1-2 cm long. Branches of inflorescence 1-sided racemes, the spikelets sessile. Infrequent, among cobblestones along river. Throughout tropical and warm temperate regions of the world. Commonly used as a lawn grass.
Common name: "Zacate de Bermuda", "Bermuda Grass"

Digitaria ciliaris (Retz.) Koel. Plate 49-D

Plant to 30 cm tall. Leaves linear-lanceolate, 5-8 mm wide; about 3 cm long. Inflorescence of slender, ascending racemes, 7-8 cm long, the spikelets almost sessile. Common, on gravel bars in the river bed. Pantropical weed.

Digitaria setigera R. & S. Plate 50-A

Plant to 30 cm tall. Leaves linear, 7-10 mm wide. Inflorescence broom-shaped, the long slender ascending racemes 7-12 cm long, the spikelets sessile. Almost identical to the previous species but the lower glume absent. Common, weed in the lawn and disturbed areas. Native to the Old World; becoming pantropical. This is the first record for Ecuador.
Common name: "Grama"

Echinochloa colonum (L.) Link Plate 50-B

Plant to 90 cm tall. Leaves linear, 4-6 mm wide. Inflorescence pyramidal, the lateral racemes one-sided, simple, 0.6-1.5 cm long, the spikelets sessile. Common, among cobblestones along the river. A pantropical weed.

Eleusine indica (L.) Gaertn. Plate 50-C

Plant to 30 cm tall. Leaves linear, to 12 cm long, ca. 1 mm wide, the usually 3, long, dense racemes 4-6 cm long, the spikelets sessile. Infrequent, on gravel bars in the river. Cosmopolitan weed of tropical and temperate regions.

Homolepis aturensis (HBK) Chase Plate 50-D

Low, creeping, herb. Leaves very narrowly lanceolate, 1.3-1.5 cm wide. Inflorescence paniculate, 30-50 cm tall, the long-pedicellate spikelets 6-7 mm long. Uncommon, along the roadside. Mexico to Bolivia and Brazil.

Hymenachne donacifola (Raddi) Chase Plate 51-A

Plant aquatic. Leaves linear-lanceolate, 1.5-2.8 cm wide, ca. 15-20 cm long. Inflorescence narrowly pyramidal, the lateral branches ascending, one-sided, 3-5 cm long, apparently racemose but actually with short side branches bearing the spikelets, the spikelets pedicellate. Uncommon, aquatic grass in running water in open areas. Costa Rica to northern Argentina.

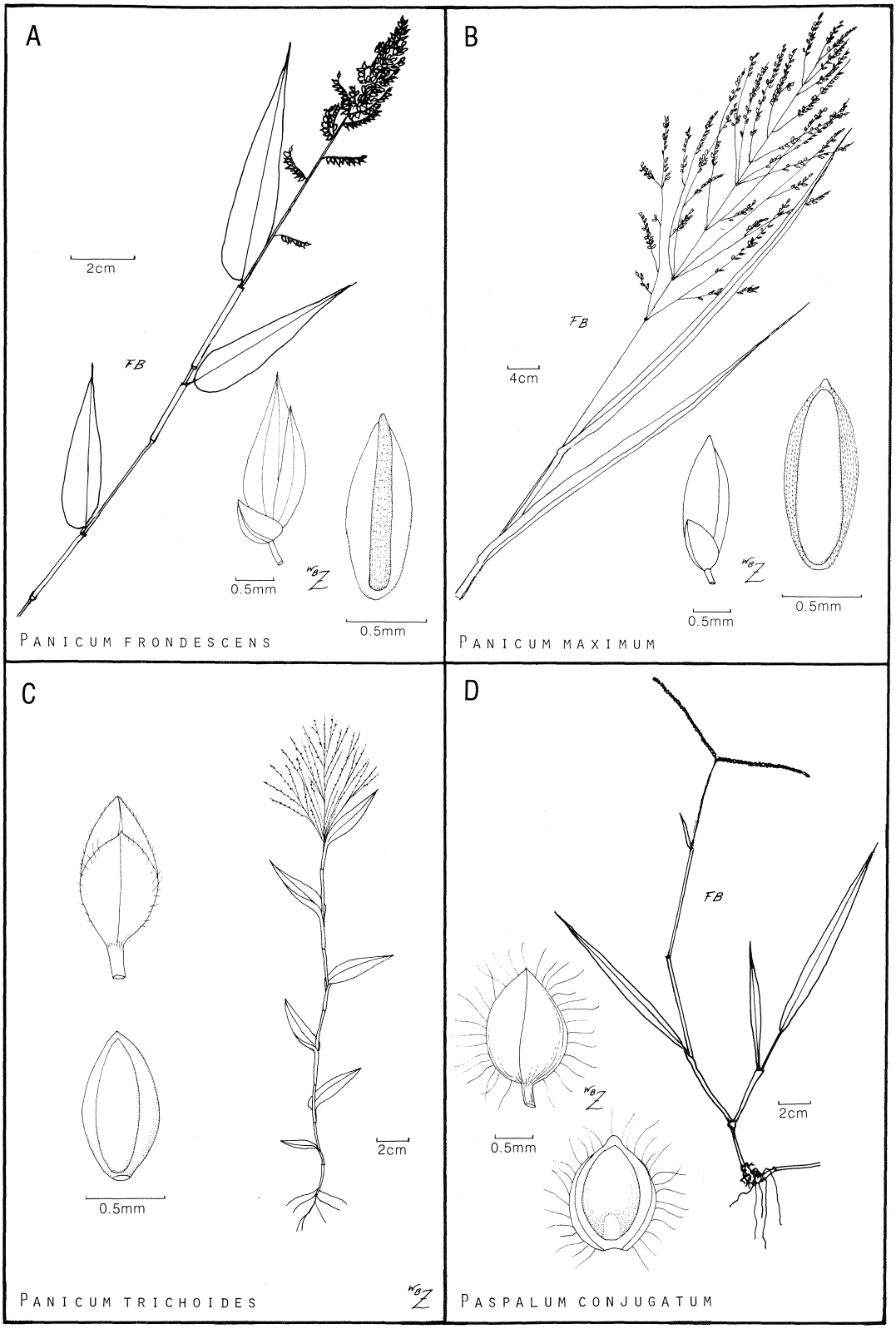
A
2cm
FB
0.5mm
WBZ
0.5mm
PANICUM FRONDESCENS
B
FB
4cm
WBZ
0.5mm
0.5mm
PANICUM MAXIMUM
C
0.5mm
2cm
PANICUM TRICHOIDES
WBZ
D
FB
WBZ
0.5mm
2cm
PASPALUM CONJUGATUM

Plate 52

Lasiacis sorghoidea (Desv.) Hitchc. & Chase Plate 51-B

Subwoody clambering vine. Stems to 3 m. Leaves narrowly lanceolate, 2-3 cm wide. Inflorescence paniculate, large and open, the pedicellate spikelets subglobose, 3 mm long, 2 mm wide. Uncommon, at the forest edge. Mexico and the West Indies to Argentina.
Common name: "Carricillo Trepador"

Olyra latifolia L. Plate 51-C

Clambering herbaceous grass. Leaves lanceolate, 2-3.5 cm wide. Inflorescence narrowly paniculate, the spikelets pedicellate, the lemma with a 1-1.5 cm long awn. Infrequent, in mature forest edge and along the trails. Mexico, Florida and the West Indies to Argentina.
Common name: "Gramalote"

Oplismenus hirtellus (L.) Beauv. Plate 51-D

Creeping perennial grass. Leaves narrowly lanceolate, 0.9-1.5 cm wide. Inflorescence very narrowly paniculate, of one-sided racemes 1.5-2.5 cm long, the spikelets sessile, the first glume with a 1 cm long awn, the second glume with a shorter awn. Uncommon, along the trails in mature forest. Mexico and the West Indies to Argentina, also Old World tropics.

Panicum frondescens G. Mey. Plate 52-A

Low perennial herb. Leaves lanceolate, 1.5-2.5 cm wide. Inflorescence narrowly pyramidal, of one-sided racemes 0.5-1.5 cm long, the spikelets sessile. Common, weed of disturbed forest. Mexico to Brazil.

Panicum maximum Jacq. Plate 52-B

Erect, tufted, tall grass to 2.5 m. Leaves to 60 cm long, 1.5-2 cm wide. Inflorescence an open panicle, the branches not one-sided racemes, the spikelets pedicellate, 2-3 mm long. Fruit transversely rugose. Common, roadside perennial. Native to Africa; now pantropical.
Common name: "Zabolla"+, "Zacate de Guinea"

Panicum trichoides Sw. Plate 52-C

Small, prostrate, annual grass. Leaves broadly lanceolate, 0.7-1.5 cm wide, 2-4 cm long. Inflorescence a finely-branched, open panicle, the primary branches in whorls, the spikelets pedicellate, less than 1 mm long. Uncommon, in disturbed areas. Throughout tropical America.

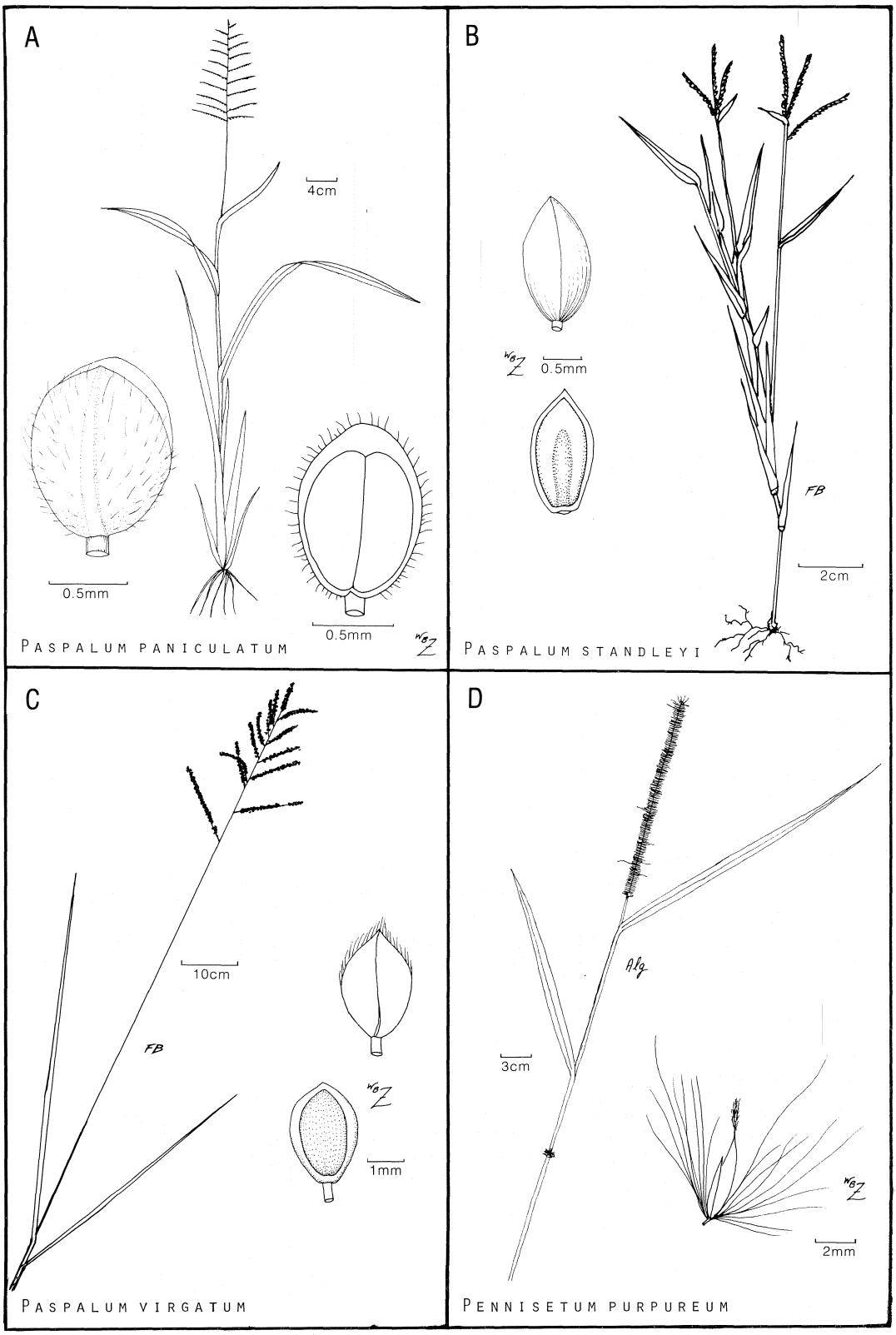
A
4cm
0.5mm
0.5mm
PASPALUM PANICULATUM
B
0.5mm
FB
2cm
PASPALUM STANDLEYI
C
10cm
FB
1mm
PASPALUM VIRGATUM
D
Alg
3cm
2mm
PENNISETUM PURPUREUM

Plate 53

Paspalum conjugatum Bergius Plate 52-D

Common, erect, stoloniferous grass to 50 cm tall. Leaves linear, 3-10 cm long, 0.6-1 cm wide. Inflorescence a pair of opposing, one-sided, slender, drooping, yellowish-green, 4-10 cm long racemes, the sessile spikelets 1 mm long. Common, in open disturbed areas. Southern United States to Argentina, also in Old World.
Common name: "Turvara"

Paspalum paniculatum L. Plate 53-A

Leaves linear, coarsely pubescent, ca. 1 cm wide. Inflorescence pyramidal, of one-sided racemes 1.5-4 cm long, the sessile spikelets 1 mm long. Very common, weedy perennial grass of open disturbed areas. Mexico and the West Indies. to Argentina; also Africa and Queensland, Australia.

Paspalum standleyi Chase Plate 53-B

Grass to 70 cm high. Leaves linear, pilose, ca. 2 mm wide. Inflorescence of several, ascending, one-sided racemes 1.5-2 cm long, the sessile, spikelets 1 mm long. Common, on river bed cobblestones. Ecuador to Guatemala, this is the first Ecuadorian record.

Paspalum virgatum L. Plate 53-C

Perennial grass to 2 m tall. Leaves linear, ca. 1.5 cm wide. Inflorescence large, more or less pyramidal, of one-sided racemes, the sessile spikelets 2 mm long. Common, at the roadside and in disturbed areas. Texas and the West Indies to Brazil.

Pennisetum purpureum Schumach. Plate 53-D

Grass to 3 m tall. Leaves linear, 50-90 cm long, 0.5-1.3 cm wide, the midrib white. Inflorescence an unbranched, congested raceme, the spikelets subtended by 1.5-2.5 cm long bristles. Common, in disturbed areas. Native to Africa; now widespread in the New World tropics.
Common name: "Paja Elefante"+

***Saccharum officinarum** L. Plate 54-A

Cultivated grass 2-5 m tall, canes 2-3 cm thick, solid. Leaf blades auriculate, 3-6 cm wide, the midvein broad, white. Panicle bisexual, 30-60 cm long, a profusion of slender spikelets surpassed by silky hairs. Cultivated around homesites. Native to the Old World tropics; cultivated pantropically. Illustration adapted from "Manual of U. S. Grasses."
Common name: "Caña de Azúcar"+

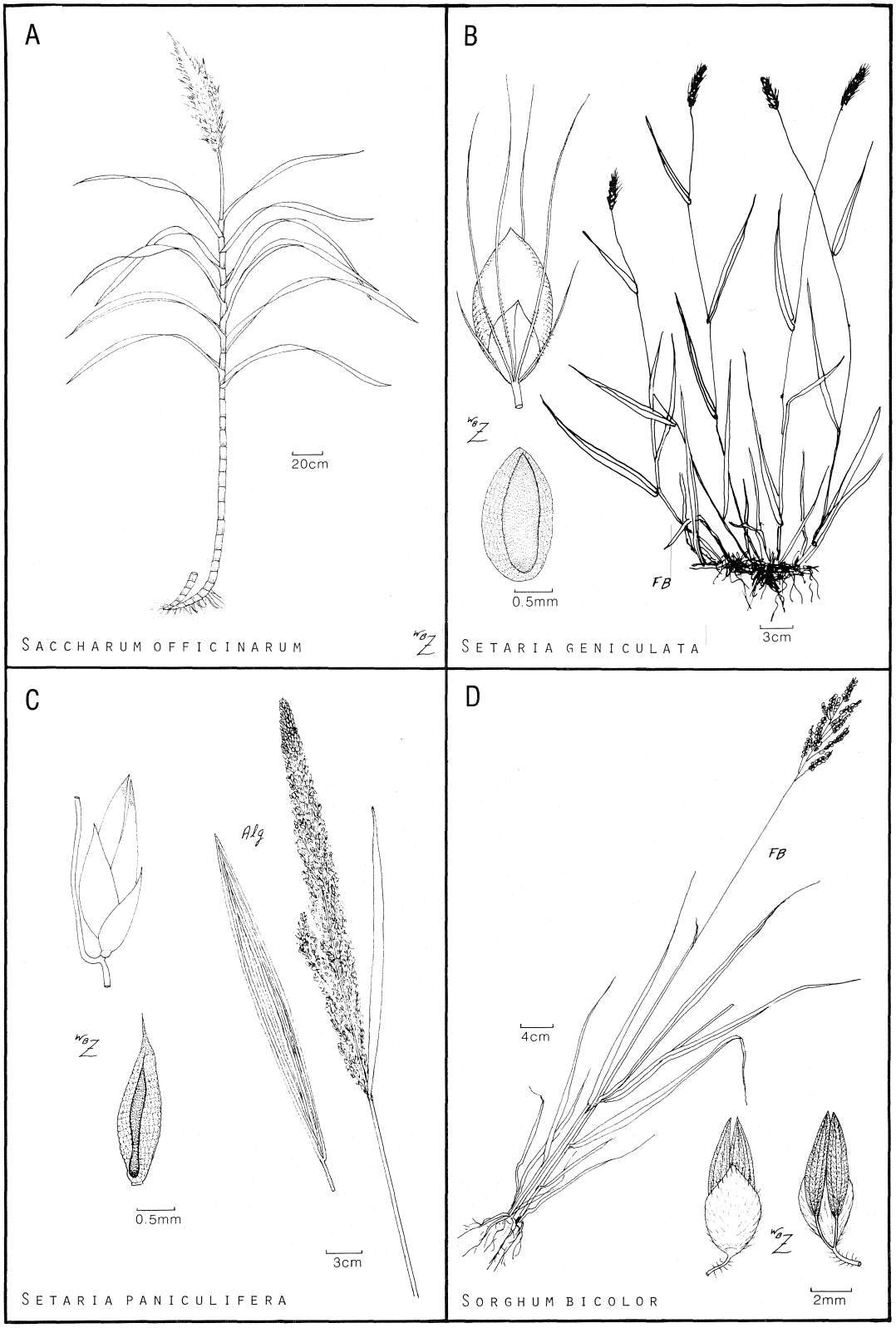
A
20cm
SACCHARUM OFFICINARUM
B
0.5mm
FB
3cm
SETARIA GENICULATA
C
Alg
0.5mm
3cm
SETARIA PANICULIFERA
D
FB
4cm
2mm
SORGHUM BICOLOR

Plate 54

Setaria geniculata (Lam.) Beauv. Plate 54-B

Erect weedy grass to 50 cm tall. Leaves narrowly linear, 7-14 cm long, 0.5-0.7 cm wide. Inflorescence an unbranched, cylindric, congested raceme, the spikelets subtended by 0.5 cm long bristles. Uncommon, in disturbed areas. United States to Argentina, also in the Old World.

