

Central American Araliaceae – a precursory study for the *Flora Mesoamericana*

MARGARET J. CANNON and JOHN F. M. CANNON

Department of Botany, British Museum (Natural History), Cromwell Road, London SW7 5BD

CONTENTS

Introduction	6
Systematic treatment	7
I. <i>Dendropanax</i> Decne. & Planchon	7
Key to <i>Dendropanax</i> in the <i>Flora Mesoamericana</i> area	7
1. <i>D. praestans</i> (Standley) A. C. Smith	8
2. <i>D. latilobus</i> M. & J. Cannon	8
3. <i>D. bracteatus</i> M. & J. Cannon	8
4. <i>D. punctatus</i> M. & J. Cannon	11
5. <i>D. querceti</i> J. D. Smith	11
6. <i>D. ravenii</i> M. & J. Cannon	11
7. <i>D. leptopodus</i> (J. D. Smith) A. C. Smith	11
8. <i>D. arboreus</i> (L.) Decne. & Planchon	11
9. <i>D. oliganthus</i> (A. C. Smith) A. C. Smith	14
10. <i>D. alberti-smithii</i> Nevl.	14
11. <i>D. globosus</i> M. & J. Cannon	14
12. <i>D. populifolius</i> (Marchal) A. C. Smith	14
13. <i>D. hondurensis</i> M. & J. Cannon	14
14. <i>D. gonatopodus</i> (J. D. Smith) A. C. Smith	17
15. <i>D. maritimus</i> M. & J. Cannon	17
16. <i>D. panamensis</i> M. & J. Cannon	17
17. <i>D. pallidus</i> M. & J. Cannon	20
18. <i>D. sessiliflorus</i> (Standley & A. C. Smith) A. C. Smith	20
19. <i>D. caucanus</i> (Harms) Harms	20
20. <i>D. capillaris</i> M. & J. Cannon	20
Excluded species	
<i>D. darienense</i> Seemann	23
II. <i>Oreopanax</i> Decne. & Planchon	23
Key to <i>Oreopanax</i> in the <i>Flora Mesoamericana</i> area	23
1. <i>O. xalapensis</i> (Kunth) Decne. & Planchon	23
2. <i>O. echinops</i> (Schldl. & Cham.) Decne. & Planchon	24
3. <i>O. lempiranus</i> Hazlett	24
4. <i>O. geminatus</i> Marchal	24
5. <i>O. peltatus</i> Linden	24
6. <i>O. sanderianus</i> Hemsley	24
7. <i>O. platyphyllus</i> Marchal	24
8. <i>O. capitatus</i> (Jacq.) Decne. & Planchon	24
9. <i>O. steyermarkii</i> A. C. Smith	24
10. <i>O. superoerstedianus</i> M. & J. Cannon	24
11. <i>O. oerstedianus</i> Marchal	27
12. <i>O. standleyi</i> A. C. Smith	27
13. <i>O. pycnocarpus</i> J. D. Smith	27
14. <i>O. arcanus</i> A. C. Smith	27
15. <i>O. vestitus</i> A. C. Smith	27
16. <i>O. compactus</i> M. & J. Cannon	27
17. <i>O. nicaraguensis</i> M. & J. Cannon	27
18. <i>O. striatus</i> M. & J. Cannon	27
19. <i>O. costaricensis</i> Marchal	29
20. <i>O. spathulatus</i> M. & J. Cannon	29
21. <i>O. obtusifolius</i> L. O. Williams	29
22. <i>O. donnell-smithii</i> Standley	29
23. <i>O. nubigenus</i> Standley	29
III. <i>Schefflera</i> Forster & G. Forster	29
Key to <i>Schefflera</i> in the <i>Flora Mesoamericana</i> area	32
1. <i>S. robusta</i> (A. C. Smith) A. C. Smith	32

2. <i>S. coclensis</i> M. & J. Cannon	32
3. <i>S. macphersonii</i> M. & J. Cannon	34
4. <i>S. panamensis</i> M. & J. Cannon	34
5. <i>S. octostyla</i> M. & J. Cannon	38
6. <i>S. sapoensis</i> M. & J. Cannon	38
7. <i>S. systyla</i> (J. D. Smith) R. Viguier	38
8. <i>S. epiphytica</i> A. C. Smith	43
9. <i>S. jefensis</i> M. & J. Cannon	43
10. <i>S. brenesii</i> A. C. Smith	43
11. <i>S. latiligulata</i> M. & J. Cannon	43
12. <i>S. siebertii</i> A. C. Smith	47
13. <i>S. nicaraguensis</i> (Standley) A. C. Smith	47
14. <i>S. whitefoordiae</i> M. & J. Cannon	47
15. <i>S. caduca</i> M. & J. Cannon	47
16. <i>S. pubens</i> M. & J. Cannon	51
17. <i>S. archeri</i> Harms	51
18. <i>S. bifida</i> M. & J. Cannon	51
19. <i>S. cartagoensis</i> M. & J. Cannon	54
20. <i>S. albocapitata</i> M. & J. Cannon	54
21. <i>S. morototoni</i> (Aublet) Maguire, Steyerl. & Frodin	54
22. <i>S. aquaverensis</i> M. & J. Cannon	54
23. <i>S. instita</i> M. & J. Cannon	58
24. <i>S. cicatricata</i> M. & J. Cannon	58
25. <i>S. rodriguesiana</i> Frodin	61
Doubtful species	
<i>S. sphaerocoma</i> (Benth.) Harms	61
References	61

SYNOPSIS. The results of work undertaken in preparation for an account of the Araliaceae for the *Flora Mesoamericana* are presented, with the provision of keys to the three large and complex genera, *Dendropanax*, *Oreopanax*, and *Schefflera*. The following new species are described: *Dendropanax bracteatus*, *D. capillaris*, *D. globosus*, *D. hondurensis*, *D. latilobus*, *D. maritimus*, *D. pallidus*, *D. panamensis*, *D. punctatus*, *D. ravenii*, *Oreopanax compactus*, *O. spathulatus*, *O. striatus*, *O. superoerstedianus*, *Schefflera albocapitata*, *S. aquaverensis*, *S. bifida*, *S. caduca*, *S. cartagoensis*, *S. cicatricata*, *S. coclensis*, *S. instita*, *S. jefensis*, *S. latiligulata*, *S. macphersonii*, *S. octostyla*, *S. panamensis*, *S. pubens*, *S. sapoensis*, and *S. whitefoordiae*. The new name *Schefflera rodriguesiana* Frodin ex M. & J. Cannon is proposed for *Didymopanax pittieri* Marchal.

INTRODUCTION

The preparation of an account of the Araliaceae for the *Flora Mesoamericana*, which covers Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama, and the Mexican States of Campeche, Chiapas, Quintana Roo, Tabasco, and Yucatán, has been undertaken. It has resulted in much new information, both on known taxa and in terms of new species. Consequently we have decided to publish a precursory paper to make this information available in an interim form until the appropriate volume of the flora appears. It represents the first comprehensive review of the Araliaceae in Central America since the account by A. C. Smith (1944) in the *North American Flora*. Since that time, a very large quantity of new material has accumulated from many sources, including fieldwork associated with various flora projects, e.g. *Flora of Panama*, *Flora Mesoamericana*. Thirty new species are described, many from Panama, which is scarcely surprising for a family with strong tropical affinities.

Smith (1944) reported seven species of *Schefflera* (including *Didymopanax*) from the area, including three from Panama, whereas we have recorded twenty-five species, of which nineteen come from Panama, thirteen being described for the

first time. These figures closely parallel the results from some other groups, such as the aroids, where Croat (pers. comm.) has reported even more startling statistics. As might be expected, the taxonomic problems of the Araliaceae in Central America are strongly concentrated in the three large and complex genera, *Schefflera*, *Dendropanax*, and *Oreopanax*. The present contributions are limited to these genera and no new information is presented for the remaining small or poorly represented genera, i.e. *Aralia* and *Sciadodendron*, and the introduced taxa of *Hedera* and *Polyscias*. As it will be some time before the *Flora Mesoamericana* account appears, we are publishing keys to the species in the three large genera. Interim identification needs will almost certainly be concentrated on these taxa, and the publication of the keys will provide, to some extent, a convenient summary of our new species in the context of those previously recognized.

The Araliaceae presents a particularly frustrating challenge to those involved in herbarium-based taxonomy. In addition to considerable general phenotypic plasticity, the life forms seem to vary with considerable freedom between shrubs, trees, and scramblers, all of which can occur as epiphytes, while, for some, there is also evidence of epiphytes becoming secondarily free-standing, following the death or total envelopment of the original 'host' tree. Further major problems arise from the complexity of the breeding system. In

Schefflera and *Dendropanax* the flowers are hermaphrodite (except in *S. morotoni* where sometimes lateral, functionally-male umbels are situated below the terminal hermaphrodite umbels). In *Oreopanax* the situation is much more complex and the plants are polygamodioecious. The flowers of the 'male' plants frequently have stigmas reduced in number and size, which are presumably non-functional, while the 'female' flowers appear to have functional stamens. No doubt further complications in terms of protandry are also involved. As a result of these circumstances, matching up male and female plants in the herbarium is difficult and sometimes uncertain, as often only one sex is collected. The leaf shape is frequently very variable; juvenile leaves of strikingly different form are sometimes present, but are rarely collected. The ultimate in leaf shape variation is shown by some of the cultivated species in our area, such as *Polyscias guilfoylei* (W. Bull) L. Bailey. It will be apparent that the taxonomic problems of the Central American Araliaceae will not be solved until there has been much more fieldwork by specialists, with observations on the biology of these plants, both over wide areas and in terms of detailed studies of small breeding populations. Ideally, the fieldwork should be supplemented by cultural studies under uniform conditions in botanic gardens, but for substantial woody plants this is clearly not practicable. While ideal solutions are not likely, future visiting collectors and local botanists can make important contributions by carefully documented field observations. It would be specially valuable if residents were to make careful records over a period of years and several reproductive cycles, rather than the short-term scrutiny to which expedition biologists are limited.