Setaria paniculifera (Steud.) Fourn. Plate 54-C

Grass to 1.5 m tall. Leaves narrowly elliptic, plaited, 1.5-4 cm wide and ca. 30 cm long. Inflorescence an open panicle, the subsessile spikelets subtended by bristles ca. 0.5 cm long. Uncommon, along the roadsides. Mexico and the West Indies to Colombia, Venezuela and Ecuador. This is the first Ecuadorian record.
Common name: "Zacate de Mula"

Stenotaphyrum secundatum (Walt.) Kuntze Plate 277-A
see Addendum for description.

Sorghum bicolor (L.) Moench. Plate 54-D

Grass to 1 m tall. Leaves linear, 1.5-2 cm wide. Inflorescence narrowly pyramidal, the racemes to 4 cm long, the spikelets in pairs, one sessile and fertile (3 × 2 mm), the other pedicellate and staminate (2-3 × 1 mm). Uncommon, on rocky riverside beaches. Native to Africa; escaped from cultivation.

Streptochaeta sodiroana Hack. Plate 55-A

Low, erect grass to 70 cm tall. Leaves broad, elliptic, 6-7 cm wide, 17-30 cm long. Inflorescence narrow, elongate, the spikelets appressed, the lemmas with a very long (9-10 cm) awn, much twisted toward the tip, intertwining in a tangled mass. Uncommon, in mature forest. Belize to Ecuador.

***Zea mays** L. Plate 55-B

Tall cane-like plant to several meters tall. Leaves robust, linear, more than 4 cm wide. Monoecious; male inflorescence a terminal panicle; female inflorescence axillary and spicate. Fruit an ear with numerous rows of spikelets on a thickened woody cob. Native to Mexico; cultivated throughout world. Illustration adapted from "Manual of U. S. Grasses."
Common name: "Maíz"+

HAEMODORACEAE

Perennial herbs. Leaves equitant, alternate, linear (iris-like). Flowers bisexual, regular; sepals and petals similar, white, free; stamens 3 or 6; ovary inferior, locules 3. Fruit a 3-valved capsule.

Xiphidium caeruleum Aubl. Plate 55-C

Erect herbs to 70 cm tall from a creeping rhizome. Leaves distichous, much resembling an iris. Leaves to 80 × 5 cm. Inflorescence terminal, paniculate to 70 cm long; petals white, showy, 4 × 5 mm; stamens yellow. Fruits bright orange when ripe. Common, on cliff faces and steep embankments, rarely found on tree trunks as an epiphyte. Widespread in tropical America. Illustration of flower adapted from "Flora of Guatemala."

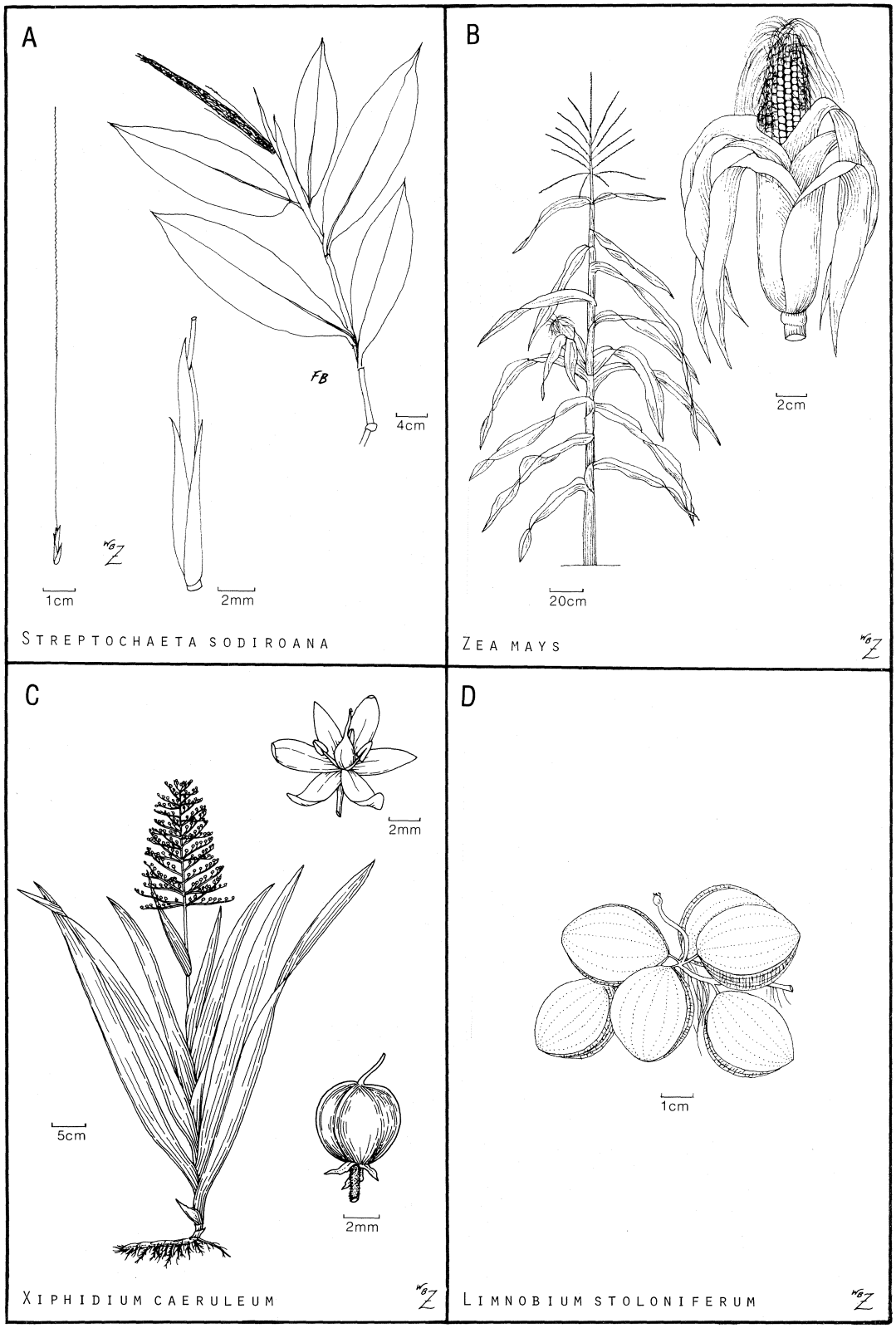
A
FB
4cm
1cm
2mm
STREPTOCHAETA SODIROANA
B
2cm
20cm
ZEA MAYS
C
2mm
5cm
2mm
XIPHIDIUM CAERULEUM
D
1cm
LIMNOBIUM STOLONIFERUM

Plate 55

HYDROCHARITACEAE

Submerged or floating aquatic herbs; roots terrestrial or floating. Leaves basal or cauline, alternate, opposite, or whorled. Inflorescence subtended by a spathe; flowers unisexual or bisexual, regular; sepals 3; petals 3; pistil 1; ovary inferior.

Limnobium stoloniferum (G. F. Mey.) Griseb. Plate 55-D

Aquatic herb, floating or attached to substrate by roots. Leaves basal, broadly ovate, very thick and swollen, 3 × 2 cm. Inflorescence erect; petals white. Rare. In swampy areas near the river. Central America and the West Indies to Argentina.

LEMNACEAE

Minute, thalloid, aquatic herbs, usually floating on water surface. Stemless, rootless, or with a few apparently nonfunctional roots. Flowers minute from a saclike spathe in a pouch at the basal margin of a frond, consisting of a single stamen or a single pistil, often 2 staminate flowers and 1 pistillate flower per spathe.

Lemna minima Phil. Plate 56-A

Minute, floating aquatic, becoming stranded on riverside beaches. Plant body an elliptic thallus 1-2 mm long, with a single, pendent root from the center. Forming dense mats in standing water. Southwest United States to Argentina.

LILIACEAE

Shrubs, trees or often herbs with a tuberous root stock; stems often climbing. Leaves entire, alternate, often with a pair of tendrils borne on the petiole. Flowers bisexual, regular; sepals 6; stamens 6, the filaments distinct or joined; ovary trilocular, superior. Fruit a capsule or berry.

Key to the species.

1. Vines, often spiny; native.
   2. Leaves glabrous beneath.
      3. Leaves more or less cordate at maturity; stems spiny . . . . . *Smilax* aff. *febrifuga*
      3. Leaves narrowly ovate with rounded bases; stems without spines . . . . . *Smilax* cf. *spissa*
   2. Leaves puberulous beneath . . . . . *Smilax* cf. *tomentosa*
1. Unarmed erect shrubs; cultivated.
   4. Leaves forming a petiole at base . . . . . *Cordyline terminalis*
   4. Leaves not forming a petiole . . . . . *Dracaena fragrans*

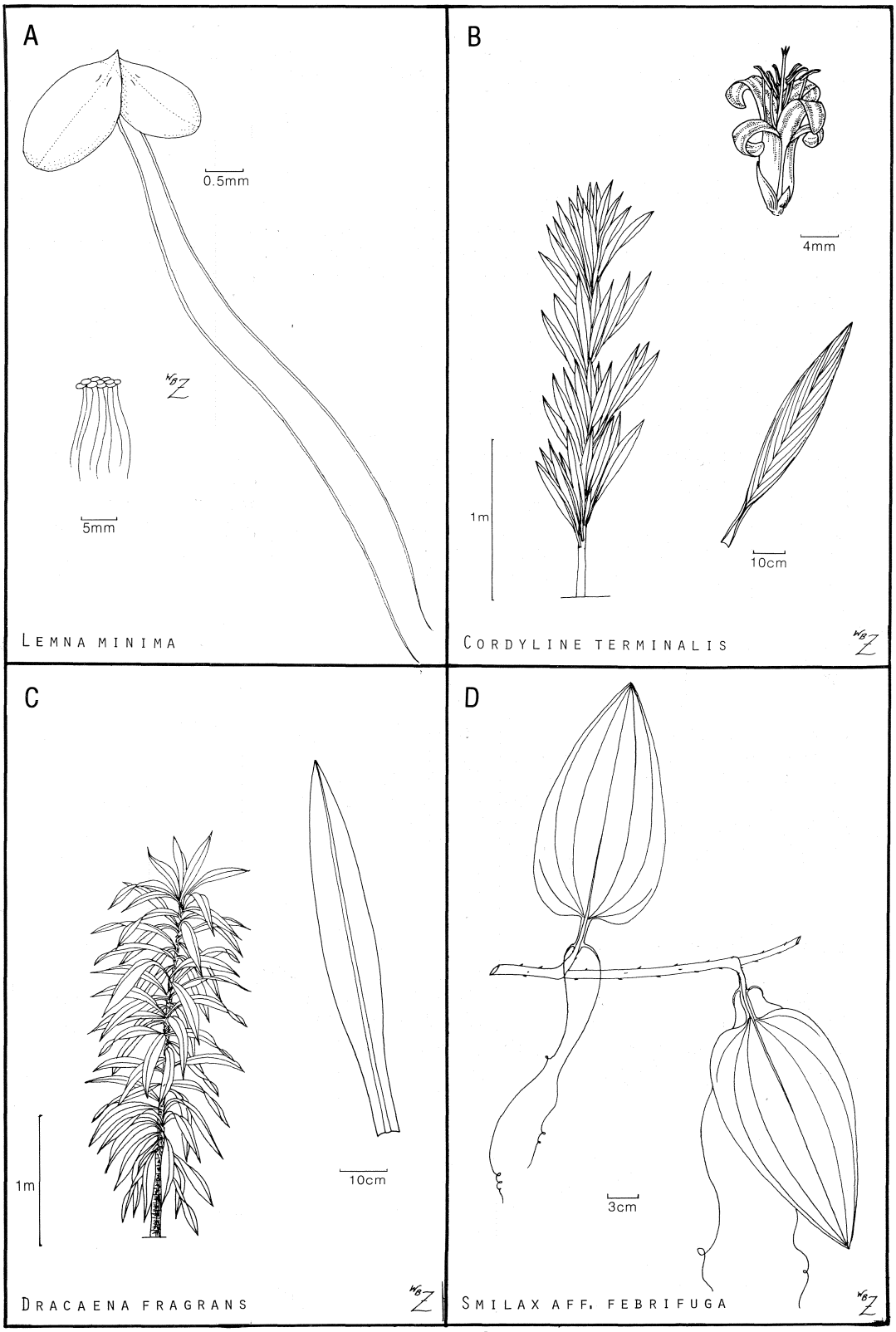
A
0.5mm
5mm
LEMNA MINIMA
B
4mm
1m
10cm
CORDYLINE TERMINALIS
C
1m
10cm
DRACAENA FRAGRANS
D
3cm
SMILAX AFF. FEBRIFUGA

Plate 56

***Cordyline terminalis** (L.) Kunth Plate 56-B

Erect shrub to small tree to 3 m tall. Leaves spirally arranged on a cane, elliptic, petiolate, 90 × 5-10 cm, variegated or green. Inflorescence terminal; flowers white. Commonly cultivated around homesites. Introduced from the E. Indies.

***Dracaena fragrans** (L.) Ker-Gawl. Plate 56-C

Erect shrub to small tree to 5 m tall. Leaves spirally arranged on canes, to 90 × 2 cm, sessile, dark red to variously variegated. Inflorescence terminal; flowers yellow. Commonly cultivated around homesites. Introduced from Africa.

Smilax aff. **febrifuga** Kunth Plate 56-D

Large vine with spiny stems. Mature leaves ovate, shallowly cordate to truncate at the base, 5- to 7-veined, glabrous, 14 × 20 cm, the petiole 6 cm long, winged for the basal half, the apex of each wing produced into a tendril to 30 cm long. Common, in mature forest. Only known from sterile material at Río Palenque and tentative identification comes from matching with Amazonian Peruvian material determined as *S. febrifuga.*
Common name: "Zarzaparrilla"+

Smilax cf. **spissa** Killip & Morton Plate 57-A

Vine without spines on the stem, the upper stem angulate. Leaves narrowly ovate, round at the base, palmately 5-veined with 3 prominent primary veins and 2 inconspicuous submarginal veins, glabrous, to 18 × 6.5 cm, the petiole with 2 tendrils. Previously known from Costa Rica and Panama. Only known from sterile material at Río Palenque but seems closest to this species among those from Panama.
Common name: "Zarzaparrilla"+

Smilax cf. **tomentosa** HBK Plate 57-B

Large vine with spiny stems. Mature leaves ovate, cordate, 7- to 9- veined, puberulous beneath, ca. 22 × 15 cm, the petiole with 2 tendrils. Only known from sterile material at Río Palenque but seems a good match for this mostly upland species except for greater leaf size.
Common name: "Zarzaparrilla"+

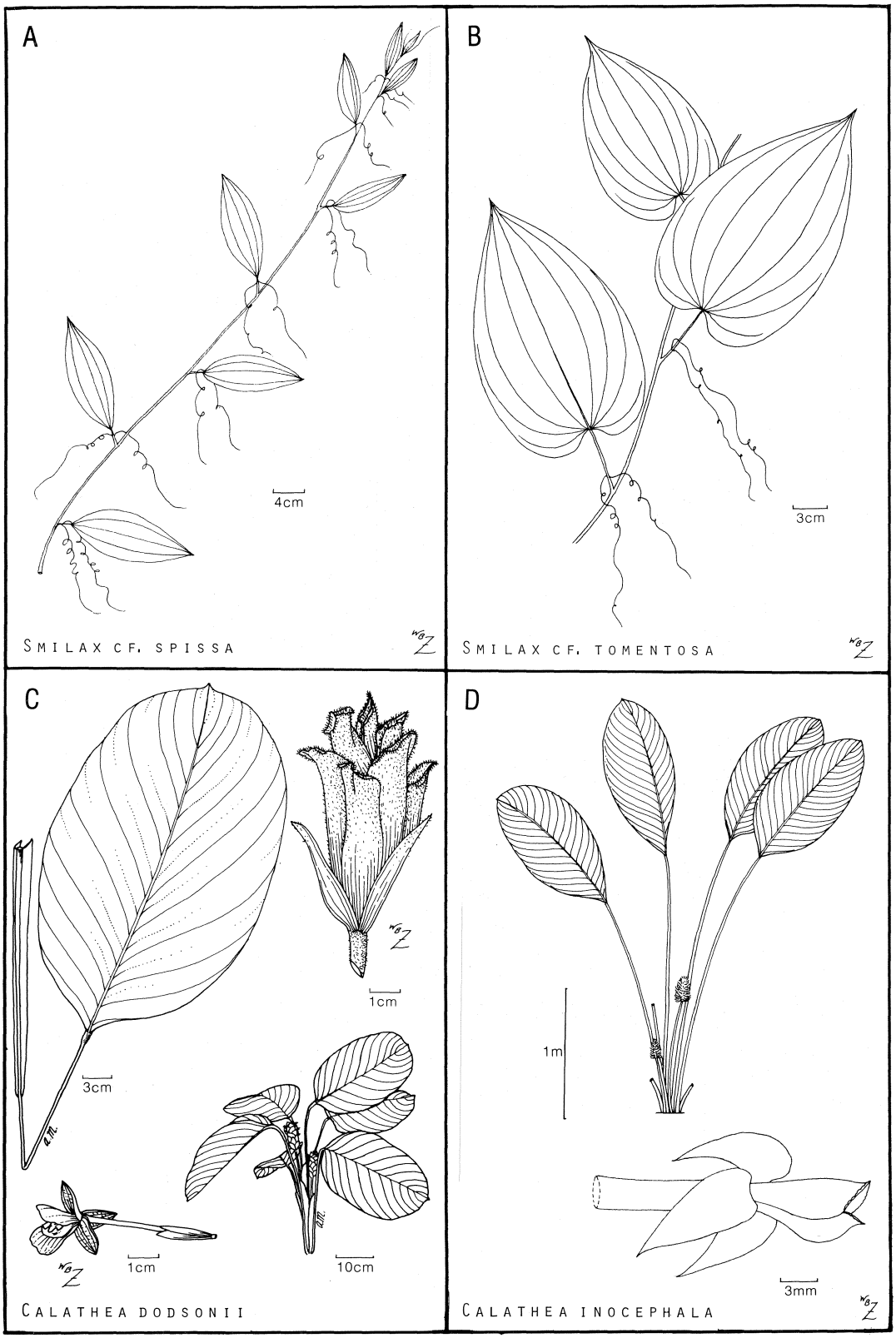
A
4cm
SMILAX CF. SPISSA
B
3cm
SMILAX CF. TOMENTOSA
C
1cm
3cm
1cm
10cm
CALATHEA DODSONII
D
1m
3mm
CALATHEA INOCEPHALA

Plate 57

MARANTACEAE

Perennial herbs with rhizomes. Leaves distichous, mostly basal, consisting of a blade, pulvinus, petiole, and open leaf sheath, the petiole terete, the upper portion (pulvinus) differing in color and texture. Inflorescence composed of numerous bracts which subtend and surround the flowers. Flowers in pairs, bisexual, irregular; sepals 3, free; petals 3, fused below forming a corolla tube, 3-4 petaloid staminodes and a single fertile stamen present; ovary inferior, trilocular or appearing unilocular by abortion. Capsule 1 or 3-seeded.

Key to the species.

1. Leaves covered with a whitish wax on the undersides.
   2. Inflorescence cylindric, pencil-like, very narrow, less than 5 mm thick, bracts light green . . . . . *Ischnosiphon leucophaeus*
   2. Inflorescence slightly compressed, 2-3 cm wide, bracts bronze . . . . . *Calathea lutea*
1. Leaves without wax on the undersides, leaf grey-green, green or purple underneath.
   3. Inflorescences 2 or more per shoot ("branched"), the spikes usually laterally flattened or dorsiventral, the bracts distichous.
      4. Inflorescence densely pubescent; leaves pubescent; flowers purple . . . . . *Ischnosiphon morlaei*
      4. Inflorescence and leaves glabrous; flowers white, pinkish or yellowish.
         5. Inflorescence 4-5 cm wide, strongly laterally flattened, bracts yellowish . . . . . *Calathea insignis*
         5. Inflorescence to 2 cm wide, not laterally flattened, bracts green . . . . . *Stromanthe* cf. *confusa*
   3. Inflorescence 1 per shoot ("unbranched"), capitate or cylindric, not at all flattened, the bracts spirally arranged.
      6. Margins of the bracts with conspicuously frayed ends, the individual bracts not clearly defined, light brown or tan, forming a dense, frayed, mop-like inflorescence . . . . . *Calathea inocephala*
      6. Bracts of the inflorescence discrete and obviously demarcated, entire or subentire, the margins not fraying.
         7. Inflorescence narrow, ca. 2 cm wide, the bracts emarginate; leaf bearing a white pattern paralleling the leaf margin . . . . . *Calathea legrelleana*
         7. Inflorescence wider, more than 3.5 cm wide, the bracts rounded or acute at the apex; leaf (of mature plants) plain green above.

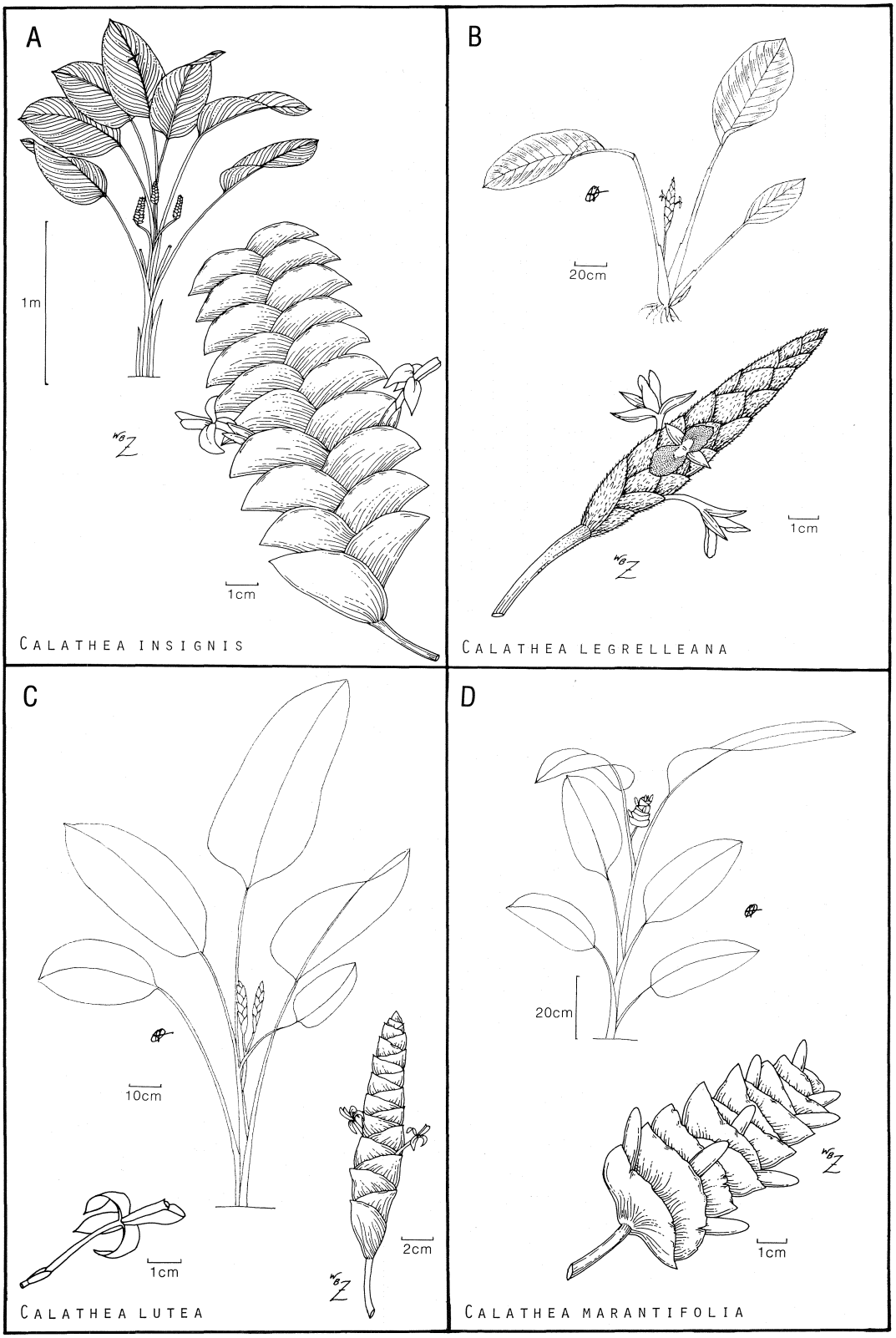
A
1m
1cm
CALATHEA INSIGNIS
B
20cm
1cm
CALATHEA LEGRELLEANA
C
10cm
1cm
2cm
CALATHEA LUTEA
D
20cm
1cm
CALATHEA MARANTIFOLIA

Plate 58

8. Inflorescence less than 7 cm long, subcapitate with tightly appressed bracts . . . . . *Calathea marantifolia*
8. Inflorescence more than 10 cm long, relatively open, the bracts more lax.
   9. Leaf blade nearly round, length less than twice the width, the apex rounded, the pulvinus less than 1.7 cm long, pubescent; petals purple, staminodes white . . . . . *Calathea dodsonii*
   9. Leaf blade elongate, length more than twice the width, the apex acute, the pulvinus more than 4 cm long, glabrous; flowers peach colored . . . . . *Calathea pachystachya*

Calathea dodsonii Kennedy Plate 57-C

Erect herb. Stem very short. Leaves in a rosette, the blade nearly round, thick, green on the upper side, red-purple or green on the lower side, to 40 cm long, the petiole to 60 cm long. Inflorescence up to 25 cm above the ground, subcapitate; bracts flared outward at the apices, red-purple; petals purple; staminodes white. Locally common in marshy areas. Known only from Río Palenque, related to *C. dressleri* Kennedy of Panama.

Calathea inocephala (Kuntze) Kennedy & Nicolson Plate 57-D

Herbaceous plant to 2 m tall. Leaves green, glabrous. Inflorescence a capitate, tannish, mop-like structure with conspicuously frayed bracts and cream-colored flowers. Infrequent, in mature forest along the creeks. Mexico to Pacific Ecuador.
Common name: "Platanillo"+

Calathea insignis Petersen ex Eggers Plate 58-A

Herbaceous plant to 3 m tall. Leaves green, glabrous. Inflorescences 2-4 per shoot, laterally flattened, 4-5 cm wide, with yellow to yellowish-green, tightly compressed, distichous floral bracts. Flowers white or pinkish. Common, especially in disturbed forest. Mexico to Argentina.
Common name: "Bijao Macho"+

Calathea legrelleana (Linden) Regel Plate 58-B

Herbaceous plant to 50 cm tall. Leaves glabrous, purple below, green with a white design on the upper side. Inflorescence rather narrow, the bracts soft, pubescent, the bracts and flowers purple. Common, on the floor of mature forest. Endemic to Pacific Ecuador and adjacent Colombia.
Common name: "Platanillo Morado"+

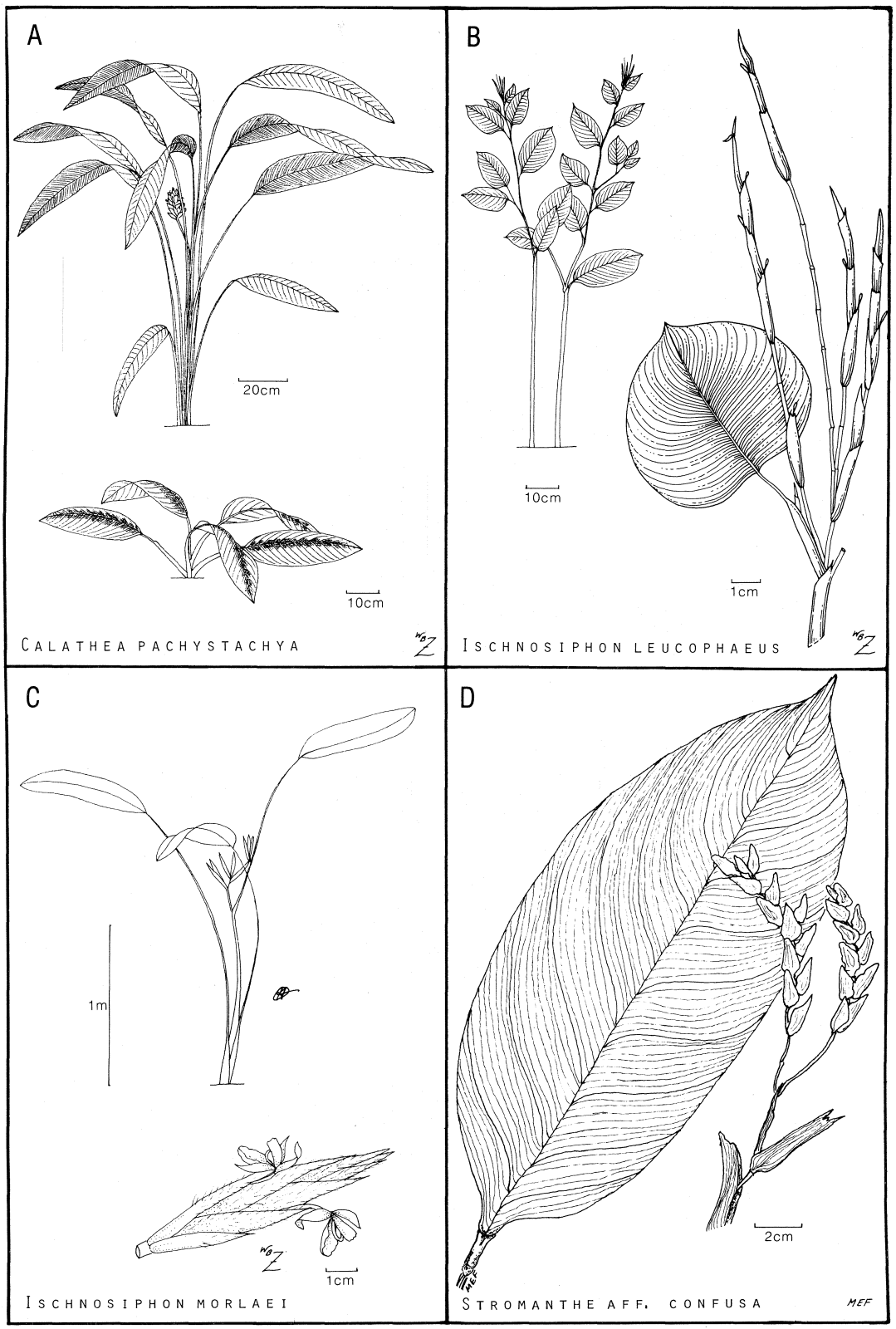
A
20cm
10cm
CALATHEA PACHYSTACHYA
B
10cm
1cm
ISCHNOSIPHON LEUCOPHAEUS
C
1m
1cm
ISCHNOSIPHON MORLAEI
D
2cm
STROMANTHE AFF. CONFUSA
MEF

Plate 59

Calathea lutea (Aubl.) Schultes Plate 58-C

Large herbaceous plant to 4 m tall with white wax on the undersides of the leaves. Inflorescences 2 to several, the bracts bronzy, flacid. Flowers with conspicuous yellow staminodes and reflexed purplish petals. Locally common, especially in marshy second growth areas. Mexico to Northern Argentina.
Common name: "Bijao"+

Calathea marantifolia Standl. Plate 58-D

Herbaceous plant to 2 m tall. Leaves glabrous, green to purplish. Inflorescence subcapitate with appressed, entire-margined, green or purplish bracts; flowers white or cream. Common, on the floor of mature forest. Guatemala to Ecuador.
Common name: "Platanillo"+

Calathea pachystachya (P. & E.) Körn. Plate 59-A

Herbaceous plant to 2 m tall. Leaves in juvenile plants with the upper surface variegated and highly decorated with radiating white lines on a dark green background, the mature leaves green dorsally, purple below. Inflorescence up to 1.5 m above the ground, the bracts reddish-green to yellow-green, the flowers peach. Uncommon, in mature forest but rare, as a mature plant. Ecuador and Amazonian Peru, a trans-Andean disjunction, but the plant from Western Ecuador could be distinct.