All floristic and monographic accounts are necessarily limited by the data available, and we are more acutely aware of this than has been the case in some other projects with which we have been involved. It is, therefore, in this context that we offer both the present paper and the account that will appear in due course in *Flora Mesoamericana*. All specimens cited here have been seen by the authors.

SYSTEMATIC TREATMENT

I. DENDROPANAX Decne. & Planchon

in *Revue hort.* IV, 3: 107 (1854). Type species: non designatus.

Key to *Dendropanax* in the *Flora Mesoamericana* area

- 1a. Mature leaves deeply lobed:
 - 2a. Peduncles 1.2–4 cm, styles forming a column ... 1. **D. praestans**
 - 2b. Peduncles 5–14 cm, styles forming a cone 2. **D. latilobus**
- 1b. Mature leaves entire, crenate or denticulate but not deeply lobed:
 - 3a. Umbels solitary or rarely with 1–4 smaller umbels below:
 - 4a. Outer bracts of receptacle connate:
 - 5a. Pedicels bracteate, 1–2 mm, leaves without pellucid dots 3. **D. bracteatus**
 - 5b. Pedicels ebracteate, more than 2 mm, leaves with pellucid dots (sometimes rather obscure):
 - 6a. Peduncles bracteate, stylar cone 0.5 mm or less, leaves with marked red pellucid dots 4. **D. punctatus**
 - 6b. Peduncles ebracteate, stylar column 1–1.5 mm, leaves with pale or obscure pellucid dots 5. **D. querceti**
 - 4b. Outer bracts of receptacle free:
 - 7a. Peduncle 0.4–0.6 cm, umbels with 2–5 flowers 6. **D. ravenii**
 - 7b. Peduncle 1 cm or more, umbels with 7 or more flowers:
 - 8a. Stylar column of fruit 0.5 mm or less, peduncles 5–14 cm, often articulate and geniculate about the middle 7. **D. leptopodus**
 - 8b. Stylar column 1 mm or more, peduncles 1–5(–7) cm, not articulate and geniculate about the middle 8. **D. arboreus**
 - 3b. Umbels several to many:
 - 9a. Rachis 0–2 mm:
 - 10a. Flowers 5-merous, receptacle flat-based, domed 9. **D. oliganthus**
 - 10b. Flowers 6–10-merous, receptacle globose:
 - 11a. Flowering pedicels up to 4 mm, styles in a column 10. **D. alberti-smithii**
 - 11b. Flowering pedicels 6–10 mm, styles in a cone 11. **D. globosus**
 - 9b. Rachis present, more than 2 mm to several cm:
 - 12a. Bracts of peduncle cupulate:
 - 13a. Styles of mature fruit free and spreading 12. **D. populifolius**
 - 13b. Styles of mature fruit in a cone or column:
 - 14a. Styles of mature fruit in a cone, flowers (7–)8–10-merous 11. **D. globosus**
 - 14b. Styles of mature fruit in a column, flowers 5–6-merous:
 - 15a. Stylar column of mature fruit 2 mm or more, bases of pedicels swollen and winged 13. **D. hondurensis**
 - 15b. Stylar column of mature fruit less than 2 mm, bases of pedicels not swollen or winged:
 - 16a. Flowers 20–40, fruits 8–20 14. **D. gonatopodus**
 - 16b. Flowers few to 20, fruits 2–6:
 - 17a. Calyx 0.5 × 2.5 mm, salver-shaped, leaves narrow, up to 4.5 cm wide 1. **D. praestans**
 - 17b. Calyx 1–1.5 mm, shallowly campanulate, leaves broad, up to 12 cm wide ... 15. **D. maritimus**
 - 12b. Bracts of peduncle free or 0:
 - 18a. Peduncle 1.5 cm or less:
 - 19a. Flowering pedicels 1 mm or less, inflorescence compact:
 - 20a. Stylar column of mature fruit 0.3–0.4 mm, flowers 12–15 per umbel 16. **D. panamensis**
 - 20b. Stylar column of mature fruit 1 mm, flowers 2–5 per umbel 6. **D. ravenii**
 - 19b. Flowering pedicels 2 mm or more, inflorescence ± spreading, not compact:
 - 21a. Stylar column of mature fruit 1.5 mm, calyx 0.5 × 2.5 mm, salver-shaped, leaves without pellucid dots 1. **D. praestans**
 - 21b. Stylar cone of mature fruit 0.5 × 2 mm, calyx 1.5–2 × 1.5 mm, obconic, leaves with red pellucid dots 4. **D. punctatus**
 - 18b. Peduncle more than 1.5 cm:
 - 22a. Fruit with stylar cone:



Fig. 1 *Dendropanax latilobus* - holotype (BM).

MISSOURI
BOTANICAL GARDEN
HERBARIUM

Nº 2288098



Seen for
Flora Mesoamericana

TYPE SPECIMEN

Dendropanax bracteatus M. J. Cannon
det M. Cannon 1988

Seen for
Flora Mesoamericana

PANAMA: DARTEN
PLANTS OF THE
CERRO TACARCUNA EXPEDITION

to the Serranía del Darién, Panama/Colombia frontier

Family: ARALIACEAE? ~~GLASTRACEAE??~~
Dendropanax querceti Donn. Sm.

Vicinity of Cerro Tacarcuna summit camp,
along stream N of camp, alt. 1550-1650 m,
lower montane wet forest life zone.

Treelet 4 m, flowers green, 5 stamens.

Al Gentry & S. Mori, 14062 1 Feb. 1975
Sponsored by the National Geographic Society
Distributed by Missouri Botanical Garden



Fig. 2 *Dendropanax bracteatus* – holotype (MO).

without punctate pellucid dots, and slightly winged petioles. Lower montane wet forests at altitudes of 1550–1650 m. Known only from the type area.

The name draws attention to the bracteate pedicels, the bracts being absent in the other species.

4. *Dendropanax punctatus* M. & J. Cannon, *sp. nov.*

Fig. 3.

D. querceti J. D. Smith similis sed foliis latioribus, punctatis pellucidis cinnabarinis, pedunculos bractatis, stigmatibus fere sessilibus, differt.

Arbor ad 9 m alto vel frutex. Folia lamina 5–13 × 3–8 cm, late ovato-elliptica vel ovata, punctis pellucidis cinnabarinis conspicuis. Umbella solitaria vel basi cum 1–4 umbellis minoribus, rachidi 0–1 cm longa, pedunculis 1–3 cm longis, bracteis 2–3 liberis vel vix connatis, floribus (2–)5–12 in quaque umbella, 5-meris. Receptaculum 1–2(–3) mm in diam., bracteis florum abortivorum interdum conspicuis. Fructus 3–8 in quaque umbella, 4–6 × 7–8 mm; cono stylari 0.5 mm longi vel breviori, 2 mm lato.

Type: **Panama**, Prov. Panamá, El Llano-Cartí Rd., 23.4 km from Inter American Hwy, wet forest, 13 April 1975, *Mori & Kallunki* 5579 (BM-holotype; MO-isotype). Additional specimens: **Panama**: Prov. Panamá, Cerro Jefe, Altas de Pacora, *Antonio* 3220 (BM, MO); Prov. Coclé, La Mesa, El Valle, *Dwyer* 11908 (G, MO).

Tree up to 9 m, or shrub; branchlets striate, cinereous. Lamina 5–13 × 3–8 cm, broadly ovate-elliptic to ovate, papyraceous; pellucid dots very conspicuous, bright red, sometimes coalescing; lateral veins 6–7 per side, margin entire or somewhat crenulate; broadly apiculate at apex, acute to cuneate at base; petioles 0.5–4(–7) cm, bases not expanded. Inflorescence a simple umbel, or with 1–4 smaller umbels below the central umbel; rachis 0–1 cm × 1–2 mm, with several glabrous acute bracts, 1–1.5 × 1 mm; peduncles 1–3 cm, with a ring of 2–3 free or scarcely connate membranaceous bracts 0.5 mm or less, the central umbel sometimes ebracteate; umbels (2–)5–12-flowered, flowers 5-merous; receptacle 1–2(–3) mm, outer bracts 1–2 mm, membranaceous, connate, inner bracts ferruginous-puberulent; pedicels 2–6 mm, slender (less than 0.5 mm broad); calyx 1.5–2 × 1.5 mm, obconic, limb small, undulate; petals 1 × 0.75 mm, bud rounded, as tall as broad; filaments 1 mm, anthers 0.3–0.4 mm. Fruits 3–8 per umbel, 4–6 × 7–8 mm, more or less sulcate; bracts of aborted flowers sometimes conspicuous; stylar cone 0.5 mm or less × 2 mm, stigmas free and recurved; seeds 4.5 × 2.5 mm.

This species resembles *D. querceti* J. D. Smith, but differs from it in the leaf shape, the presence of numerous red pellucid dots, bracteate peduncles, and the almost sessile stigmas.

It appears to be widespread in tropical wet forest and premontane rain-forest at altitudes of 300–900 m.

Panama.

The name draws attention to the pellucid red dots within the leaves, which are easily seen if the leaf is held up to the light.

5. *Dendropanax querceti* J. D. Smith in *Bot. Gaz.* **42**: 297 (1906).

Wet cloud forest, lower montane rain-forest. Costa Rica and Panama.