Ischnosiphon leucophaeus (P. & E.) Körn. Plate 59-B

Erect herb to 1 m tall. Leaves green, glabrous, the tip distinctly acuminate, the base truncate. Inflorescence narrow (less than 0.5 cm wide), pencil-like, branched, glabrous. Flowers white. Uncommon and local, on forested island near the river. Ranges from Panama to Amazonian Peru and has been reported from Chocó but not from Ecuador.

Ischnosiphon morlaei Eggers Plate 59-C

Herbaceous plant to 2 m tall. Leaves pubescent, yellow-green. Inflorescences branching, densely pubescent, the bracts yellow-green, distichous. Flowers purple. Uncommon, in mature forest. Honduras to Pacific Ecuador.

Stromanthe aff. **confusa** K. Schum. Plate 59-D

Herb to 3 m tall. Leaves green, glabrous. Inflorescence to 2 cm wide, much branched, with green distichous floral bracts, ca. 6 mm wide. Flowers white. Uncommon, near river bank. South America on both sides of the Andes. According to Helen Kennedy (pers. comm.) this species is nearly intermediate between *Myrosoma* and *Stromanthe.*

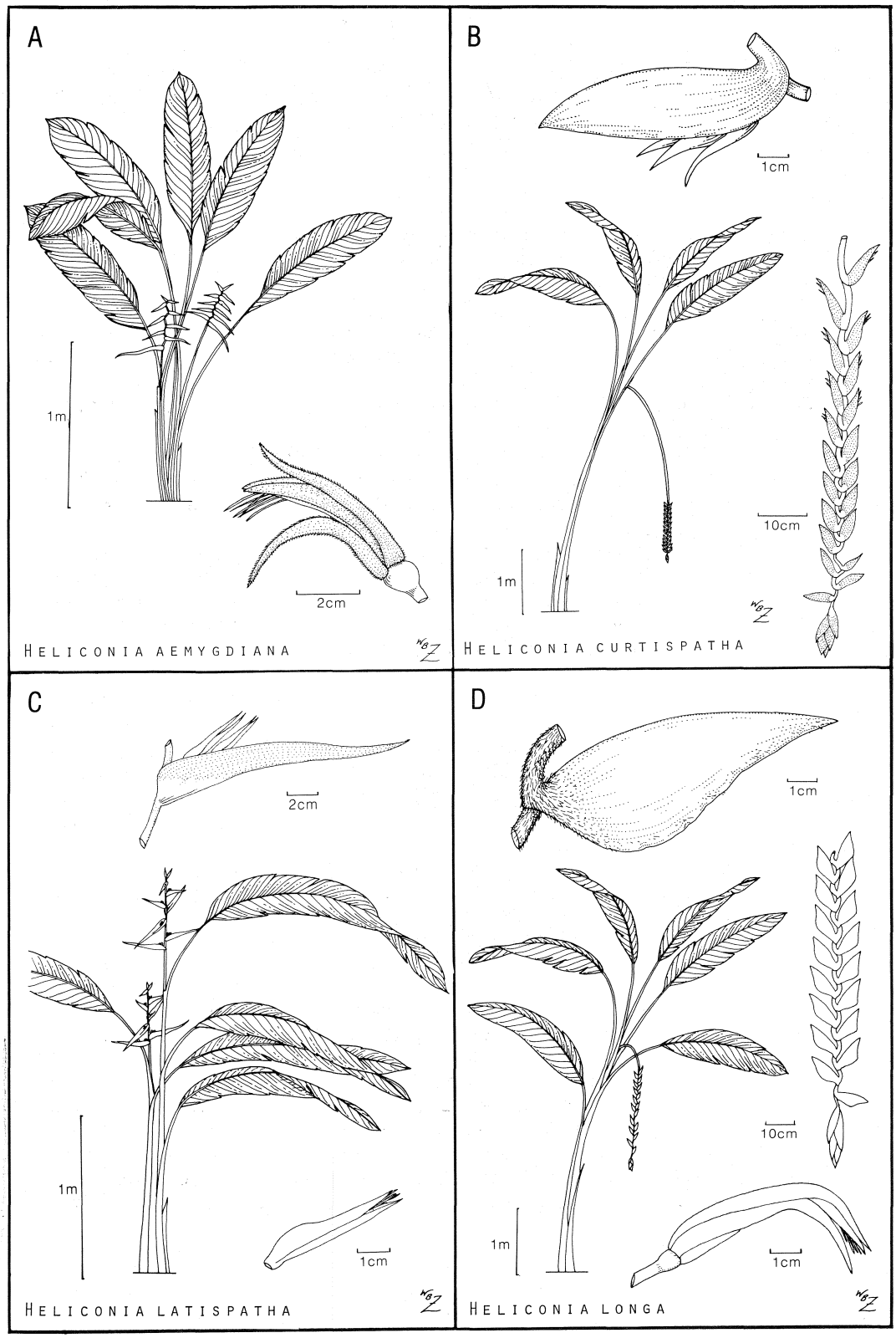
A
1m
2cm
HELICONIA AEMYGDIANA
B
1cm
10cm
1m
HELICONIA CURTISPATHA
C
2cm
1m
1cm
HELICONIA LATISPATHA
D
1cm
10cm
1m
1cm
HELICONIA LONGA

Plate 60

MUSACEAE

Large herbs, often tree-like, stem or pseudostem unbranched, formed by sheathing petioles. Leaves large, alternate, entire, distichous or spirally arranged. Flowers bisexual or unisexual, borne in the axil of a bract, or surrounded by a deciduous bract, zygomorphic; perianth segments 6, unequal in size and shape; stamens 6, 1 a staminode, 5 fertile; ovary inferior. Fruit an elongate or globose berry.

Key to the species.

1. Leaves spirally arranged; clusters of unisexual flowers surrounded by a deciduous bract; fruit elongate, edible when ripe. (Bananas).
   2. Fruits sugary, edible without cooking . . . . . *Musa acuminata*
   2. Fruits starchy, must be cooked . . . . . *Musa* × *paradisiaca*
1. Leaves distichously arranged; clusters of bisexual flowers subtended by a persistent branch bract, each flower subtended by a single floral bract; fruits round, inedible. (Heliconias).
   3. Inflorescences produced from the apex of the stem among the leaves.
      4. Inflorescence erect.
         5. Branch bracts green; peduncle longer than the rachis . . . . . *Heliconia metallica*
         5. Branch bracts red or red and yellow; peduncle shorter than the rachis.
            6. Branch bracts red, flattened; flowers green, pubescent; fruits purple when ripe . . . . . *Heliconia aemygdiana*
            6. Branch bracts a combination of red and yellow, boat-shaped; flowers green and yellow or green and white, glabrous; fruits blue-black when ripe.
               7. Branch bracts red at the apices, yellow toward the base; flower yellow with a green stripe along the margin of the sepals. . . . . *Heliconia latispatha*
               7. Branch bracts yellow-green with a broad red blotch on each side; flower white with a green band around the distal third and with white tips . . . . . *Heliconia wagneriana*
      4. Inflorescence pendent.
         8. Branch bracts rosy-red with the upper and distal portion of bract yellow-green. . . . . *Heliconia riopalenquensis*
         8. Branch bracts dark red.
            9. Inflorescence short (to 50 cm); dark wine-red. . . . . *Heliconia obscura*
            9. Inflorescence long (1-2 m); branch bracts bright red.
               10. Branch bracts completely red.
                  11. Peduncle and pedicel red, villous; peduncle 50 cm to 1 m long . . . . . *Heliconia longa*
                  11. Peduncle and pedicel yellow, slightly puberulous; peduncle 1-2 m long . . . . . *Heliconia curtispatha*
               10. Branch bracts red with apical half black . . . . . *Heliconia nigripraefixa*
   3. Inflorescence produced from the base of the stem, not among the leaves. . . . . *Heliconia marmoliana*

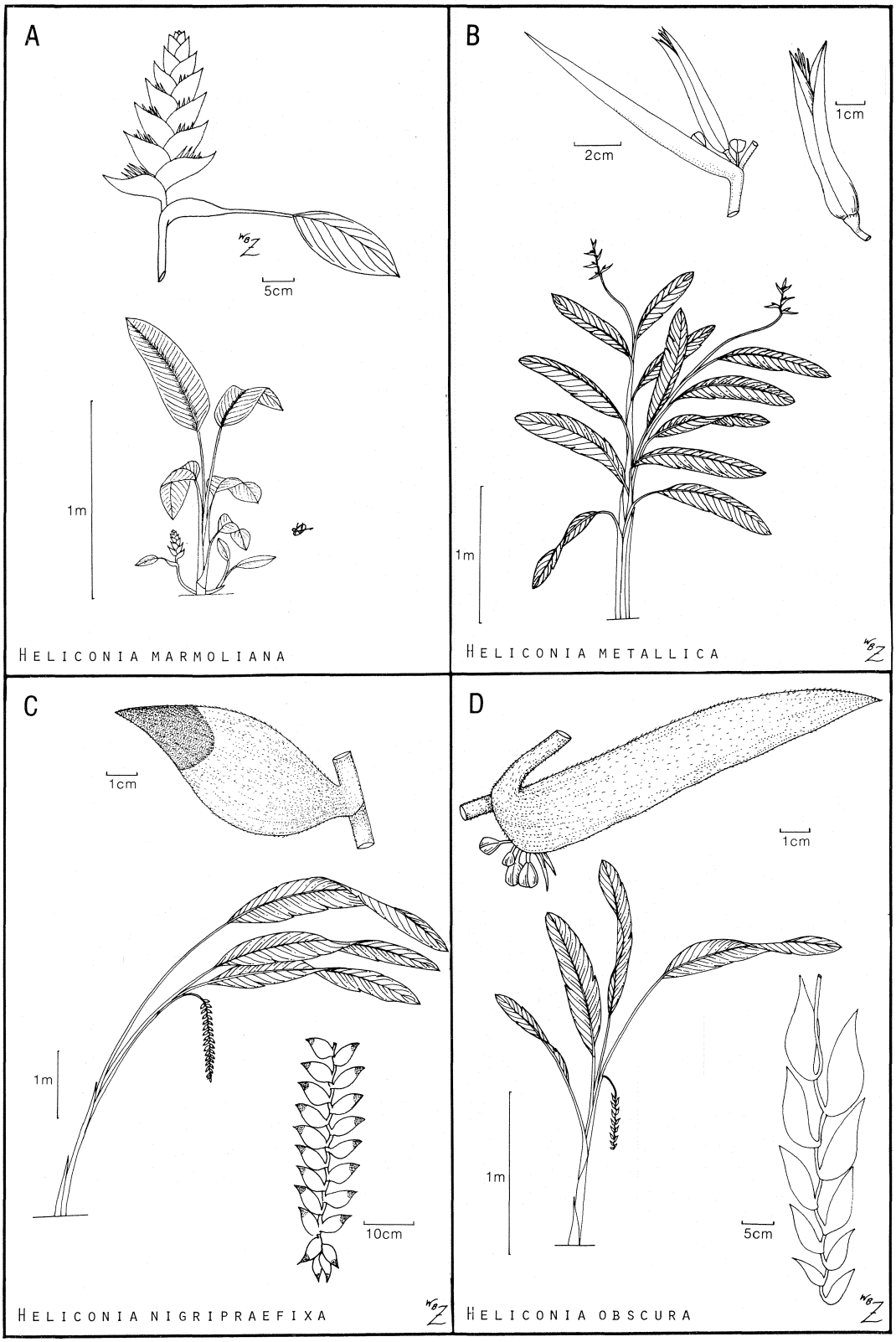
A
5cm
1m
HELICONIA MARMOLIANA
B
2cm
1cm
1m
HELICONIA METALLICA
C
1cm
1m
10cm
HELICONIA NIGRIPRAEFIXA
D
1cm
1m
5cm
HELICONIA OBSCURA

Plate 61

Heliconia aemygdiana Burle Marx Plate 60-A

Plant to 2 m tall. Leaves 20-25 cm broad. Inflorescence erect, to 80 cm long; branch bracts red, basal branch bracts flattened to 70 cm long and relatively broad (to 6 cm). Flowers green, pubescent. Fruits large and purple when ripe. Infrequent, in mature forest particularly in damp places. Western and eastern Ecuador and Brazil.

Heliconia curtispatha Petersen Plate 60-B

Plant to 5 m tall. Leaves to 2.5 m long by 60 cm broad. Inflorescence pendent, to 3 m long, the peduncle yellow to orange, to 2 m long; branch bracts red-orange, 15 × 5 cm. Flowers yellow. Fruits black when ripe. Infrequent, in mature forest. Very similar to *H. longa* but with yellow to orange peduncle.
Common name: "Platanillo"+

Heliconia latispatha Benth. Plate 60-C

Plant to 3.5 m tall. Leaves 25-30 cm broad. Inflorescence erect, to 60 cm long, the peduncle yellow; branch bracts red at the apices, yellow toward the base, moderate in length (basal branch bracts 40 cm long) and relatively narrow (to 5 cm); perianth parts yellow with a green marginal stripe. Fruits black when ripe. Common, in second growth areas and along river bank in sun. Widespread in tropical America.
Common name: "Platanillo"+

Heliconia longa (Griggs) Winkler Plate 60-D

Plant to 5 m tall. Leaves to 2.5 m long by 60 cm broad. Inflorescence pendent, to 2 m long; peduncle red, 50 cm to 1 m long; branch bracts red, 10 × 4 cm; flowers yellow. Fruits black when ripe. Common, in second growth and degraded forest. Very similar to *H. curtispatha* but with a red peduncle. Nicaragua to coastal Ecuador.
Common name: "Platanillo"+

Heliconia marmoliana Dodson & A. Gentry Plate 61-A

Plant to 1.5 m tall. Petiole to 40 cm long, leaf blade to 70 × 35 cm, with a dark red blotch down the midrib. Inflorescence produced on a separate stem from the base of the plant to 35 cm tall, erect; bracts dark red; flowers white. Not yet found at Río Palenque but common, across the river in mature forest at same elevation.