6. *Dendropanax ravenii* M. & J. Cannon, *sp. nov.*

Fig. 4.

D. querceti J. D. Smith pedunculis bracteis liberis, floribus in quaque umbella paucioribus differt, *D. panamensi* M. & J. Cannon columna stylari longiore, floribus in quaque umbella paucioribus, distincta.

Frutex ad 8 m alta. Folia lamina 15–25 × 6–8 cm, oblongo-elliptica, punctis pellucidis cinnabarinis instructa. Umbellae 1–6, rachide 3–10 mm, pedunculis 0.4–0.6 cm longis, bracteis 1–2 liberis, floribus 2–5 in quaque umbella, 5-meris, pedicellis 1–3 mm longis. Receptaculum 1 mm in diam., bracteis florum abortivorum haud ferens. Fructus 1–3 in quaque umbella, 6 × 7–8 mm, canaliculatus, columna stylari 0.7 mm longa.

Type: **Costa Rica**, Prov. Puntarenas, deep forest near the airport area, 4 miles west of Rincón de Osa, Osa Peninsula, 30 m elevation, 6 August 1967, *Raven* 21570 (F-holotype & isotype). Additional specimen: **Costa Rica**, Prov. Puntarenas, ridge between Quebrada Aguebena & Quedabra Banégas, c. 5 km west of Rincón de Osa, 8°42'N, 83°33'W, *Grayum* et al. 4057 (BM, MO).

Shrub up to 8 m, branchlets slender. Lamina 15–25 × 6–8 cm, oblong-elliptic, chartaceous, red pellucid dots present; lateral veins 10–12 per side; margin entire; acuminate to somewhat cuspidate at apex, acute to rounded at base; petioles 4–9 cm, somewhat striate, scarcely expanded at the base. Inflorescence more or less racemose, of 1–6 umbels or reduced to 1 central umbel; rachis 0.3–1 cm, with bracts 2–2.5 × 1.5–2 mm, ferruginous-puberulent; peduncles 0.4–0.6 cm, not articulate, bracts 1–2, free, c. 1 mm, puberulent; umbels 2–5-flowered, flowers 5-merous; receptacle c. 1 mm, outer bracts free, acute, inner fimbriate, all ferruginous-puberulent; pedicels 1–3 mm; calyx 2 × 1.5 mm, more or less urceolate, the limb undulate-dentate; petals 1.2 × 0.7 mm, bud rounded, taller than broad. Fruits 1–3 per umbel, 6 × 7–8 mm, with 5 distinct caniculae c. 1 mm broad; aborted flowers 0; stylar column 1 mm, stigmas free and recurved a little at the tip; disc c. 3 mm; seeds 6 × 4 mm, ridged on both sides.

This species differs from *D. querceti* J. D. Smith in its free peduncular bracts and fewer flowers, and from *D. panamensis* M. & J. Cannon in its longer stylar column and fewer flowers.

Confined to Costa Rica, at altitudes between 100–400 m.

It is named in honour of Peter H. Raven.

7. *Dendropanax leptopodus* (J. D. Smith) A. C. Smith in *Trop. Woods* **66**: 3 (1941).

Gilibertia leptopoda J. D. Smith in *Bot. Gaz.* **57**: 421 (1914). Cloud forest, lower elfin forest.

Chiapas, Guatemala, Honduras, Nicaragua.

8. *Dendropanax arboreus* (L.) Decne. & Planchon in *Revue hort.* **IV**, 3: 107 (1854).

Aralia arborea L., *Syst. nat.* 10th ed.: 967 (1759).

This is a very common, widespread species, very variable in all aspects. It occurs from central Mexico to central South America and the West Indies. Extreme forms of variation have given rise to many descriptions of taxa subsequently relegated to synonymy. The following taxa have been recognized by various authors and separated from the



PANAMA
Province of Panama

Family: Araliaceae

Dendropanax

El Llano-Carti Road, 23.4 km from
Inter-American Hwy.
wet Forest.

Tree, 10 m tall, 12 cm dbh.

Frt. eaten by an aracari (Selenidera
spectabilis).

TYPE SPECIMEN

Dendropanax punctatus Ho & Cannon

det M Cannon 1988

Seen for
Flora Mesoamericana

S. Mori & J. Kallunki 5579 13 Apr 1975
MISSOURI BOTANICAL GARDEN HERBARIUM

Fig. 3 *Dendropanax punctatus* – holotype (BM).



TYPE SPECIMEN
Dendropanax ravenii M+J Cannon
 det M Cannon 1988 Seen for
Flora Mesoamericana

COSTA RICA
 21570 Field Museum of Natural History

Dendropanax sp. ?
 det R. L. Dressler 1988

1708616
 FIELD MUSEUM
 OF
 NATURAL HISTORY

Shrub 8-25 ft tall; flowers greenish yellow
 Deep forest near the airport area, 4 miles west of Rincon de Osa, Osa
 Peninsula. 100 ft. elevation.
 PETER H. RAVEN Prov. PUNTARENAS 6 AUGUST 1967
 Supported in Part from Grants of the National Science Foundation



Fig. 4 *Dendropanax ravenii* - holotype (F).

complex by the characters indicated, and, although we are unable to separate them with any certainty, they might prove to be distinct when further material is available:

- D. matudai* (Lundell) A. C. Smith – lamina undulate-crenate;
D. schippii (A. C. Smith) A. C. Smith – simple terminal umbel;
D. stenodontus (Standley) A. C. Smith – denticulate leaves;
Gilibertia stenocarpus Standley – narrow fruits.

Croat (1978) recognizes two species on Barro Colorado Island in Panama, separating *D. stenodontus* (Standley) A. C. Smith from *D. arboreus* (L.) Decne. and Planchon by characters of fruit size and seed shape, by the petals of the former being less than 1.5 mm, and the calyx limb denticulate rather than truncate or weakly lobed, and by differences in leaf shape. Specimens we have examined from that area and from the provinces of Panamá and Colón do show a tendency to vary in these ways, but elsewhere in Panama and the rest of Central America the variations do not warrant recognition of two species. The type specimen of *D. stenodontus* has linear teeth 1–4 mm long, the calyx is undulate or weakly lobed, and the petals are 1.5 mm or more; there is no fruit. If further research indicates that a second species is indeed present, it seems unlikely that *D. stenodontus* would be the correct name.

9. ***Dendropanax oliganthus*** (A. C. Smith) A. C. Smith in *Trop. Woods* 66: 3 (1941).

Gilibertia oligantha A. C. Smith in *Brittonia* 2: 251 (1936).
 Mountain slopes.
 Guatemala.

10. ***Dendropanax alberti-smithii*** Nevl. in *Ann. Mo. bot. Gdn* 46: 232(342) (1959).

Premontane rain-forest.
 Panama.

11. ***Dendropanax globosus*** M. & J. Cannon, *sp. nov.*
 Fig. 5.

D. alberti-smithii Nevl. primo viso maxime similis, sed pedicellis per anthesin longioribus, stylis in conum dispositis, differt.

Arbor ad 12 m alta vel frutex. Folia lamina 7–20 × 4–17 cm, late ovata vel suborbiculata, epunctata. Inflorescentia axillaris ramorum umbellis 8–20, rachidibus 0–2 cm longis, incrassatis, pedunculis 4–7 cm × 1.5–4 mm incrassatis bracteis 3 connatis, floribus 15–60 in quaque umbella, (7–)8–10-meris, pedicellis per anthesin 6–10 mm longis. Receptaculum ad 10 mm in diam. globosum, bracteas florum abortivorum nullos vel paucos ferens. Fructus 15–40 in quaque umbella, 4–6 × (6–)7 mm, pedicellis fructiferis 10–25 mm longis, cono stylari 2 mm longo, 3 mm lato.

Type: **Costa Rica**, Prov. Alajuela, remnant trees in pasture, 2 km north-east of La Balsa de San Ramón, 10°11'N, 84°29'W, 900 m alt. 26 September 1976, *Lent* 3900 (BM-holotype; MEXU-isotype). Additional specimens: **Costa Rica**, Prov. Alajuela, 15 km north north-west of San Ramón, 2.5 km west of Balsa, 10°22'N, 80°30'W, *Liesner & Judziewicz* 14850 (BM); **Panama**, Prov. Bocas del Toro, east slope of Zorro to divide, *Kirkbride & Duke* 830 (MO).

Tree up to 12 m or shrub, branchlets rugose. Lamina 7–20 × 4–17 cm, broadly ovate to suborbicular, coriaceous, pellucid dots absent; lateral veins 6–8 per side; margin somewhat repand or coarsely toothed, acute to obtuse or somewhat rounded at apex, rounded to cordate at base; petioles up to 11 cm, terete, swollen above and swollen and expanded below. Inflorescences borne in branch axils, more or less umbellate to paniculate, umbels 8–20; rachis 0–2 cm, with a few woody bracts; peduncles 4–7 cm × 1.5–4 mm, swollen above and below, bracts 3, 1–2 mm, connate in a coriaceous or woody cupule at the base or ¼–½ of the way up; umbels 15–60-flowered, flowers (7–)8–10-merous; receptacle globose, outer bracts connate, woody, the inner small, corky, connate; pedicels 6–10 mm, 2–3 times longer than the diameter of the receptacle; calyx 1.5 × 2.5–3.5 mm, urceolate, obconic or salver-shaped, limb undulate; petals 2.5 × 1.5 mm, bud pointed, broader than tall; filaments 1.5–2 mm, anthers 1.2–1.5 mm. Fruit 20–40 or more per umbel, 4–6 × (6–)7 mm; pedicels 10–25 mm, aborted flowers 0 or very few; disc 4–5 mm; styler cone 2 × 3 mm, the stigmas spreading and recurved above; seeds 4 × 2.75 mm.