Heliconia metallica Planch. et Linden Plate 61-B

Plant to 2.5 m tall. Leaves relatively narrow 10-12 cm wide. Inflorescence erect, to 3 m long; peduncle long, slender, commonly from a separate branch of the rhizome at the base of the plant; bracts erect, green; flowers red with green apices of the perianth parts. Common, in mature forest. Panama through tropical South America.
Common name: "Platanillo"+

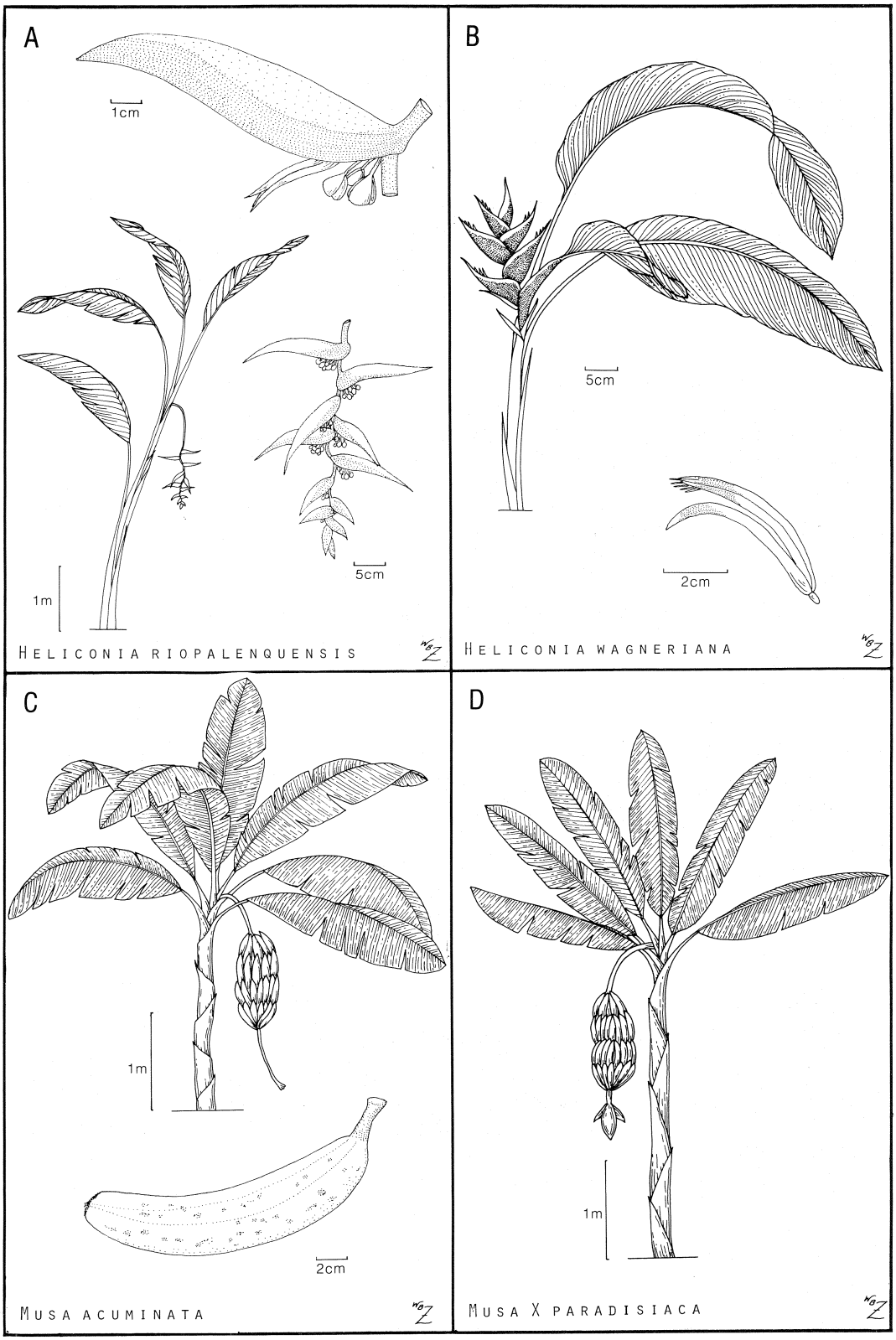
A
1cm
5cm
1m
HELICONIA RIOPALENQUENSIS
B
5cm
2cm
HELICONIA WAGNERIANA
C
1m
2cm
MUSA ACUMINATA
D
1m
MUSA X PARADISIACA

Plate 62

Heliconia nigripraefixa Dodson & A. Gentry Plate 61-C

Plant to 5 m tall. Leaves to 2.5 m long, 45 cm broad. Inflorescence pendent, to 2 m long; bracts and peduncles red, the distal half of the bracts black; flowers yellow. Uncommon, throughout mature forest. Known only from Río Palenque.
Common name: "Platanillo"+

Heliconia obscura Dodson & A. Gentry Plate 61-D

Plant to 2.5 m tall. Stems spotted with red at the base. Leaves to 30 cm broad. Inflorescences pendent, to 50 cm long; bracts dark wine-red, to 15 × 5 cm; flowers yellow. Uncommon, in mature forest. Known only from Río Palenque.
Common name: "Platanillo"+

Heliconia riopalenquensis Dodson & A. Gentry Plate 62-A

Plant to 4 m tall. Leaves 30-35 cm broad. Inflorescence pendent, to 70 cm long; branch bracts rosy-red with the upper and distal surface yellow, moderate in length (to 35 cm long); flowers yellow. Fruits white, turning light blue when ripe. Uncommon, in second growth areas. Known only from Río Palenque.
Common name: "Platanillo"+

Heliconia wagneriana Peters. Plate 62-B

Plant to 2.5 m tall. Leaves to 30 cm broad. Inflorescence erect, to 70 cm long; bracts broad, red blotched on each side with a yellow base color. Uncommon, in mature and disturbed forest. A plant was found on the Dodson road near the junction with trail 3. More frequent near Santo Domingo. Southern Mexico to Brazil.

***Musa acuminata** Colla Plate 62-C

Plant essentially the same as *M.* ×*paradisiaca* but the fruits are edible and delicious uncooked. Several cultivars are grown in the region including "Gros Michel," the original exported banana, "Variedad," the Cavendish which is now the exported type, "Oritos," the lady-finger banana, and "Manzana," the fat, red banana.
Common name: "Banana"+, "Guineo"+, "Oritos"+

***Musa* × *paradisiaca** L. Plate 62-D

Large herbaceous tree to 7 m tall. Stem short and thick with numerous leaf sheaths forming a "trunk" to 4 m tall, the leaf blade from the top of the sheaths, to 2.5 m long, 45 cm wide. Inflorescence emerging from the top of the leaf sheaths, pendent, to 2 m long after the point of emergence; flowers and fruits in "hands" on the peduncle, the female flowers and fruits at the base of the inflorescence, the male flowers at the apex. Fruits to 40 cm long, to 6 cm in diameter. This is the cooking banana much cultivated on the coast.
Common name: "Platano"+, "Verde"+, "Maduro"+

ORCHIDACEAE

Perennial herbs, epiphytic, terrestrial, or vine-like. Leaf-bearing stems often swollen in epiphytes. Leaves alternate, simple, entire, plicate or leathery, basally with a closed sheath. Flowers bisexual, rarely unisexual, zygomorphic; sepals 3; petals 3, usually with one expanded; stamens and pistil joined to form a column; anther 1, rarely 2.

The Orchidaceae constitute the largest family at Río Palenque. Many of the species are rare. Several species, which have not been collected at the Science Center, but are known to exist in natural populations in the hills across the Río Palenque, are included (marked in the key with **). The distance is less than 4 kilometers, and many of the waifs which have been found at the Science Center form natural populations in these nearby hills.

Names used in this treatment are in some cases inexact. Some plants found at Río Palenque belong to widespread and confusing taxonomic complexes. Those names marked (†) are used in the broad sense.

Key to the species.

1. Plants terrestrial.
   2. Flowers more than 10 cm wide, pink; cultivated.
      3. Inflorescence cone-like, to 10 cm long . . . . . *Sobralia fenzliana*
      3. Inflorescence zig-zag, to 40 cm long . . . . . *Sobralia pulcherrima*
   2. Flowers less than 1 cm wide, green or yellow; native.
      4. Plant with inflorescence to 70 cm tall; lip with elongate, twisted, anchor-like, apical lobes . . . . . *Erythrodes ecuadorensis*
      4. Plant with inflorescence to 25 cm tall; lip with round, flattened, apical lobes.
         5. Leaves green; inflorescence elongate . . . . . *Erythrodes weberana*
         5. Leaves green with silver maculations; inflorescence sessile. . . . . *Erythrodes maculata*
1. Plants epiphytic.
   6. Plants with large vining habit (stems to 15 m long) . . . . . *Vanilla planifolia*
   6. Plants forming clumps, or if vining, small.
      7. Pseudobulbs (swollen stems) either not present or not obvious.
         8. Plants with fan-like arrangement of leaves and with very short rhizomes.
            9. Inflorescence a single flower produced at the apex of the peduncle, or flowers produced successively in a raceme.
               10. Flowers white with purple apices to the segments. . . . . *Pescatorea wallisii*
               10. Flowers orange, red, yellow or green.
                  11. Sepals and petals orange, flowers very large (to 15 cm in diameter) . . . . . *Huntleya wallisii*
                  11. Sepals and petals yellow or green, flowers less than 8 cm in diameter.
                     12. Flowers green, or if sepals and petals yellow, lip always red; never more than one flower produced on an inflorescence.
                        13. Base of the lip produced into a spur.

14. Whole plant to 8 cm tall; flowers to 8 mm in diameter . . . . . *Cryptocentrum minus*
14. Whole plant to 40 cm tall; flower to 25 mm in diameter. . . . . *Cryptocentrum jamesonii*
13. Base of the lip without a spur.
15. Sepals and petals yellow; lip red.
16. Flowers to 4 cm in diameter . . *Maxillaria crassifolia***
16. Flowers to 7 cm in diameter.
17. Leaves fleshy; flower segments tapering acutely . . . . . *Maxillaria nasuta*
17. Leaves thin; flower parts as wide at the mid-point as at the base . . . . . *Maxillaria chartacifolia*
15. Sepals and petals green; lip green. *Kefersteinia stevensonii*
12. Flowers yellow, or yellow with brown spots; lip not red; flowers produced in succession on the inflorescence.
18. Flowers completely yellow, less than 8 mm in diameter . . . . . *Psygmorchis pumilio*
18. Flowers yellow with brown spots at the base of the lip, more than 1 cm in diameter . . . . . *Psygmorchis pusilla*
9. Inflorescence racemose, several flowers produced at one time.
19. Inflorescence erect; flowers densely arranged . . . *Trizeuxis falcata*
19. Inflorescence pendent; flowers loosely arranged.
20. Leaves rigidly fan-shaped; peduncle and backs of the floral bracts pubescent . . . . . *Ornithocephalus bryostachyus*
20. Leaves loosely fan-shaped; peduncle and backs of the floral bracts glabrous . . . . . *Cryptarrhena lunata*
8. Plants with cane-like stems or with leaves in a basal rosette.
21. Leaves in a basal rosette . . . . . *Spiranthes cranichoides*
21. Leaves arranged along a cane-like stem.
22. Leaves thin with obvious veins on the underside.
23. Flowers in a congested inflorescence with several flowers open at one time.
24. Inflorescence flattened; flowers white. . . . . *Elleanthus isochiloides*
24. Inflorescence not flattened; flowers orange-red or pink.
25. Flowers pink; inflorescence very short, head-like . . . . . *Elleanthus* cf. *zamorensis*
25. Flowers orange-red; inflorescence cone-like. . . . . *Elleanthus aristatus*
23. Flowers produced singly in succession, or in pairs.
26. Flowers more than 10 cm in diameter.
27. Flowers entirely yellow-white; native epiphytes . . . . . *Sobralia macrophylla*
27. Flowers pink (at least on the lip); cultivated as terrestrials.
28. Inflorescence cone-like, to 10 cm long . . . . . *Sobralia fenzliana*
28. Inflorescence zig-zag, to 40 cm long . . . . . *Sobralia pulcherrima*
26. Flowers less than 6 cm in diameter.

29. Flowers yellow, usually only 2 produced . .*Sobralia suaveolens*
29. Flowers pink, several produced in succession . *Sobralia valida*

22. Leaves without obvious veins on the underside.
30. Plants vine-like, small (to 40 cm long); roots produced along the stem . . . . . *Campylocentrum micranthum*
30. Plants not vine-like; secondary stems with roots produced only at the base.
31. Flowers produced at nodes along the stem, not only at the apex.
32. Plant pendent or lax.
33. Leaves terete . . . . . .*Reichenbachanthus reflexa*
33. Leaves flat.
34. Plant with short, broad leaves.
35. Leaves to 1.5 cm long, by 8 mm wide . . . . . .*Dichaea muricata*
35. Leaves to 3 cm long, 1 cm broad . . . . . .*Dichaea morrisii***
34. Plant with longer, narrower leaves.
36. Sepals and petals relatively narrow (20 × 3 mm) . . . . . .*Dichaea gorgonensis*
36. Sepals and petals relatively broad. (6-12 × 3-5 mm).
37. Leaves 25 × 5 mm; sepals 6 × 3 mm . . . . . .*Dichaea richii*
37. Leaves 50 × 5 mm; sepals 12 × 5 mm . . . . . .*Dichaea riopalenquensis*
32. Plant erect.
38. Stems 3-5 cm long . . . . . .*Scaphyglottis prolifera*
38. Stems 10-35 cm long.
39. Stems to 15 cm long, 1 cm thick; pedicel to 5 mm long . . . . . *Scaphyglottis modesta*
39. Stems to 35 cm long, 5 mm thick; pedicel to 25 cm long . . . . . *Scaphyglottis punctulata***
31. Flowers produced only at the apex of the stem.
40. Plant with 1 leaf at the apex of each stem.
41. Sepals joined at their apices leaving small windows at the mid-point of the juncture between the dorsal and ventral sepals. . . . . .*Cryptophoranthus oblongifolius***
41. Sepals free at their apices, often partially joined near the base.
42. Sepals joined basally to form a tube, apices elongated and slender . . . . . *Masdevallia thienii*
42. Sepals free, or joined basally, but not forming a tube (lateral sepals sometimes joined).
43. Sepals spreading to form a flat flower; lip and petals tiny, blunt at the apices.
44. Plants 2-40 cm tall; floral bracts expanded, 12 mm long, equalling the length of the pedicels; ventral sepals joined and different in shape from the dorsal sepal . . .*Stelis purpurea*
44. Plant 5-10 cm tall; floral bracts 1-3 mm long, not equaling the pedicel; ventral sepals separated and equal in shape to the dorsal sepal.

45. Inflorescence only slightly surpassing the leaf; peduncle straight . . . . . *Stelis* cf. *pusilla*
45. Inflorescence 3 or more times the length of the leaf; peduncle zig-zag . . . . . *Stelis concinna*
43. Sepals erect, usually forming a cup at least at the base; lip and petals variously shaped.
46. Inflorescences very short; flowers in fascicles.
47. Base of the leaf cordate.
48. Leaf narrow, to 12 × 2 cm . . . . . *Pleurothallis dibolia***
48. Leaf broad, heart-shaped.
49. Stem triangular . . . . . *Pleurothallis congruens***
49. Stem terete.
50. Petals 1 mm wide at the base; peduncle 1-2 mm long . . . . . *Pleurothallis acostae***
50. Petals 1.5 mm wide at the base; peduncle 1-1.5 cm long . . . . . *Pleurothallis prolaticollaris***
47. Base of the leaf acute.
51. Leaf and stem bracts plain green; leaf broadly elliptic . . . . . *Pleurothallis ruscifolia*
51. Leaf and stem bracts with black dots; leaf narrowly elliptic . . . . . *Pleurothallis peduncularis***
46. Inflorescences elongate; flowers produced from an obvious peduncle.
52. Inflorescence appressed to the leaf.
53. Dorsal and ventral sepals widely divergent; petals thin, much longer than the lip . . . . *Pleurothallis geminicaulina*
53. Dorsal and ventral sepals not opening widely; petals thick, about equal in length to the lip.
54. Petals grooved along each margin forming 4 serrate laminae . . . . . *Pleurothallis quadriserrata*
54. Petals entire on the margin . . *Pleurothallis verecunda*
52. Inflorescence divergent from the leaf.
55. Flowers pink, to 3 cm tall . . . . . *Pleurothallis luctuosa*
55. Flowers yellow or brownish, sometimes with red flecks.
56. Plants 10-20 cm tall.
57. Stems to 1 cm long . . *Pleurothallis costaricensis***
57. Stems more than 3 cm long and nearly equal to the leaf.
58. Flowers to 8 mm in diameter, spaced about 8 mm apart . . . . . *Pleurothallis pruinosa***
58. Flowers to 4 mm in diameter, tightly and distichously arranged . . . . . *Pleurothallis deregularis*
56. Plants 30-45 cm tall.
59. Stem with appressed bracts; flowers yellow; sepals and petals spreading; petals linear . . . . . *Pleurothallis helleri*
59. Stem with open, sheathing bracts; flowers cream with purple flecks; sepals hooded; petals ovate . . . . . *Pleurothallis univaginata*

40. Plant with several leaves arranged alternately along cane-like stems.
60. Lip free and divergent from the column; flowers yellow with red-brown spots. . . . . *Lockhartia serra*
60. Lip united to the column to its apex; flowers yellow-green, orange-red, pink or white.
61. Plant pendent from the lower side of tree limbs.
62. Leaves slender, to 15 × 0.9 cm . . *Epidendrum guayasense*
62. Leaves broad, to 3 × 1.5 cm . . *Epidendrum coronanthera*
61. Plant erect to lax, usually from the upper surface of tree limbs.
63. Flowers pink or orange-red.
64. Flowers orange-red . . . . *Epidendrum baumannianum*
64. Flowers pink.
65. Inflorescence 0.3-0.5 cm long; flowers produced in succession . . . . . *Dimerandra emarginata*
65. Inflorescence 10 to 30 cm tall, with numerous flowers open at a time . . . . . *Epidendrum imatophyllum*
63. Flowers yellow-green or white. (*E. mininocturnum* has pink sepals and column).
66. Margin of lip long fimbriate. . . . *Epidendrum ilense***
66. Margin of lip entire to 3 lobed.
67. Midlobe of the lip narrow and tapered to a point . . . . . *Epidendrum mininocturnum*
67. Midlobe of the lip blunt or broad.
68. Flowers arranged in a head-like inflorescence.
69. Head of flowers on an elongate peduncle (to 50 cm long) . . . *Epidendrum anceps***
69. Head of flowers on a very short peduncle (to 1 cm long).
70. Flowers white.
71. Stems to 50 cm long; leaves broad (to 8 × 5 cm) . . . . . *Epidendrum rhizomaniacum***
71. Stems to 15 cm long; leaves narrow (to 10 × 1 cm) . . . . . *Epidendrum jejunum*
70. Flowers yellow-green.
72. Flowers in dense clusters, 5 to 20 at a time, produced once per year; upper leaves small and bract-like . . . . . *Epidendrum difforme*
72. Flowers 2 to 3 at a time, produced in succession throughout the year; upper leaves similar to the others.
73. Surface of lip smooth; flowers ca. 2.5 cm in diameter. . . . . *Epidendrum williamsii***
73. Surface of lip with strongly raised nerves; flowers ca. 6 cm in diameter . . . . . *Epidendrum platychilum***

68. Flowers arranged on a raceme.
74. Inflorescence to 40 cm long, with small floral bracts ..... *Epidendrum pseudopaniculatum*
74. Inflorescence to 15 cm long, with large floral bracts ..... *Epidendrum rigidum*

7. Pseudobulbs obvious.
75. Pseudobulbs of several internodes.
76. Leaves one or two at the apex of the pseudobulb; not deciduous ..... *Cattleya maxima*
76. Leaves several, one at each node; deciduous.
77. Inflorescence from the top node of the pseudobulb; lip blade convex, white with a green-black callus..... ..... *Cycnoches lehmannii*
77. Inflorescence from the mid or lower nodes of the pseudobulb; lip flat or hooded, green or ivory.
78. Lip hooded, green to yellow green .... *Catasetum macroglossum*
78. Lip flat to slightly recurved, ivory to pink..... ..... *Mormodes buccinator*
75. Pseudobulbs of a single internode.
79. Leaves thin with conspicuous veins on the underside.
80. Pseudobulbs with a single leaf at the apex.
81. Inflorescence with 2 flowers, 5-10 cm in diameter.
82. Flowers with a ring around the base of the lip, to 5 cm broad across the sepals .... *Stanhopea annulata*
82. Flowers without a ring around the base of the lip, to 10 cm broad across the sepals. *Stanhopea tricornis*
81. Inflorescence with several flowers (usually 5-8), 2-4 cm in diameter.
83. Flowers with a fringe on the lip..... ..... *Sievekingia reichenbachiana*
83. Flowers without a fringe on the lip..... ..... *Sievekingia rhonhofiae*
80. Pseudobulbs normally with 2 or more leaves at the apex.
84. Inflorescence with a single flower.
85. Peduncle to 5 cm long; pseudobulb surrounded by a papery bract ..... *Teuscheria integrilabia***
85. Peduncle 10-18 cm long; pseudobulbs not covered by a bract.
86. Plant with clustered pseudobulbs, the rhizome to 1 cm long ..... *Trigonidium riopalenquense*
86. Plant with pseudobulbs widely separated on an elongate rhizome to 40 cm long .... *Trigonidium insigne*
84. Inflorescence with multiple flowers (2-30).
87. Flowers to 10 cm in diameter, lip forming a water-filled bucket ..... *Coryanthes elegantium*
87. Flowers to 5 cm in diameter, lip not forming a bucket.
88. Inflorescence erect.

89. Pseudobulbs ovoid, to 8 × 6 cm ..... *Xylobium variegatum*
89. Pseudobulbs slender, to 30 × 1 cm ..... *Xylobium elongatum*

88. Inflorescence pendent.
90. Pseudobulbs round, smooth ..... *Trevoria ecuadorensis***
90. Pseudobulbs ellipsoid, deeply ridged.
91. Base of the lip with long, finger-like projections in addition to the pair of antennae at the mid-portion of the lip .... *Gongora grossa*
91. Base of the lip with very short projections in addition to the pair of antennae..... *Gongora quinquenervis*

79. Leaves thick, without conspicuous veins on the underside.
92. Inflorescence producing a single flower at the apex of the peduncle (often forming several inflorescences from the base of each pseudobulb).
93. Flowers produced in succession at the apex of the peduncle, flowers spreading with narrow dorsal and broad ventral segments..... *Oncidium kramerianum*
93. Flowers produced singly at the apex of each peduncle, the dorsal and ventral segments of the same width.
94. Sepals forming an erect cup, recurved at the apices.
95. Pseudobulbs clustered; stems short ..... *Trigonidium riopalenquense*
95. Pseudobulbs widely separated on rambling rhizomes ..... *Trigonidium insigne*
94. Sepals spreading, not recurved at the apices.
96. Pseudobulbs mostly joined, one on top of another.
97. Stems 10 to 30 cm long.
98. Stems 10-15 cm long; peduncle 5 mm long..... *Scaphyglottis modesta*
98. Stems 15-30 cm long; peduncle 2 cm long..... *Scaphyglottis punctulata***
97. Stems 3-5 cm long.... *Scaphyglottis prolifera*
96. Pseudobulbs arranged along the rhizome.
99. Plants with very short rhizomes, the pseudobulbs clustered.
100. Leaves from the base of the pseudobulb well developed, nearly of the same size as the apical leaves.
101. Inflorescences nearly equaling the leaves..... *Maxillaria arachnitis*
101. Inflorescences much shorter than the leaves.
102. Leaves green with white spots *Maxillaria reichenheimiana***
102. Leaves plain green.

103. Flowers to 7 cm in diameter . . . . . *Maxillaria nasuta*
103. Flowers to 3 cm in diameter . . . . *Maxillaria crassifolia***
100. Leaves from the base of the pseudobulb reduced to bracts.
104. Flowers on very short peduncles, tightly arranged under the pseudobulbs . . . . . *Maxillaria neophylla*
104. Flowers on peduncles which exceed the pseudobulbs.
105. Sepals widely spreading to recurved . . . . . *Maxillaria rufescens*
105. Sepals erect, hooded . . . . . *Maxillaria brunnea*
99. Plants with elongate rhizomes, the pseudobulbs widely separated.
106. Leaves to 1 cm wide; pseudobulbs very slender. . . . . *Maxillaria meridense***
106. Leaves more than 2 cm wide; pseudobulbs obviously swollen.
107. Rhizomes dichotomously branched at the base of each pseudobulb . . . . . *Maxillaria ramosa*
107. Rhizomes normally unbranched at the base of the pseudobulbs.
108. Flowers cream to brown, to 8 mm in diameter . . . . *Maxillaria conferta*
108. Flowers yellow or white, 2.5-3 cm in diameter.
109. Flowers yellow; pseudobulbs usually separated by more than 30 cm on an erect, leafy stem . . . . . *Maxillaria densifolia***
109. Flowers white; pseudobulbs usually only separated by 5-10 cm on a lax stem with fully developed leaves only toward the apex . . . . . *Maxillaria alba*
92. Inflorescence with several flowers open at the same time. (racemose or paniculate).
110. Plants fan-shaped; flowers tightly clustered. . . . . *Trizeuxis falcata*
110. Plants not fan-shaped; flowers loosely arranged.
111. Rachis of inflorescence swollen and fleshy; flowers sunken . . . . . *Bulbophyllum pachyrhachis*
111. Rachis of inflorescence not swollen; flowers not sunken.
112. Inflorescence produced from the apex of the pseudobulb.
113. Inflorescence elongate, lax, with densely flowered, erect branches . . . . . *Polystachya concreta***
113. Inflorescence either very short or unbranched.
114. Inflorescence not surrounded by a sheath at the base. . . . . *Hexadesmia lindeniana*
114. Inflorescence surrounded by an obvious sheath at its base.
115. Pseudobulbs arranged along an elongate rhizome; flowers to 1 cm in diameter . . . . . *Encyclia pygmaea*
115. Pseudobulbs clustered on a short rhizome; flowers to 5 cm in diameter.
116. Sepals and petals pink with a yellow margin . . . . . *Encyclia vespa***
116. Sepals and petals white with dark red flecks. . . . . *Encyclia chimborazoensis*

112. Inflorescence produced from the base of the pseudobulb.
117. Leaves terete . . . . . *Ionopsis satyrioides*
117. Leaves flat, very narrow in some cases but not terete.
118. Inflorescence pendent.
119. Flowers to 1 cm in diameter; sepals green; lip and petals white, barred with orange . . . . . *.Notylia replicata*
119. Flowers to 2.5 cm in diameter, pink or white.
120. Flowers pink; lip 3-lobed. . *.Macradenia brassavolae*
120. Flowers white; lip entire . . . *Leucohyle subulata***
118. Inflorescence erect or lax.
121. Flowers produced singly in succession.
122. Dorsal sepal and petals very elongate (to 5 cm); rhizome short with pseudobulbs closely adjacent . . . . . *Oncidium kramerianum*
122. Dorsal sepal and petals not elongate (to 2 cm long); pseudobulbs produced at the nodes along a vine-like rhizome several meters long . . . . . *Oncidium globuliferum*
121. Flowers several, most open at the same time.
123. Column with wings, or the margin expanded on each side of the stigma; lip with an obvious callus.
124. Inflorescence a panicle with several major branches from the main rachis, the flowers white, arranged in dense fascicles at the nodes . . . . . *.Sigmatostalix adamsii***
124. Inflorescence a panicle or a raceme with a single flower at each node, the flowers pink or yellow marked with brown.
125. Lip much longer than the sepals and petals . . . . . *Oncidium obryzatum***
125. Lip equal to or much shorter than the sepals and petals.
126. Sepals only slightly longer than the lip or shorter; petals spreading.
127. Flowers with a pink lip; sepals and petals light brown. . . . . *Oncidium cardiochilum*
127. Flowers yellow, marked with brown.
128. Apical lobe of the callus oval in profile; pseudobulbs unifoliate at the apex . . . . . *Oncidium stenotis*
128. Apical lobe of the callus forming a hook in profile; pseudobulbs bifoliate at the apex. . . . . *. .Oncidium planilabre***

126. Sepals more than twice as long as the lip; petals usually overlapping or touching at the tips.
129. Flowers 10-15 cm in longest diameter; pseudobulbs unifoliate at the apex ..... *Brassia arcuigera***
129. Flowers 4-7 cm in longest diameter; pseudobulbs bifoliate at the apex ..... *Brassia warscewiczii***
123. Column wingless; lip callus small or lacking.
130. Base of the column and lip joined to form a nectary.
131. Flowers green with a white lip. ..... *Aspasia psitticina*
131. Flowers pink ..... *Comparettia falcata*
130. Base of the column and lip not forming an obvious nectary.
132. Lip pink or white.
133. Flowers 5 cm or more in diameter. ..... *Miltoniopsis santanaei*
133. Flowers 3 cm or less in diameter.
134. Sepals and petals spreading, light green; lip pink with red spots ..... *Cischweinfia rostrata***
134. Sepals and petals clasping around the lip; whole flower light pink ..... *Ionopsis utricularioides*
132. Lip yellow or green with red markings.
135. Lip anchor-shaped; sepals and petals strongly reflexed ..... *Sigmatostalix picta***
135. Lip obovate, sepals and petals erect to hooked over the column.
136. Lateral sepals connate for at least half of their length; flowers yellow marked with red. ..... *Leochilus labiatus*
136. Lateral sepals free; flowers green marked with red ..... *Leochilus scriptus*

Aspasia psitticina Rchb. f. Plate 63-A

Epiphytic; rhizome short, to 1 cm between obvious, flattened pseudobulbs, to 15 × 4 cm, with 2 or 3 basal, leaf-like sheaths, the apical leaves in pairs, to 35 cm long. Inflorescences from the base of the pseudobulb in the axils of the basal leaves, slightly longer than the pseudobulbs; flowers 3 to 8, to 5 cm in length; sepals and petals yellow, barred with red-brown; lip white. Common, in the Quevedo region, very rare at the Science Center. Cultivated on "Mate" *(Crescentia)* tree alongside electric house. Flowering season February to May. Pollinated by *Eulaema cingulata* and *E. polychroma.* Coastal Ecuador.

Brassia arcuigera Rchb. f. Plate 63-B

Epiphytic; rhizome short; pseudobulb to 15 cm long, flattened with very sharp edges, with a single leaf at the apex, to 35 × 7 cm, the sheaths at the base expanded to form leaves, to 50 cm long. Flowers 5 to 15, to 15 cm in length; sepals very long and slender; petals long and slender and curved so as to meet at the apices, yellow barred with brown at the base; lip long and slender coming to a point, yellow with brown spots at the base. Common, in trees on the hills across the river. Not yet found on the Science Center. Flowering season February to July. Pollinated by many species of *Pepsis* and *Campsomeris* wasps. Nicaragua to Ecuador.

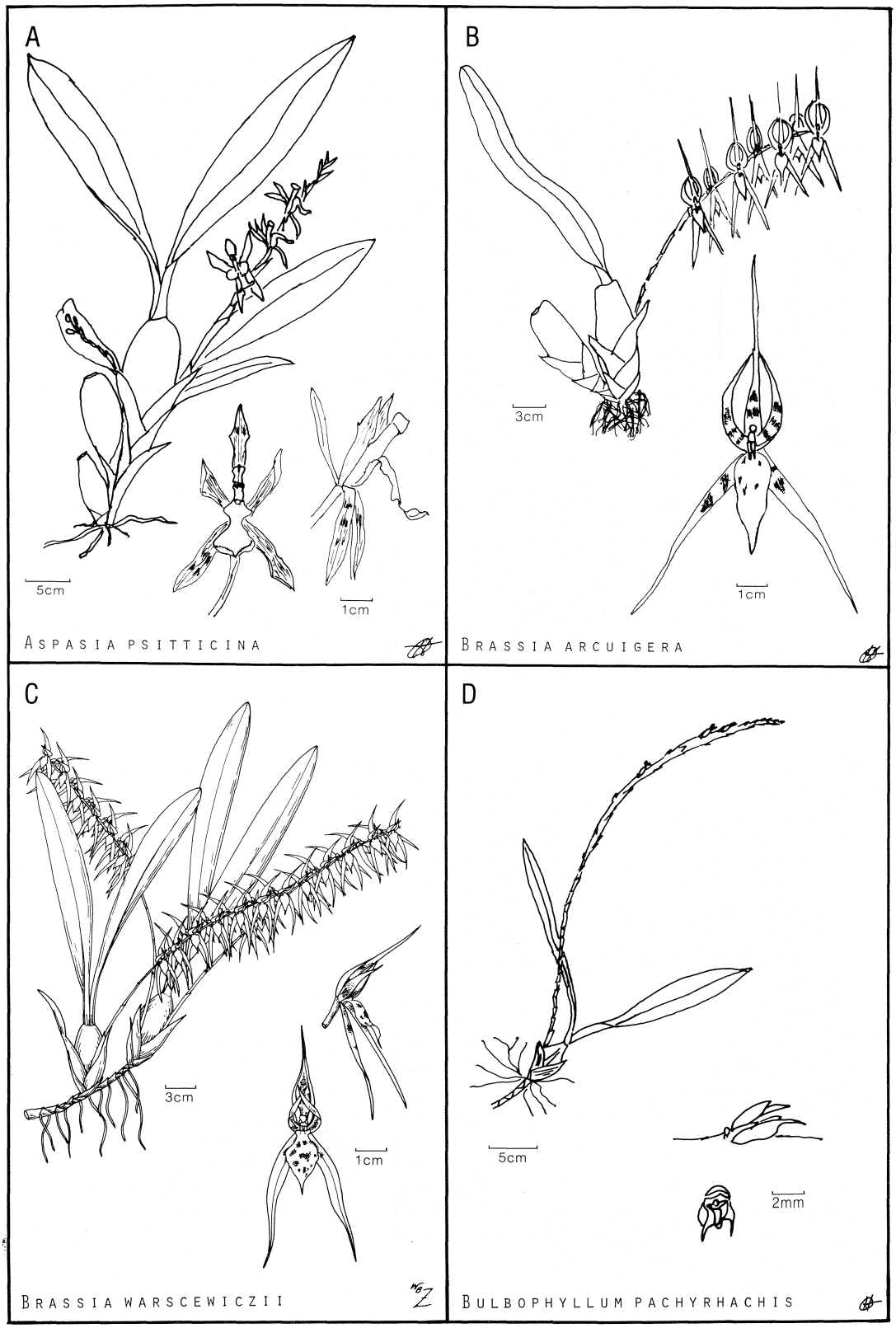
A
5cm
1cm
ASPASIA PSITTICINA
B
3cm
1cm
BRASSIA ARCUIGERA
C
3cm
1cm
BRASSIA WARSCEWICZII
D
5cm
2mm
BULBOPHYLLUM PACHYRHACHIS

Plate 63

Brassia warscewiczii Rchb. f. Plate 63-C

Epiphytic; rhizome short; pseudobulb large, to 10 cm long, slightly flattened and ridged longitudinally, with 1 or 2 leaves at the apex, to 25 × 3.5 cm, the sheaths at the base expanded to form short leaves which are soon deciduous. Inflorescences from the base of the pseudobulb in the axils of the leaves, to 25 cm long; flowers 15 to 25, very fragrant, to 7 cm in length; sepals long and slender; petals slender, curved to meet at the apices, yellow; lip pale yellow, tapering to a point. One of the smallest flowered species of true *Brassia.* Not yet found on the Science Center but occasional in large trees over coffee near Naranjal. Flowering season July to September. Coastal Ecuador.

Bulbophyllum pachyrhachis (A. Rich.) Griseb. Plate 63-D

Epiphytic; rhizome to 8 cm long between obvious pseudobulbs; pseudobulbs broad at the base, tapering at the apex, square in cross section, 5 cm long, with 2 apical leaves to 15 cm long. Rachis fleshy and swollen, to 30 cm long; flowers imbedded in the rachis and subtended by obvious bracts to 7 mm long; sepals and petals to 4 mm long, green-brown. Uncommon, in the tops of tall trees. Flowering season August-November. Mexico and the West Indies to Venezuela and Ecuador.