This species at first sight resembles *D. alberti-smithii* Nevl. but differs in having much longer pedicels at anthesis and in fruit, and the styles are connate, forming a cone.

Lower montane rain-forest at altitudes of 900–1600 m.
 Costa Rica and Panama.

The name draws attention to the shape of the receptacle.

12. ***Dendropanax populifolius*** (Marchal) A. C. Smith in *Trop. Woods* 66: 3 (1941).

Gilibertia populifolia Marchal in *Bull. Acad. r. Belge* II, 47: 77 (1879).
 Fog forest.
 Chiapas.

13. ***Dendropanax hondurensis*** M. & J. Cannon, *sp. nov.*
 Fig. 6.

D. populifolio (Marchal) A. C. Smith accedens, sed forma foliorum, pedunculis longioribus fissuratis horizontaliter, floribus 5-meris etc., bene distincta.

Arbor ad 36 m alta, liberivivens vel epiphytica. Folia lamina 6–18 × 2.5–9 cm, ovato-elliptica vel ovato-lanceolata, epunctata. Umbellae 5–10, rachide 1–3 cm longa, pedunculis 3.5–12 cm longa saepe apicem versus fissuratis horizontaliter, bracteis 3 connatis cupulam lignosam formantibus, floribus 60–100 in quaque umbella, 5-meris, pedicellis 6–12 mm longis, infra incrassatis alatis. Receptaculum globosum cavum, bracteas florum abortivorum haud ferens. Fructus 12–20 in quaque umbella, 4 × 5 mm, columna stylaris 2–2.5 mm longa.

Type: **Honduras**, Dept. Morazán, cloud forest, Mt Uyuca, 2000 m alt., 7 August 1947, *Molina* 473 (G-holotype). Additional specimens: **Honduras**, Dept. Sta. Barbara, forest on ridge of Montana Sta. Barbara, *Armour & Chable* 6127 (BM); **Mexico**, Chiapas, Pueblo Nuevo Solistahuacán, *Miranda* 7794 (US).

Tree up to 36 m, independent or epiphytic, or shrub, branchlets stout, rugose. Lamina 6–18 × 2.5–9.5 cm, ovate-elliptic to ovate-lanceolate, chartaceous, pellucid dots absent; lateral veins 5–7 per side, the 2 major basal veins often not

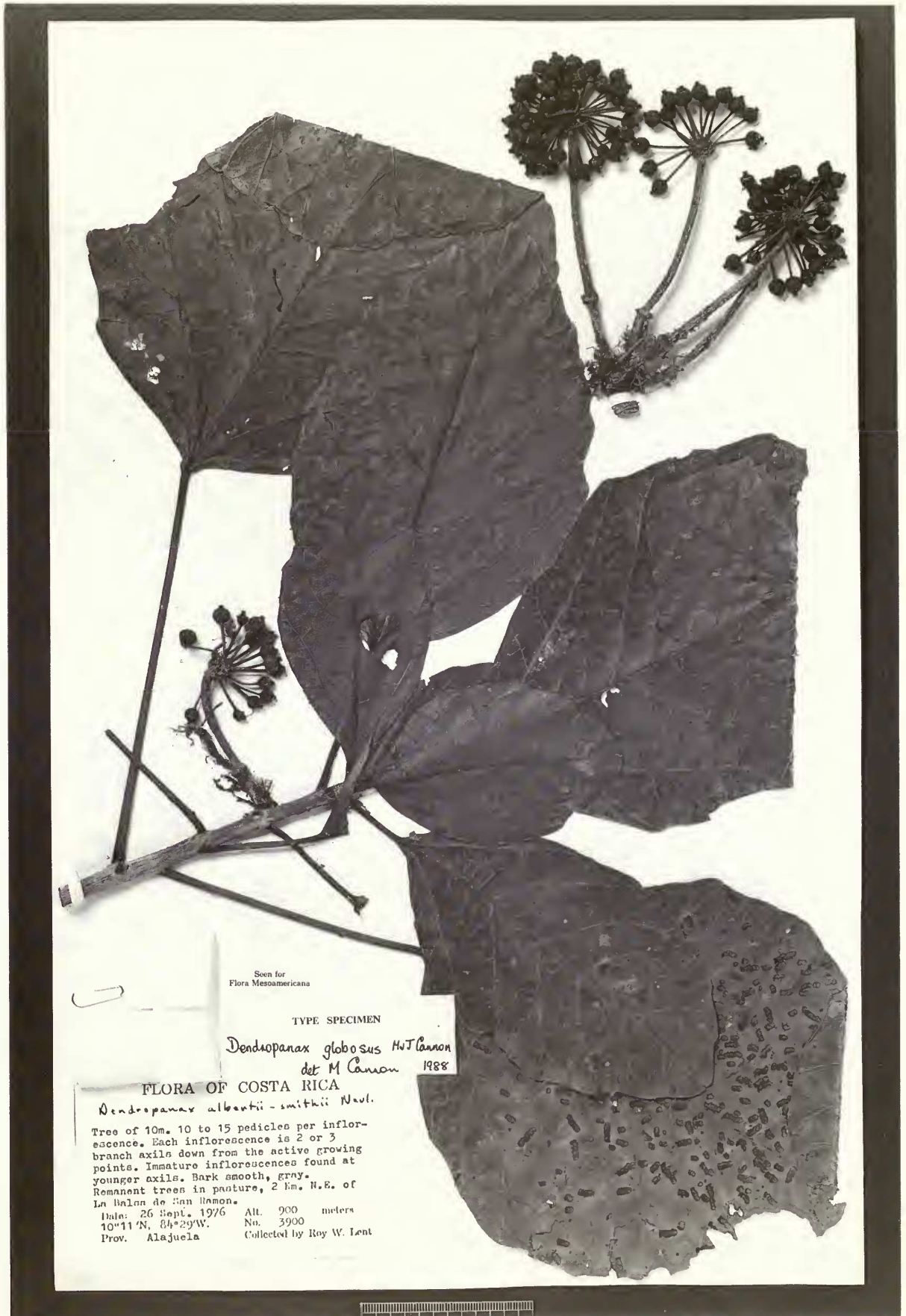


Fig. 5 *Dendropanax globosus* – holotype (BM).



Fig. 6 *Dendropanax hondurensis* – holotype (G).

opposite; margin entire, plane; acute at apex, acute to rounded at base; petioles 3–11 cm, striate, swollen and expanded at the base. Inflorescence paniculate or umbellate, of 5–10 umbels; rachis 1–3 cm, with very woody or corky bracts; peduncles 3.5–12 cm, often horizontally fissured above, bracts 3, 2 mm, connate, forming a woody cupule, with a second cupule or several free bracts above; markedly swollen and expanded laterally at the base and below the cupule; umbels up to 60(–100+) flowered, spreading to more than 180° and often to 360°; flowers 5-merous; receptacle globose or semi-globose, hollow; outer bracts connate or invisible (globose-receptacled plants), inner bracts membranaceous, connate, forming cupules round the bases of the pedicels; pedicels 6–12 mm, the bases often markedly swollen and with 2 short lateral membranaceous wings, sometimes horizontally fissured; calyx urceolate, 2.5 × 2.5 mm, the limb with broad membranaceous teeth; petals 1.7 × 1.2 mm, bud as broad as tall, top rounded; filaments 2 mm, anthers 1 mm. Fruits 12–20 per umbel, 4 × 5 mm, markedly sulcate; bracts of aborted flowers conspicuous; disc 1.5–2 mm, stylar column 2–2.5 mm, stigmas free above, spreading; seeds 4 × 2.5 mm.

Close to *D. populifolius* (Marchal) A. C. Smith in the stout peduncles with cupule of bracts, but differs from it in leaf shape, the longer, fissured peduncles, 5-merous flowers, etc. Specimens from Chiapas often have more than 100 flowers borne on a globose receptacle, and much longer peduncles than those from Honduras. The status of these plants might be more satisfactorily determined on examination of their mature fruits; they may prove to be a further new taxon. Cloud forest in Honduras and Chiapas at altitudes of 1850–2350 m.

14. *Dendropanax gonatopodus* (J. D. Smith) A. C. Smith in *Trop. Woods* 66: 3 (1941).

Gilibertia gonatopoda J. D. Smith in *Bot. Gaz.* 55: 434 (1913).

Premontane wet forest, lowland forest.
Costa Rica, Panama.

15. *Dendropanax maritimus* M. & J. Cannon, *sp. nov.*
Fig. 7.

D. arboreo (L.) Decne. & Planchon *accedens*, sed foliis multo grandioribus, venis lateralibus foliorum numerosioribus, bracteis sub pedunculo latioribus, differt.

Frutex ad 1.5 m altus. Folia lamina 10–24 × 5–12 cm, ovata vel oblonga, punctis pellucidis obscuris instructa. Umbellae 6–9, rachide 0.5–3 cm longa, pedunculis 1.5–2.5 cm longis, bracteis 2–3 annulatis liberis vel vix connatis, pedicellis 2–5 mm longis. Receptaculum ad 4 mm in diam., bracteis florum abortivorum multos et conspicuos ferens. Fructus 3–5 in quaque umbella, ad 7 × 7 mm, columna stylari 0.5–1 mm longa.

Type: **Panama**, Prov. Colón, Coclé Del Norte, along beach, elevation less than 100 m, 25 August 1978, *Hammel* 4570 (MO-holotype; BM-isotype). Additional specimens: **Panama**: Canal Zone, Pipeline road, premontane forest, wet area, *Lao*, *Holdridge & Gentry* 32 (F, G); Canal Zone, Barro Colorado Island, Gross Pt, *Aviles* 959 (F).