†Campylocentrum micranthum (Lindl.) Rolfe Plate 64-A

Epiphytic; vine-like; roots elongate, produced along the full length of the stem. Leaves 1 cm apart, oblong, to 3 cm long. Inflorescences to 1.5 cm long, produced opposite the leaves. Flowers white, the segments to 2 cm long, the spur produced from the base of the lip, curled forward, 1.5 cm long. Fruits to 8 mm long. Flowers probably self-fertilizing resulting in many seed pods being present. Uncommon, in tops of tall trees. Flowering season July to August. Widespread in tropical America.

Catasetum macroglossum Rchb. f. Plate 64-B
C. sodiroi Schltr.

Epiphytic; usually on dead limbs; pseudobulbs large, thick, jointed, on very short rhizomes. Leaves thin, deciduous, with obvious, thickened veins, to 30 × 8 cm. Inflorescence erect, to 20 cm long, produced from the base of the pseudobulb; flowers 3 to 10, green or yellow-green; sepals and petals to 5 cm long, 2.5 cm wide; lip hood-shaped in both male and female flowers, the male flowers with an obvious, fleshy, transverse callus inside the hood and with elongate antennae from the sides of the column. Uncommon, in dead trees and limbs. Flowering season January to May. Pollinated by *Eulaema bomboides, E. polychroma* and *E. cingulata.* Restricted to coastal Ecuador.

***Cattleya maxima** Lindl. Plate 64-C

Epiphytic; rhizome short between obvious cylindrical pseudobulbs; pseudobulbs to 50 × 3 cm, clothed with closely appressed dry sheaths, with a single leaf at the apex, to 20 × 5 cm. Inflorescence from the apex of the pseudobulb, surrounded at the base by a flattened bract to 7 cm long; flowers 5-13, orchid-pink with darker veins on the lip; sepals and petals to 9 cm long; lip to 10 × 4 cm. Cultivated around the buildings at the Science Center. Previously common, in tropical deciduous, and thorn forest of Guayas and Manabi Provinces. Flowering sporadically through year but principally during November. Coastal Ecuador and Peru.

† = Name used in the broad sense.

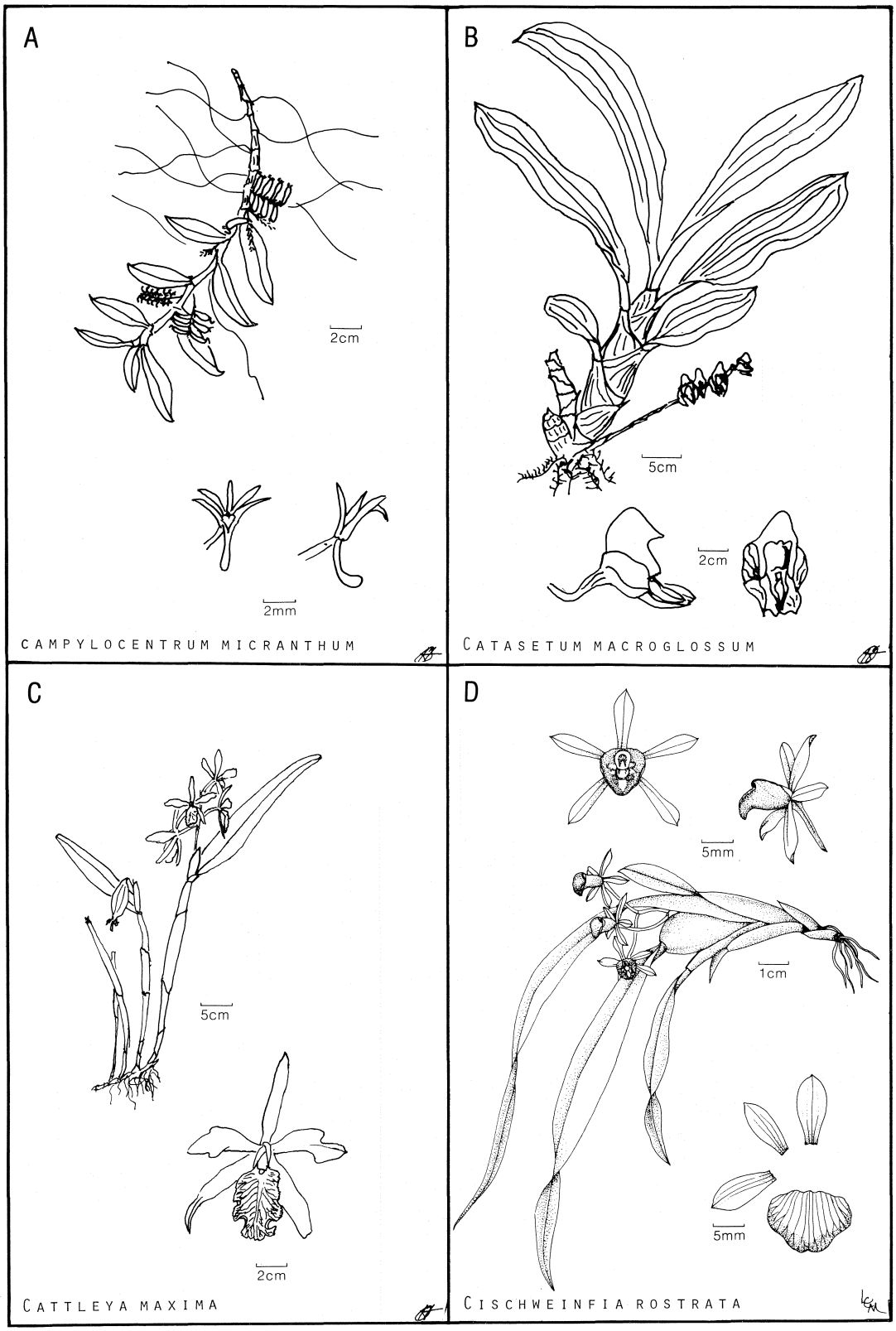
A
2cm
2mm
CAMPYLOCENTRUM MICRANTHUM
B
5cm
2cm
CATASETUM MACROGLOSSUM
C
5cm
2cm
CATTLEYA MAXIMA
D
5mm
1cm
5mm
CISCHWEINFIA ROSTRATA

Plate 64

Cischweinfia rostrata Dressler & N. Williams Plate 64-D

Epiphytic; rhizome very short; pseudobulbs flattened, to 5 cm long, with 2 leaves at the apex, to 10 cm long, the sheaths surrounding the base of the pseudobulb foliaceous. Inflorescence from base of the pseudobulb in the axils of the sheaths, to 10 cm long; flowers 4-7; sepals and petals similar, spreading, light green, to 1 cm long; lip flared and surrounding the column at the base, pink with darker pink spots; column extended at the apex over the anther to form a thin skirt. Rare, in the region of Santo Domingo, probably to be found on the Science Center. Flowering through most of the year. Restricted to coastal Ecuador.

Comparettia falcata P. & E. Plate 65-A

Epiphytic; rhizome short between pseudobulbs; pseudobulbs cylindrical, to 5 cm long, with a single leaf at the apex, the leaf fleshy, to 10 × 3 cm. Inflorescence from the base of the pseudobulb, to 40 cm long; flowers pink, produced in succession; sepals and petals 1 cm long; lip with a prominent forward curving spur produced from the base of the sepals. Rare, growing in Guava trees near the river. Pollinated by hummingbirds. Flowering sporadically throughout the year. Widespread in tropical America.

Coryanthes elegantium Linden & Rchb. f. Plate 65-B

C. wolfii Lehm.

Epiphytic; rhizome short; pseudobulbs to 15 × 5 cm in diameter at the base, tapering to 1 cm at the apex. Leaves 2 or 3 at the apex of the pseudobulbs, thin, with obvious thickened veins, to 40 × 8 cm. Inflorescences pendent, to 60 cm long, from the base of the pseudobulbs; flowers 2-4, yellow, densely spotted with red; sepals broad, reflexed, to 6 cm long; lip formed into a bucket filled with water. Uncommon, growing in ant nests in trees overhanging the river. Pollinated by *Euglossa gibbosa* and *E. tridentata.* Primary flowering season from January through June, but also any time during the year. Coastal Ecuador.

Cryptarrhena lunata R. Br. Plate 65-C

Epiphytic; rhizome very short, young plants without pseudobulbs, old plants with pseudobulbs. Leaves to 20 × 1.5 cm, arranged in a loose fan-shape, on very short stems. Inflorescences pendent, to 15 cm long; flowers green; sepals and petals to 1 cm long, 3 mm wide; lip white or light green, flattened, 4 lobed, with the apical lobes elongate and curved upward. Uncommon, in shade in understory trees. Flowering season February to April. Widespread in tropical America.

†Cryptocentrum jamesonii Benth. Plate 65-D

Epiphytic; erect. Stems short, to 5 cm long, clothed at the apex with several strap-shaped leaves, to 15 × 1 cm. Inflorescences erect, 1-flowered; flowers yellow-green; sepals forming a tube at the base, the free parts to 1 cm long; petals triangular, to 6 cm long, often recurved between the sepals; lip with a nectar tube developed from the base. Rare, on the Science Center. Common around Santo Domingo. Flowering throughout the year. Coastal Ecuador.

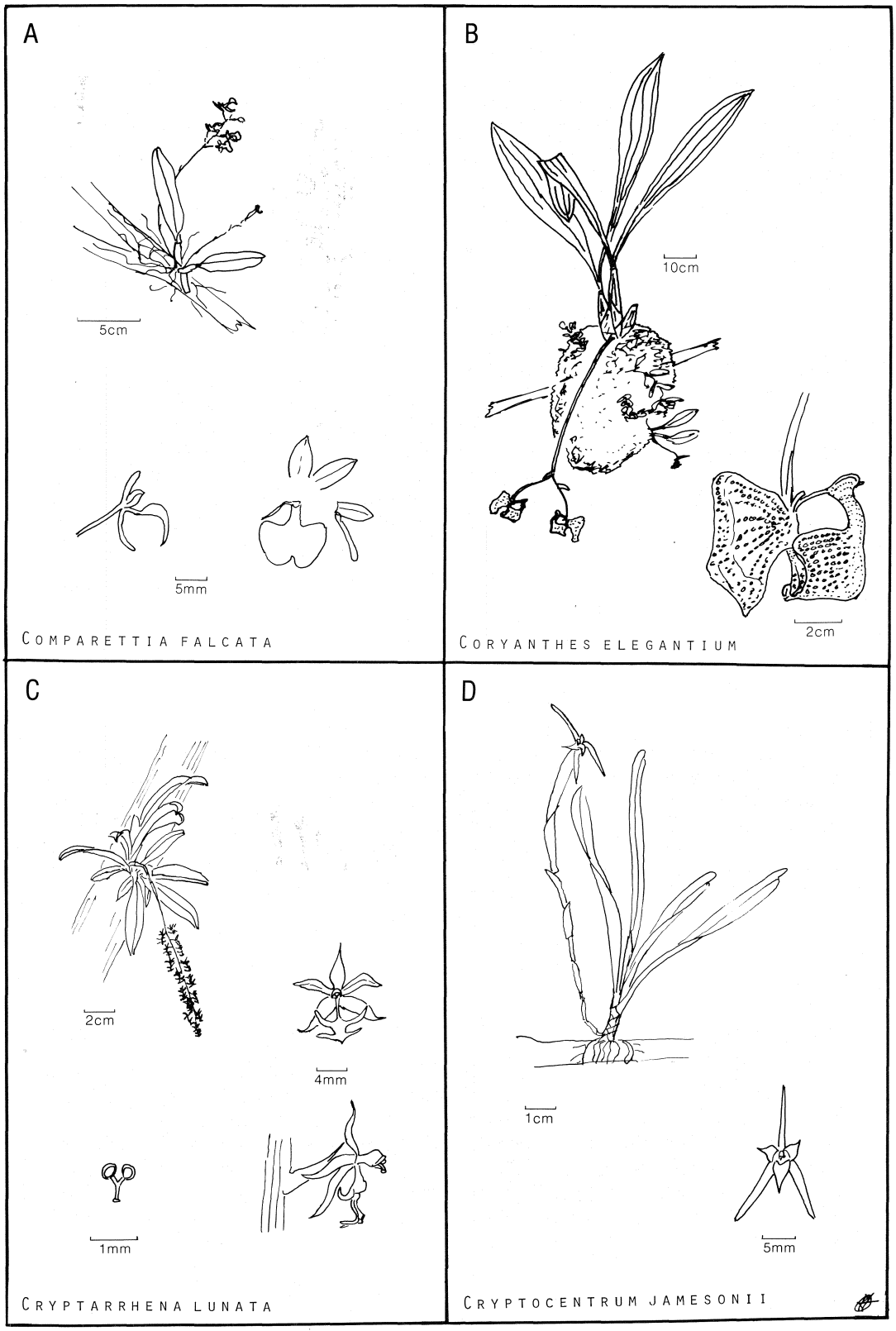
A
5cm
5mm
COMPARETTIA FALCATA
B
10cm
2cm
CORYANTHES ELEGANTIUM
C
2cm
4mm
1mm
CRYPTARRHENA LUNATA
D
1cm
5mm
CRYPTOCENTRUM JAMESONII

Plate 65

†Cryptocentrum minus Schltr. Plate 66-A

Epiphytic; small, stems short, erect, to 3 cm tall, mature plants often branched from base, clothed with numerous quill-like leaves to 7 × 0.3 cm. Inflorescences erect, 1-flowered; flowers green; sepals, petals and lip to 6 × 1 mm, the nectar tube to 1 cm long. Common, growing in moss of the upper limbs and on the trunks of tall trees. Flowering from February to May. Costa Rica to Peru.

Cryptophoranthus oblongifolius Rolfe Plate 66-B

Epiphytic; rhizome short; stems erect, to 10 cm long, clustered with close-fitting sheaths and topped by a single leaf. Leaf elliptical, to 8 × 5 cm. Inflorescence from base of leaf, short, with 2-3 flowers; sepals yellow-brown, joined at the apex, open along the margin, 2.5 cm long; petals and lip very small, at the base of the sepaline tube. Uncommon, on hills across the river from the Science Center. Flowering in May and June. Costa Rica to western Ecuador.

Cycnoches lehmannii Rchb. f. Plate 66-C

Epiphytic; rhizome short; pseudobulbs thick, jointed, to 60 cm long. Leaves thin, deciduous, with obvious, thickened veins, to 40 × 8 cm. Inflorescences produced from apical nodes, rachis to 15 cm long, 2-7 flowered; sepals and petals to 5 cm long, 2 cm wide, green; lip uppermost, 5 × 3 cm, white, the callus dark green. Uncommon, in old cacao trees, usually on dead limbs or trunks. Flowering February to May. Pollinated by *Eulaema cingulata.* Coastal Ecuador.

Dichaea gorgonensis Rchb. f. Plate 66-D

Epiphytic; stems to 30 cm long, cane-like, clothed with closely set leaves to 7 × 5 mm. Inflorescences produced singly in the axils of the leaves toward the apex of the stem, to 2 cm long; 1-flowered; sepals and petals very narrow, to 2 × 0.3 cm; lip anchor-shaped, the lobes slender; ovary muricate. Common, in tree tops, usually hanging laxly from the side of a tree limb. Plants nearly indistinguishable from *D. riopalenquensis;* however, the flowers have much more slender segments. Flowers throughout the year. Coastal Ecuador.

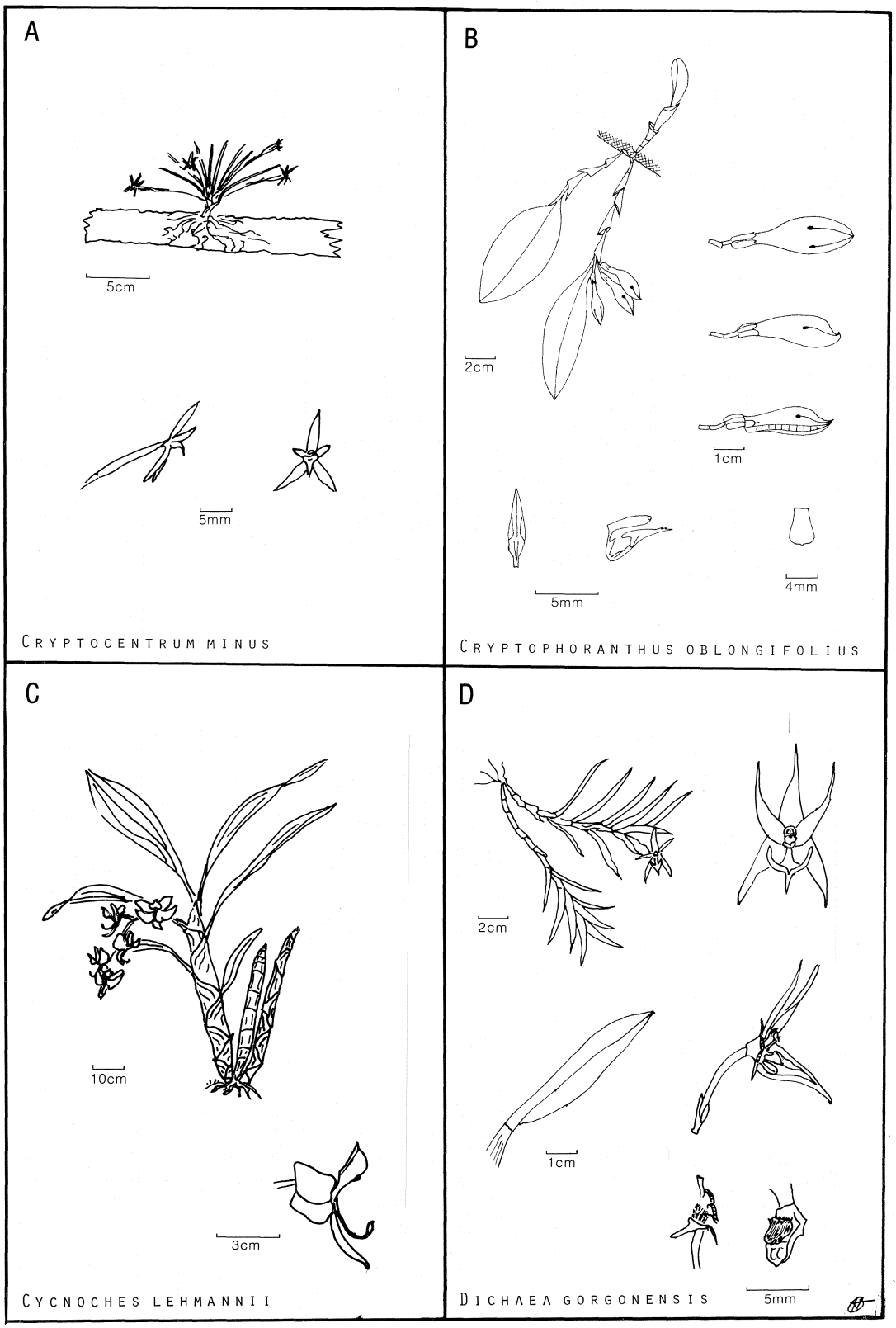
A
5cm
5mm
CRYPTOCENTRUM MINUS
B
2cm
1cm
5mm
4mm
CRYPTOPHORANTHUS OBLONGIFOLIUS
C
10cm
3cm
CYCNOCHES LEHMANNII
D
2cm
1cm
5mm
DICHAEA GORGONENSIS

Plate 66

Dichaea morrisii Fawc. & Rendle Plate 67-A

Epiphytic; rhizomes short. Stems erect, cane-like, clothed with broad leaves to 4 × 1.5 cm. Inflorescences produced in the axils of upper leaves, 1-flowered; sepals and petals white, to 1 cm long; lip anchor-like, blue; ovary muricate, the seed pods covered with spines. Rare, in trees near the river near Santo Domingo, infrequent, in trees on the hillside across the river. Flowers throughout the year. Southern Central America, the West Indies, to northern South America.

†Dichaea muricata (Sw.) Lindl. Plate 67-B

Epiphytic; stems pendent, to 2 m long, clothed with closely set leaves, branched at the base or occasionally in the mid-portion. Leaves to 15 × 8 mm, not articulated. Inflorescences produced singly in the leaf axils along the apical portion of the stem, to 1 cm long, 1-flowered. Sepals and petals buff-colored, 9 × 5 mm; lip blue. Fruits to 15 cm long, covered with thick erect hairs. Infrequent, in trees overhanging the river and the creeks, from the underside of mossy tree limbs. Flowers throughout the year. Widespread in tropical America.

Dichaea richii Dodson Plate 67-C

Epiphytic; stem lax, to 25 cm long, clothed with closely set distichously arranged leaves, the leaves to 25 × 5 mm, articulated, curved. Inflorescences produced singly in leaf axils along the apical portion of stem, to 5 mm long, 1-flowered; sepals and petals white with red-brown spots inside, 6 × 3 mm; lip anchor shaped, white blotched with red-brown. Uncommon locally, in tops of tall trees in mature forest. Flowering February to May. Western Ecuador.

Dichaea riopalenquensis Dodson Plate 67-D

Epiphytic; stems pendent or semi-erect, to 40 cm long, clothed with closely set leaves, 50 × 5 mm. Inflorescences produced singly in the axils of the leaves near the apex of the stem, to 1 cm long, 1-flowered; sepals, petals and lip pale cream to white; the sepals and petals 12 × 5 mm. Common, in the tops of understory trees. Pollinated by *Eulaema meriana.* Flowers throughout year. Ecuador. Known only from Río Palenque.

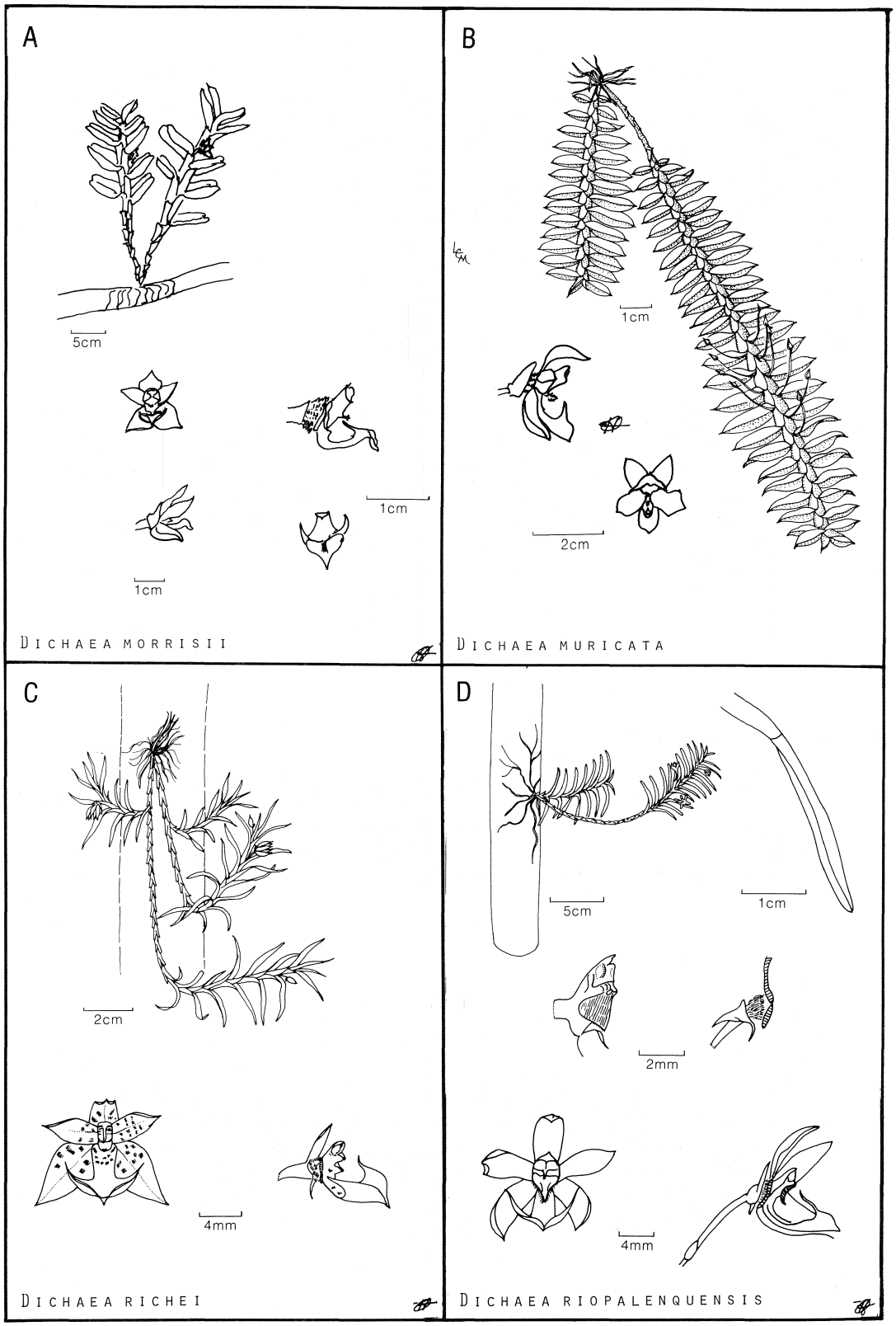
A
5cm
1cm
1cm
DICHAEA MORRISII
B
1cm
2cm
DICHAEA MURICATA
C
2cm
4mm
DICHAEA RICHEI
D
5cm
1cm
2mm
4mm
DICHAEA RIOPALENQUENSIS

Plate 67

Dimerandra emarginata (G. F. Mey.) Hoehne Plate 68-A

Epidendrum stenopetalum Hook.

Epiphytic; rhizome short; canes erect, to 40 cm, forming large clumps. Leaves stiff, spaced 3-4 cm apart on the cane, 10 cm long, 6 mm wide. Inflorescence apical on the stem, very short, to 5 mm long, 3-5 flowers produced in succession, the new inflorescences formed on old canes each year; sepals and petals to 1.5 × 1 cm, pink; lip 2 × 1.5 cm wide, pink with a white spot at the juncture with the column. Fruits 3 cm long. Uncommon, in tops of tall trees. Flowering from December through May. Widespread in tropical America.

Elleanthus aristatus Garay Plate 68-B

Epiphytic; stems cane-like, erect, to 70 cm long, clothed with leaves toward the apex, the leaves thin with prominent veins on the underside. Inflorescence terminal on the cane, each flower subtended by an elongate bract; flowers 10-25, red-orange; sepals and petals to 6 mm long; lip with 2 calli at the base. Rare, on the Science Center in the tree tops. Flowering from January to March. Western Ecuador.

Elleanthus isochiloides Løjtnant Plate 68-C

Epiphytic; stems cane-like, to 25 cm long, clothed with slender, thin leaves, 8 cm long, with obvious veins. Inflorescence at the apex of the stem, flat, composed of distichous overlapping bracts; flowers white, emerging from between the bracts, in succession. Uncommon, in tops of canopy trees. Flowering throughout the year. Western Ecuador.

Elleanthus cf. **zamorensis** Garay Plate 68-D

Epiphytic; lax, with cane-like stems to 1 m long, clothed with widely set leaves. Leaf 20 × 5 cm, the leaf blade thin with conspicuous veins. Inflorescence a compact head at the apex of the stem with large bracts surrounding pink flowers; sepals and petals 5 mm long, 3 mm broad; lip 5 × 8 mm. Uncommon, in tree tops. Pollinated by hummingbirds. Flowering from February to April. On both sides of the Andes in Ecuador at lower elevations.

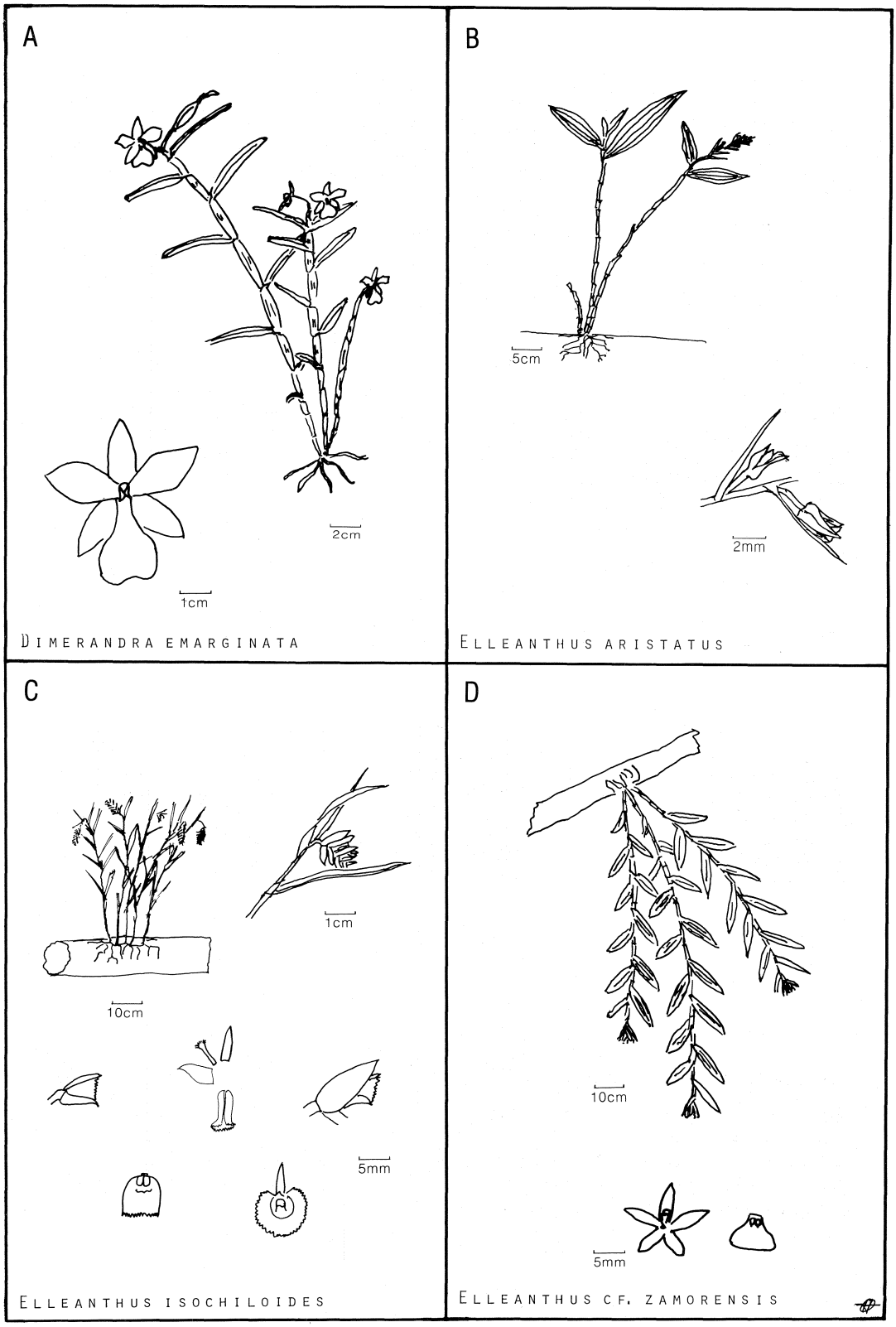
A
2cm
1cm
DIMERANDRA EMARGINATA
B
5cm
2mm
ELLEANTHUS ARISTATUS
C
1cm
10cm
5mm
ELLEANTHUS ISOCHILOIDES
D
10cm
5mm
ELLEANTHUS CF. ZAMORENSIS

Plate 68

Encyclia chimborazoensis Schltr. Plate 69-A

Epiphytic; rhizome to 6 cm long; pseudobulb to 10 × 2 cm, unifoliate, to 20 × 4 cm. Inflorescence 7-10 cm long, basally surrounded by a bract 5 × 1 cm; flowers 3-7; sepals and petals to 30 × 7 mm, white, speckled toward the base with red; lip white, 3 × 1.5 cm, striped with red lines. Common, in the tops of tall trees and in trees overhanging the river. Pollinated by sphecid wasps of the genus *Campsomeris*. Flowering throughout most of the year. Panama to Ecuador.

Encyclia pygmaea (Hook.) Dressler Plate 69-B

Epiphytic; pseudobulbs small, arranged at intervals of 5 cm along a creeping rhizome, to 3 × 5 cm, bifoliate, 4 × 1 cm. Inflorescence to 5 mm long; sepals and petals to 5 mm long; lip 5 × 5 mm, white. Fruits 3-winged, to 1 cm long. Uncommon, in the tops of tall trees. Flowering continuously. Widespread in tropical America.

†Encyclia vespa (Vel.) Dressler Plate 69-C

Epiphytic; rhizome to 3 cm long; pseudobulbs long, slender, to 25 × 2 cm. Leaves 2 to 3 borne at the apex of the pseudobulbs, often 1-3 cm apart, to 30 × 3 cm, narrowly oblong, the apex rounded. Inflorescence unbranched, to 30 cm long, surrounded at the base by a flattened spathe to 10 cm long; sepals and petals similar, 2 cm long, 0.5 cm wide, red internally with a yellow margin; lip small, recurved, red; column yellow. Uncommon, in tops of tall trees on the hills across the river from the Science Center. Not yet found at Río Palenque. Flowering sporadically throughout the year. The species in the broad sense is widespread in tropical America.

Epidendrum anceps Jacq. Plate 69-D

Epiphytic; rhizome short; stems cane-like, clothed with 5 to 10 widely spaced leaves to 10 × 3 cm. Inflorescence apical on the cane, the rachis to 30 cm long, with 20-30 flowers arranged in a sub-capitate form; sepals and petals 1 cm long, 3 mm broad, green-brown; lip broad, fleshy, 1 cm long, 1 cm wide, light green. Uncommon, in shade in the tree tops and in understory trees. Flowering from January to May. Pollinated by Ctenuchid moths. Widespread in tropical America.