Shrub up to 1.5 m; branchlets striate, cinereous. Lamina 10–24 × 5–12 cm, ovate to oblong, thinly coriaceous or

coriaceous; pale or reddish pellucid dots often present but rather obscure; lateral veins (10–)12–16 per side, raised below; margin entire or repand or minutely toothed; acuminate to rounded at apex, usually obtuse or rounded at base; petioles 0.5–3(–6) cm, striate, the base scarcely expanded. Inflorescence paniculate or umbellate, umbels 6–9, rachis 0.5–3 cm, stout, with a few glabrous acute bracts 1.2 × 2 mm; peduncles 1.5–2.5 cm with a ring of 2–3 free or just connate bracts, subtending bract 1–2 × 2 mm; umbels few–20-flowered, flowers 5-merous; receptacle up to 4 mm, outer bracts more or less connate, inner bracts puberulent; pedicels 2–5 mm; calyx 1 × 1.5 mm, shallowly campanulate, limb acutely denticulate; petals c. 1 mm, bud rounded, as tall as broad; filaments 1.5 mm, anthers 0.5 mm. Fruits 3–5 per umbel, up to 7 × 7 mm, scarcely sulcate when dry; bracts of aborted flowers many, conspicuous; disc 2–3 mm; stylar column 0.5–1 mm, the stigmas free and shortly spreading above; seeds 6 × 3.5 mm.

A large-leaved species found at low elevations in Panama. Very close to *D. arboreus* (L.) Decne. & Planchon, but differing from it in its much larger leaves with many lateral veins, and broad sub-peduncular bracts.

Premontane wet forest, and beach-sides, at elevations of less than 100 m.

Panama.

16. *Dendropanax panamensis* M. & J. Cannon, *sp. nov.*
Fig. 8.

D. caucano (Harms) Harms *affinis*, sed forma foliareum, pedicellis brevioribus, inflorescentia multo minore, distincta.

Frutex parvus. Folia lamina 7–14 × 2–4(–6) cm, anguste elliptica, interdum punctis pellucidis obscuris sparsis instructa. Umbellae 3–4, rachide 0.5–2 cm longa, pedunculis 0.5–1.5 cm longis, bracteis 2–3 liberis, floribus 12–15 in quaque umbella, 4–5-meris, pedicellis 0.5 mm longis vel brevioribus. Fructus 1–2(–3) in quaque umbella, 6–7 mm in diam., columna stylari 0.3–0.4 mm longa.

Type: **Panama**, Prov. Panamá, Cerro Jefe, c. 1000 m alt., 22 September 1972, *Gentry* 6148 (MO-holotype). Additional specimens: **Panama**: Prov. Panamá, Cerro Azul, road to Tocumen, *Mori & Kallunki* 2213 (BM, MO); Prov. Panamá, road north of Goofy Lake, *Folsome, Gentry & Daley* 1975 (MO).

Small shrub up to 2 m; young branchlets smooth, becoming somewhat rugose. Lamina 7–14 × 2–4(–6) cm, usually narrowly elliptic, occasionally broadly elliptic, somewhat coriaceous, a few obscure pellucid dots sometimes present; lateral veins 8–12 per side, margin entire or somewhat repand, undulate; acuminate or abruptly acuminate at apex, acuminate at base; petioles 1–6(–8) cm, slender, the base not expanded. Inflorescence more or less paniculate, of 3–4 umbels, rachis 0.5–2 cm, with several glabrous acute bracts 1 × 1 mm; peduncles 0.5–1.5 cm with 2–3 free bracts about half way up, subtending bracts broadly triangular or lobed, 1.5–2 mm; umbels 12–15-flowered, flowers 4–5-merous; receptacle 1–2 mm, outer bracts 1 mm, corky edged, connate, inner bracts puberulent; pedicels 0.5 mm or less; calyx 2 × 2 mm, urceolate or obconic, the limb minutely denticulate or smoothly undulate; petals 1.5 × 1 mm, buds rounded, rather broader than tall; filaments c. 1 mm, anthers 0.5 mm. Fruits 1–2(–3) per umbel, c. 6–7 mm, more or less globose, sulcate when dry; aborted flowers absent; disc 1–2 mm; stylar column



Fig. 7 *Dendropanax maritimus* – holotype (MO).

MISSOURI
BOTANICAL GARDEN
HERBARIUM

N^o 2605777

Record det.

Seen for
Flora Mesoamericana

TYPE SPECIMEN

Dendropanax panamensis H. S. Cannon
det. H. Cannon 1988

PLANTS OF PANAMA
PROV. PANAMA

ARALIACEAE

Dendropanax aff. *quercali* R. & S.
Cerro Jefe, alt. ca. 1000 meters.

Subshrub; 1 meter; fruits green.

Al Gentry no. 6148 22 Sep 1972

MISSOURI BOTANICAL GARDEN HERBARIUM (MO)



Fig. 8 *Dendropanax panamensis* – holotype (MO).

0.3–0.4 mm, the stigmas free, reflexed back against the column; seeds 3–4 × 2.5–3 mm.

This species is quite close to *D. caucanus* (Harms) Harms, but differs from it in leaf shape, shorter pedicels, and much smaller inflorescence.

It is confined to the province of Panamá, growing in forest at elevations of 800–1000 m.

17. *Dendropanax pallidus* M. & J. Cannon, sp. nov.

Fig. 9.

D. arboreo (L.) Decne. & Planchon accedens, sed fructibus grandioribus, pedicellis et pedunculis et fructibus pallidis, stylis in conum dispositis, differt.

Arbor ad 20 m alta. Folia lamina ad 18 × 9 cm, elliptica, punctis pellucidis paucis pallidis instructa. Umbellae ad 12, rachide 2(–4) cm longa, pedunculis 2–4.5 cm longis ebracteatis, floribus ad 20 in quaque umbella, 5-meris, pedicellis 4–7 mm longis. Receptaculum 1–3 mm in diam., bracteas florum abortivorum paucos ferens. Fructus 9 mm in diam., plus minusque globosus, cono stylari 2 × 4 mm.

Type: **Guatemala**, Dept. of Suchitepequez, Finca Moca, in forest on ridge, 1100 m, 8 January 1935, *Skutch* 2078 (BM-holotype; A, F-isotypes). Additional specimens: **Guatemala**, Quetzaltenango, lower slopes of Volcán Santa María, *Broome* 741 (F, MO); **Mexico**, Chiapas, Motozintla de Mendoza, 1900 m, *Breedlove & Thorne* 30988 (F).

Tree up to 20 m; branchlets straight, pale coloured, striate. Lamina up to 18 × 9 cm, elliptic, firmly membranaceous to thinly coriaceous, pale green beneath, pellucid dots few, pale red, rather obscured; lateral veins c. 6 per side, scarcely visible above; margin entire or slightly crenate; very broadly apiculate to obtuse at apex, acute at base; petioles up to 10 cm, pale coloured, striate, canaliculate, a little swollen at the base. Inflorescence paniculate, umbels up to 12, the distal umbels fasciculate; rachis 2(–4) cm, bracts few, deciduous; peduncles 2–4.5 cm, pale coloured, striate, ebracteate; umbels up to 20-flowered, flowers 5-merous; receptacle 1–3 mm, the outer bracts very small, free, undulate, inner bracts pale-puberulent; pedicels 4–7 mm; calyx campanulate, limb small, undulate; petals 1.5–2 mm, bud rounded, as tall as broad. Fruits 9 mm, more or less globose, white, strongly sulcate when dry; bracts of aborted flowers few, inconspicuous; stylar cone 2 × 4 mm, the stigmas just free and recurved at the tip; seeds 7 × 5 mm.

Specimens of this taxon in several herbaria have been variously named as *D. arboreus* (L.) Decne. & Planchon, *D. smithii* (A. C. Smith) A. C. Smith, and *D. rothschuhii* Harms. We consider *D. smithii* synonymous with *D. arboreus*; the new species differs from this in its fruit size, the styles in a cone, the rigid, pale, ebracteate peduncles, and pale pedicels and fruit. Examination of a photograph of the type of *D. rothschuhii* shows bracteate peduncles; the description includes a hemispherical receptacle, which *D. pallidus* does not have.

Montane rain-forest, steep slopes, wet forests, at altitudes of 1100–2200 m.

Apparently confined to Guatemala and Chiapas.

18. *Dendropanax sessiliflorus* (Standley & A. C. Smith) A. C. Smith in *Trop. Woods* 66: 3 (1941).

Gilbertia sessiliflora Standley & A. C. Smith in *Ann. Mo. bot. Gdn* 27: 326 (1940).

Lower montane rain-forest, cloud forest.
Costa Rica & Panama.

19. *Dendropanax caucanus* (Harms) Harms in *Notizbl. bot. Gart. Mus. Berl.* 15: 692 (1942).

Gilbertia caucana Harms in *Reprim Spec. nov. Regni veg.* 23: 300 (1927).

Premontane tropical wet forest.

Costa Rica, Panama, and Colombia.

Collections made recently in connection with the *Flora Mesoamericana* project have greatly increased our knowledge of the range of this species which was formerly known only from Colombia.

20. *Dendropanax capillaris* M. & J. Cannon, sp. nov.

Fig. 10.

D. leptopodo (J. D. Smith) A. C. Smith similis, sed columna stylari longiora, pedicellis filiformis recedit; a *D. darienensis* Seemann pedicellis brevioribus, forma fructu, distinguenda.

Arbor ad 15 m alta vel frutex. Folia lamina ad 16 × 9 cm, ovata, puncto pellucido pallido distincto interdum praebenti. Umbellae 4–8, rachide 1–5 cm longa, pedunculis 2–4 cm longis gracilibus ebracteatis, floribus paucis ad 20 in quaque umbella, 5-meris, pedicellis 5–15 mm longis filiformis, post anthesin elongatis. Receptaculum 1–4 mm in diam., bracteas florum abortivorum multis conspicuis. Fructus 4 mm in diam., globosus, columna stylari 1.5–2 mm longa.

Type: **Panama**, Prov. Veraguas, Cerro Tute, c. 10 km north-west of Santa Fé, on lower slopes, 750–1000 m, 19 May 1975, *Mori* 6296 (BM-holotype; MO-isotype). Additional specimens: **Panama**: Prov. Chiriquí, between Los Planés de Hornito and Fortuna Lake, *Hampshire & Whitefoord* 384 (BM, MO); Prov. Bocas del Toro, between Higueron & Gutierrez, Caldera-Chiriquí Trail, *Kirkbride & Duke* 749 (MO).

Tree up to 15 m or shrub, branchlets rugose. Lamina up to 16 × 9 cm (usually 8–12 × 3–6 cm), ovate, membranaceous to papyraceous, pale pellucid dots sometimes distinct; lateral veins 4–6 per side; margin entire or somewhat crenulate; acute to rather abruptly apiculate at apex, acute to obtuse at base; petioles up to 6 cm, canaliculate, expanded at the base. Inflorescence more or less paniculate, of 4–8 umbels; rachis 1–5 cm; bracts few, rather corky, peduncles 2–4 cm, slender, ebracteate, subtending bracts 0 or minute, corky; umbels few–20-flowered, flowers 5-merous; receptacle 1–4 mm wide, sometimes almost globose, outer bracts nearly free, membranaceous, inner bracts corky, rather swollen and often fused; pedicels 5–15 mm, lengthening after anthesis, filiform; calyx 1 × 1 mm, obconic, the limb more or less undulate; petals 1 × 0.5 mm, bud rounded, as tall as broad. Fruit 4 mm, globose; bracts of aborted flowers often numerous and conspicuous; disc 1–2 mm, stylar column 1.5–2 mm, the stigmas spreading shortly at the tip; seeds 3 × 3 mm.

The structure of the fruit is the only constant difference between this species and *D. leptopodus* (J. D. Smith) A. C. Smith, the latter sometimes having peduncles which are not geniculate about the middle. Intermediates occasionally occur; when further material becomes available the taxo-



Fig. 9 *Dendropanax pallidus* – holotype (BM).

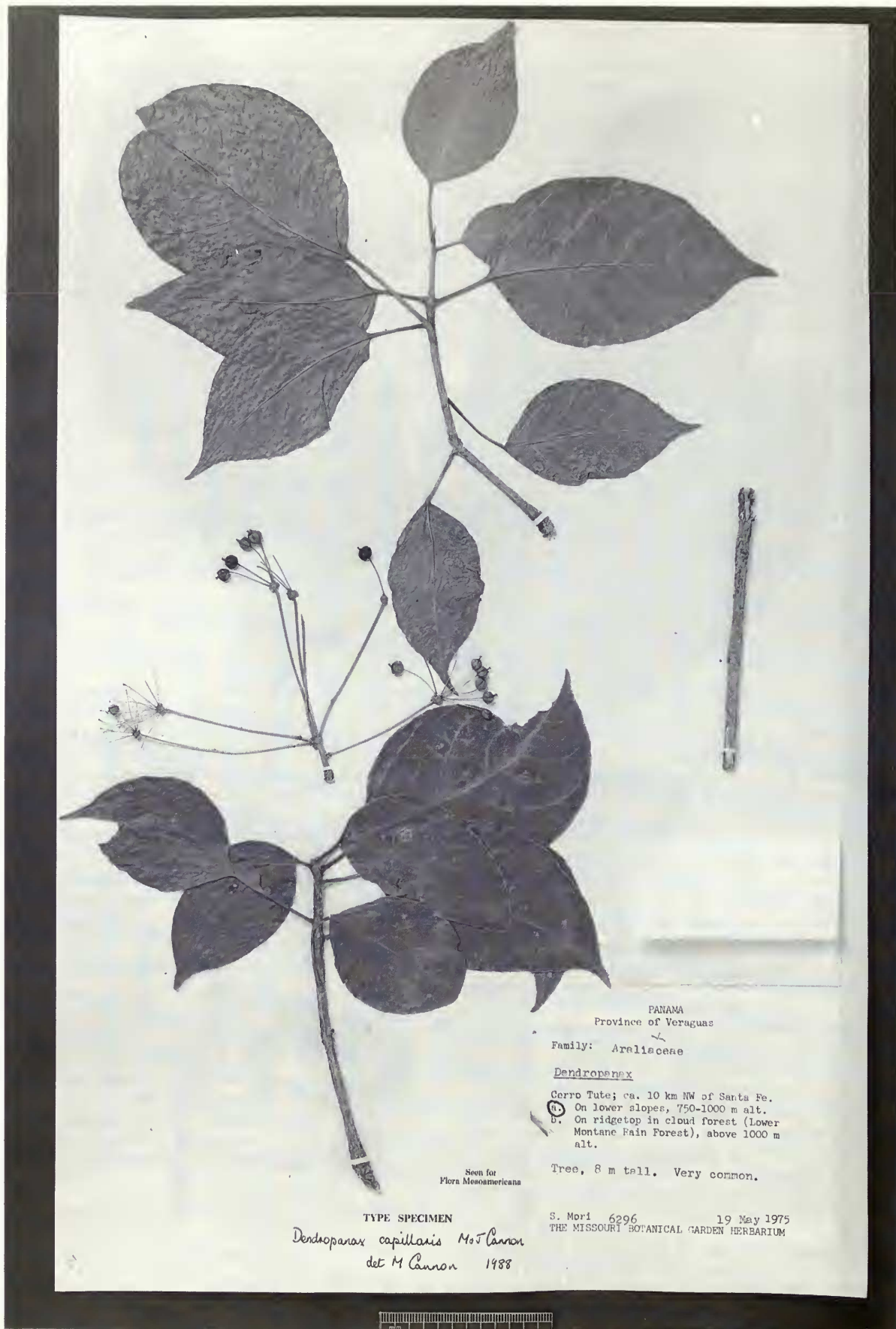


Fig. 10 *Dendropanax capillaris* – holotype (BM).

onomic situation may be clarified. It also shows similarities with *D. darienense* Seemann, a species from Colombia, not Panama, from which it may be distinguished by the very much longer pedicels and the form of the fruit of the latter.

Cloud forest, premontane rain-forest at altitudes of 700–1500 m.

Panama.

The name draws attention to the very slender pedicels.

Excluded species

Dendropanax darienense Seemann in *J. Bot.* 2: 300 (1864).

This species was included in Smith (1944) presumably on the basis of its specific name. It is known to us only from the type specimen, which was collected in Colombia, Cabo Corrientes.

II. OREOPANAX Decne. & Planchon

in *Revue hort.* IV, 3: 107 (1854). Type species: non designatus.

Key to *Oreopanax* in the *Flora Mesoamericana* area

- 1a. Leaves palmately compound, inflorescence racemose:
 - 2a. Indumentum usually scale-like or rarely of short-stalked stellate hairs, bracts subtending peduncles 0.5–1.5 mm, not leafy towards the base of the inflorescence 1. *O. xalapensis*
 - 2b. Indumentum of long-stalked stellate hairs, bracts subtending peduncles 4–8 mm, leafy towards the base of the inflorescence 2. *O. echinops*
- 1b. Leaves simple, inflorescence paniculate, rarely racemose (*O. lempiranus* only) or umbellate:
 - 3a. Inflorescence racemose 3. *O. lempiranus*
 - 3b. Inflorescence paniculate or umbellate:
 - 4a. Leaves lobed or dentate:
 - 5a. Leaves deeply 5- or more lobed:
 - 6a. Staminate heads 8–12 mm, peduncles stout (2–4 mm diam.), hermaphrodite flowers with 2–3(–4) styles 4. *O. geminatus*
 - 6b. Staminate heads 3–6 mm, peduncles slender (up to 1 mm diam.), hermaphrodite flowers with 2 styles only 5. *O. peltatus*
 - 5b. Leaves 3-lobed or bi- or tridentate:
 - 7a. Leaves equally 3-lobed, fruits 2–4 per head, styles scarcely sunken within the fruit 6. *O. sanderianus*
 - 7b. Leaves 2–3-dentate, fruits 5–15 per head, styles borne within a fleshy cupule 7. *O. platyphyllus*
 - 4a. Leaves entire:
 - 8a. Leaves, or at least the lower surface, hairy:
 - 9a. Indumentum without stalked stellate hairs:
 - 10a. Indumentum often scale-like, or of very short-branched sessile stellate hairs, branches and peduncles more or less terete (a widespread and very variable species) 8. *O. capitatus*
 - 10b. Indumentum of long-branched sessile stellate hairs, branches and peduncles markedly 4-sided and sharply angled 9. *O. steyermarkii*
 - 9b. Indumentum with at least some stalked stellate hairs:
 - 11a. At least some hairs thick-stalked:
 - 12a. Thick-stalked hairs often up to 7 mm; styles (10–)11–12(–15) 10. *O. superoerstedianus*
 - 12b. Thick-stalked hairs up to 4 mm; styles 5–6(–7) 11. *O. oerstedianus*
 - 11b. Hairs slender-stalked:

- 13a. Hermaphrodite flowers with (8–)11(–12) styles; fruits 8–14 per head 12. *O. standleyi*
- 13b. Hermaphrodite flowers with 5–6(–7) styles:
 - 14a. Fruits 20–40 per head, compressed closely together, sharply angled when dry 13. *O. pycnocarpus*
 - 14b. Fruits 2–8 per head, not compressed or sharply angled when dry:
 - 15a. Floral bracts concave, arching over the flowers; fruits 2–3 per head 14. *O. arcanus*
 - 15b. Floral bracts not concave nor arching over the flowers, fruits 3–9 per head 15. *O. vestitus*

- 8b. Leaves glabrous beneath:
 - 16a. Hermaphrodite heads sessile, inflorescence branches 1 cm or less 16. *O. compactus*
 - 16b. Hermaphrodite heads pedunculate, inflorescence branches more than 1 cm:
 - 17a. Hermaphrodite heads 20–40-flowered, fruits compressed closely together, sharply angled when dry ... 13. *O. pycnocarpus*
 - 17b. Hermaphrodite heads 2–12-flowered, fruits not compressed closely together or sharply angled when dry:
 - 18a. At least the lower ¼ of the styles sunken within a hollow at the top of the fruit:
 - 19a. Calyx-limb with 5 broadly deltoid lobes, inflorescence with long-branched sessile stellate hairs 17. *O. nicaraguensis*
 - 19b. Calyx-limb truncate, inflorescence glabrous 18. *O. striatus*
 - 18b. Styles not or scarcely sunken within a hollow at the top of the fruit:
 - 20a. Leaves usually twice as long as broad:
 - 21a. Mature inflorescence glabrous, styles 10 (rarely 8–9) 19. *O. costaricensis*
 - 21b. Mature inflorescence puberulent; styles 5–8 (rarely more):
 - 22a. Floral bracts spatulate 20. *O. spathulatus*
 - 22b. Floral bracts suborbicular 8. *O. capitatus*
 - 20b. Leaves less than twice as long as broad:
 - 23a. Outer floral bract 1–2 mm, inner 2 smaller, bracts subtending peduncles 3–5 mm 21. *O. obtusifolius*
 - 23b. Floral bracts all similar in size, bracts subtending peduncles 2 mm or less:
 - 24a. Leaves usually more than 15 × 14 cm, often up to 40 × 40 cm, bracts subtending peduncles minute 22. *O. donnell-smithii*
 - 24b. Leaves less than 15 × 14 cm, bracts subtending peduncle 1–2 mm:
 - 25a. Indumentum of stalked or sessile long-branched hairs 23. *O. nubigenus*
 - 25b. Indumentum scale-like:
 - 26a. Fruits 6–8 mm, floral bracts 1 mm tall 6. *O. sanderianus*
 - 26b. Fruits 4–6 mm, floral bracts 3–4 × 4–5 mm 8. *O. capitatus*

1. *Oreopanax xalapensis* (Kunth) Decne. & Planchon in *Revue hort.* 4: 108 (1854).

Aralia xalapensis Kunth, *Nov. gen. sp.* 5: 8 (1821).

Oreopanax langlassei Standley in *Contr. U.S. natn. Herb.* 23: 1083 (1924).

We include within this very variable species *O. langlassei* Standley. It was originally separated from it on the basis of the styles connate from the base, not spreading, and the

indumentum of stalked (not sessile) stellate hairs. Careful examination of the type specimen (*Langlassé* 796 (US)) shows several fruits with spreading styles. Both sessile and stalked stellate hairs occur in *O. xalapensis* and, as the plants are similar in all other respects, we cannot maintain the separation.

A group of plants from the Volcán Barú area of Panama are remarkable for their dense indumentum of long-stalked stellate hairs, as well as simple and branched hairs. The leaflets are often very broad and undulate, the upper surface often very shiny and markedly rugose-reticulate. We do not consider that the differences are sufficient to describe it as a new species, but further collections could produce better evidence. Specimens seen include *Mori & Bolten* 7435, *Tyson & Loftin* 5984, *Folsome & Page* 6077, etc.

Dry oak woodland to cloud forest.

Chiapas, Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica, and Panama.

2. ***Oreopanax echinops*** (Schldl. & Cham.) Decne. & Planchon in *Revue hort.* 4: 108 (1854).

Aralia echinops Schldl. & Cham. in *Linnaea* 5: 174 (1830).

Cloud forest.

Mexico to Honduras.

3. ***Oreopanax lempiranus*** Hazlett in *Ceiba* 23: 119 (1979).

Montane forest.

Honduras.

4. ***Oreopanax geminatus*** Marchal in *Bull. Acad. r. Belg.* II, 47: 91 (1879).

Steep slopes on limestone hills.

Mexico to Nicaragua.

5. ***Oreopanax peltatus*** Linden in *Gartenflora* 11: 170 (1862).

Cool slopes and wet canyons.

Northern Mexico to Guatemala.

6. ***Oreopanax sanderianus*** Hemsley in *Gdnrs Chron.* III, 11: 718 (1892).

Cloud and montane rain-forest.

Mexico to Honduras.

7. ***Oreopanax platyphyllum*** Marchal in *Bull. Acad. r. Belg.* II, 47: 88 (1879).

Lower montane rain-forest.

Mexico to Guatemala.

8. ***Oreopanax capitatus*** (Jacq.) Decne. & Planchon in *Revue hort.* IV, 3: 108 (1854).

Aralia capitata Jacq., *Enum. syst. pl.*: 18 (1760).

This is an extremely variable species occurring from central Mexico to central South America and the West Indies. Narrow-leaved forms have been described as *O. liebmanni*

Marchal, but the variation is so continuous with that of broader-leaved forms, especially in Nicaragua, that the difference cannot be sustained (Cannon & Cannon, 1986).

Intermediates between this species and several others occur quite frequently, especially with *O. vestitus* A. C. Smith, *O. standleyi* A. C. Smith, and *O. sanderianus* Hemsley. Further investigation of these species may result in further reductions.

9. ***Oreopanax steyermarkii*** A. C. Smith in Britton et al., *N. Amer. fl.* 28B: 36 (1944).

Mountain slopes.

Guatemala.

10. ***Oreopanax superoerstedianus*** M. & J. Cannon, *sp. nov.* Figs 11–12.

Inter *O. oerstediano* Marchal et *O. standleyi* A. C. Smith intermedia; a *O. oerstediano* pilis stipitatis longioribus, stylis (10–)11–12(–15) differt; a *O. standleyi* pilis crassistipitatis, capitularis masculis minoribus, bracteis minoribus, distincta.

Arbor parva vel frutex, interdum scandens, saepe epiphytica, indumento pilis longe ramosis crassistipitatus, stipite ad 7 mm longo formanti. Folia simplicia lamina 15–30 × 12–20 cm, latissime ovata vel ovato-lanceolata, petiolo 10–30 cm longo e basi vix expanso. Capitula mascula 4–5 mm in diam., globosa, floribus 15–20, bracteis floralibus c. 1 mm longis. Fructus ad 7 mm longis, globosus vel ovoideus, stylis (10–)11–12(–15), 1–1.5 mm longis, in fructu non immersis. Semina albumine ruminato.

Type: **Panama**, Prov. Chiriquí, Distrito Bugaba, Cerro Punta, 8°52'N, 82°33'E, 2200 m, alt., 'cloud forest, rich in epiphytes . . . Trees to 15 m tall but frequently less. In tree layer many Araliaceae', 23 January 1984, *Werff & Herrera* 6239 (hermaphrodite inflorescence) (BM-holotype; MO-isotype). Additional specimens: **Panama**: Prov. Chiriquí, between Los Planés de Hornito and Fortuna Lake, 8°41'N, 82°13'W, *Hampshire & Whitefoord* 392 (male inflorescence) (BM); Prov. Chiriquí, Cerro Punta, *Croat* 48605 (MO); Prov. Bocas del Toro, Valle de Silencio, 9°05'N, 82°56'W, *Antonio* 1627 (BM, MO).

Small tree to 10 m, shrub or vine, often epiphytic; branchlets stout, often densely villose; indumentum of leaves and inflorescence of long-branched subsessile and stalked stellate hairs and very thick-stalked, branched or stellate hairs, the stalks up to 7 mm (or more), pale ferruginous. Leaves simple; lamina 15–30 × 12–20 cm, very broadly ovate to ovate-lanceolate, thinly coriaceous, glabrous, often glossy above or sometimes sparsely pubescent on the veins, sparsely pubescent beneath (the hairs long-stalked, stellate); 3–5 veined at the base, the midrib and primary veins raised above and beneath, acute or abruptly acuminate at apex, rounded to cordate at base; petioles (5–)10–30 cm, glabrescent or sparsely pilose, striate, scarcely swollen or expanded at the base. Male inflorescence up to 20 cm, paniculate, densely pilose or tomentose, often with a small brown glabrous or puberulent bud at the base within the spreading branches, bracts (subtending branches) 1.5–2 mm, acute or cuspidate, heads 4–5 mm, globose, 15–20-flowered; peduncles up to 17 mm with acute or cuspidate subtending bracts 1.5–2 mm; floral bracts c. 1 mm, acute, broadly ovate; calyx obconic, limb truncate; petals 1.5–2 mm; filaments 2.5–3 mm, anthers



Fig. 11 *Oreopanax superoerstedianus*, hermaphrodite inflorescence – holotype (BM).

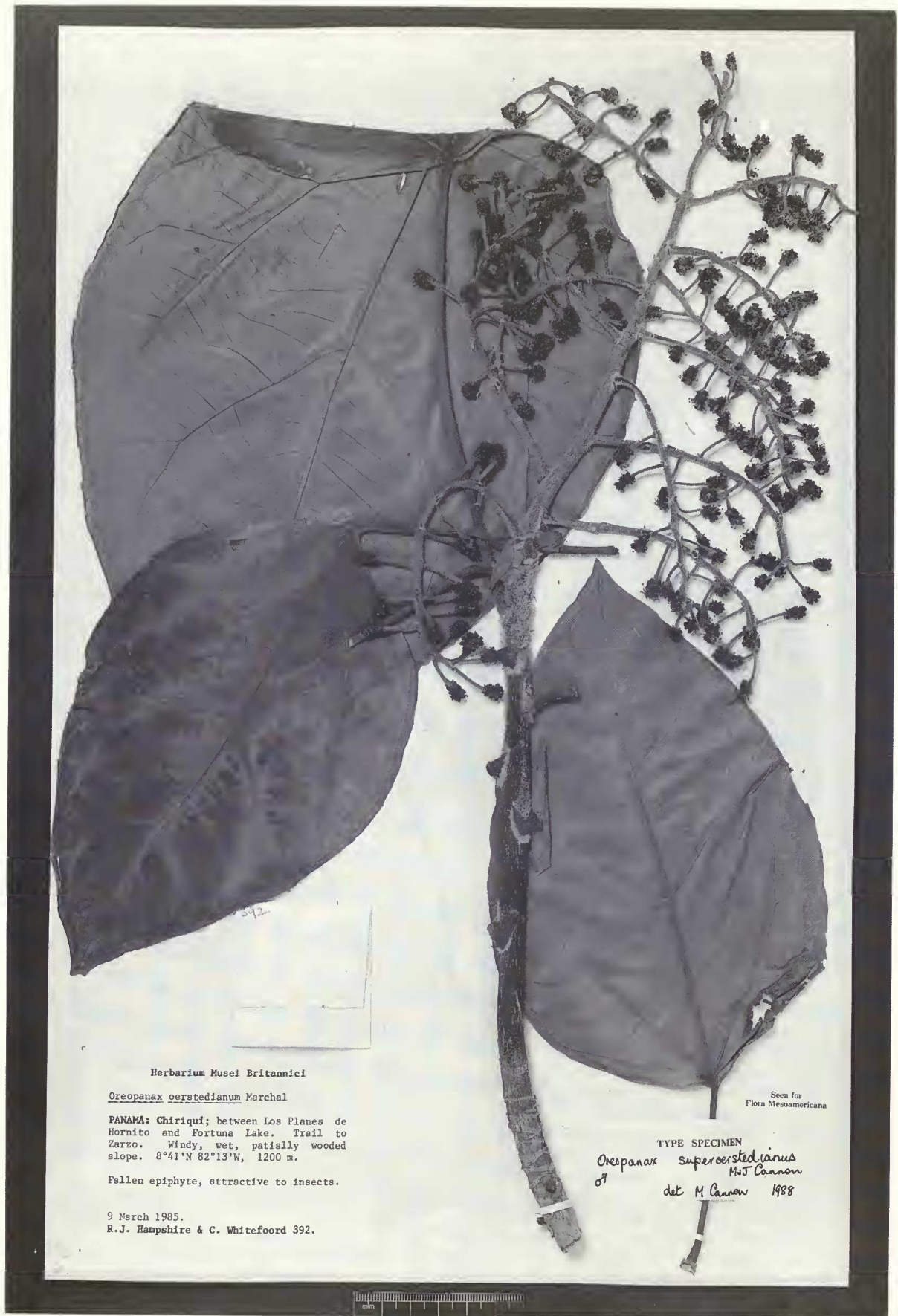


Fig. 12 *Oreopanax superoerstedianus*, male inflorescence – Hampshire & Whitefoord 392 (BM).

0.5–1 mm; styles 1 or 2. Hermaphrodite inflorescence similar; heads 6–15-flowered; peduncles up to 20 mm, styles (10–)11–12(–15). Fruits up to 7 mm, globose or ovoid; styles 1–1.5 mm, not sunken within the fruit, free or rather swollen and connate at the base, sometimes appearing fused and infundibuliform when dry; endosperm ruminant.

This species is intermediate between *O. oerstedianus* Marchal and *O. standleyi* A. C. Smith. It is a much larger plant in all respects, and can be distinguished from the former by the much longer stalks of the hairs and the style number, and from the latter by the presence of long thick-stalked hairs, smaller and fewer-flowered male heads, and smaller floral bracts.

Cloud forest, premontane rain-forest, and oak forest, at altitudes of 1100–2500 m.

It occurs only in Panama, in Chiriquí and Bocas del Toro provinces, and is most common in the Fortuna Dam region. The name refers to the superficial similarity of the species to a large form of *O. oerstedianus*.

11. *Oreopanax oerstedianus* Marchal in *Bull. Acad. r. Belg.* II, 47: 91 (1879).

Cloud forest and montane rain-forest.
Costa Rica and Panama.

12. *Oreopanax standleyi* A. C. Smith in *Brittonia* 2: 259 (1936).

Wet forests.
Costa Rica.

13. *Oreopanax pycnocarpus* J. D. Smith in *Bot. Gaz.* 31: 113 (1901).

Cloud forest.
Costa Rica and Panama.

14. *Oreopanax arcanus* A. C. Smith in Britton et al., *N. Amer. fl.* 28B: 38 (1944).

Moist forest, steep slopes.
Mexico to Guatemala.

15. *Oreopanax vestitus* A. C. Smith in *Ann. Mo. bot. Gdn* 27: 324 (1940).

Cloud forest and rain-forest.
Costa Rica and Panama.

16. *Oreopanax compactus* M. & J. Cannon, *sp. nov.* Fig. 13.

O. platyphylo Marchal semina albuminem ruminatum deficienti similis, sed bracteis floralibus minoribus, nodi ramulis incrassatis, bene distincta.

Frutex vel arbor parva epiphytica, ramulis in nodis incrassatis. Folia simplicia, lamina 8–18 × 3.5–7 cm, oblanceolata vel lanceolata, glabra vel infra pilis stellatis sessilibus obtecta, petiolo ad 9 cm longo basi expanso. Inflorescentia hermaphrodita compacta, ramis 3–4, 0.5–1 cm longis, capitulis (1)2–3 sessilibus globosis, floribus 8–12, bracteis floralibus 5–6 mm longis apicibus inflexis, exteriore suborbiculato

duobus interioribus spathulatis. Fructus 6–8 mm in diam., parte superiore incrassato, stylis 8–10(–12) e cavitate cupulata vix emergentibus, loculibus basalibus. Semina albumine laevigato vel vix undulato.

Type: **Costa Rica**, Prov. Cartago, along camino Ruiz de Hule, south-east of Platanillo (Tsipiri), 1200–1400 m, (Trail above home of Aziel Jones, American Minister), 1 July 1976, *Croat* 36730 (hermaphrodite inflorescence) (MO-holotype). Additional specimens: **Costa Rica**, Prov. Cartago, Río Tambor, 3 miles east of Cachi, *Lent* 865 (F); **Panama**, Prov. Chiriquí, San Felix, *Croat* 48467 (? male inflorescence) (MO).

Epiphytic shrub or tree up to 5 m; branchlets glabrous, nigrescent, swollen at the nodes; indumentum of inflorescence of sessile stellate hairs. Leaves simple; lamina 8–18 × 3.5–7 cm, oblanceolate or lanceolate, thinly coriaceous, glabrous or very sparsely pubescent beneath; venation pinnate or somewhat 3-veined at the base, the midrib and primary veins raised beneath, less so above, acute at apex, acute to rounded at base; petioles up to 9 cm, expanded at the base. Male inflorescence not seen. Hermaphrodite inflorescence compact, very sparsely pilose, subtended by shortly-petiolate leafy bracts up to 13 × 3.5 cm; branches 3–4, 0.5–1 cm, stout, bearing (1–)2–3 sessile globose 8–12-flowered heads; floral bracts 5–6 mm, with markedly incurved tips, the outer bract semiorbicular, the inner 2 spathulate, ciliate when young, becoming crenulate and corky-edged, fruits 6–8 mm, fleshy, swollen above with a cup-shaped cavity bearing the 8–10(–12) scarcely emergent styles; locules basal; endosperm smooth or barely undulate.

A specimen from Panama (*Croat* 48467 (MO)) may possibly be a male inflorescence of this species. Its floral bracts are of two sizes, concave but not incurved, the expansion at the base of the petiole is like that of *O. compactus*, the branchlets nigrescent and swollen at the nodes as in that species. The new species resembles *O. platyphyllus* Marchal in its stigma number and lack (or relative lack) or ruminant endosperm, but the floral bracts are much smaller and this, together with the swollen nodes of the branchlets, makes it quite distinct. Forest on steep slopes.

Costa Rica and possibly also in Panama.

17. *Oreopanax nicaraguensis* M. & J. Cannon in *Ann. Mo. bot. Gdn* 73: 482 (1986).

Cloud forest and premontane moist forest.
Nicaragua, Costa Rica, and Panama.

18. *Oreopanax striatus* M. & J. Cannon, *sp. nov.* Fig. 14.

A *O. donnell-smithii* Standley ramulis et petiolis et pedunculis profunde striatis, petiolis basi crassis, stylis 6 in fructu plus minusque occultis, differt; a *O. nicaraguensi* M. & J. Cannon ramulis et petiolis et pedunculis profunde striatis, bracteis floralibus minoribus, stylis brevioribus, distinguenda.

Arbor parva interdum epiphytica, ramulis striatis omnino glabra, folia simplicia, lamina 18–25 × 12–16 cm, ovata vel late ovata, petiolo ad 15 cm longo, profunde striato basi crasso et valde expanso. Capitula mascula 5–8 mm longa cylindrica floribus 15–30, pedunculo 5–15 mm longo profunde striato vel alato. Fructus 6–8 in quaque capitula, 4–5



MISSOURI
BOTANICAL GARDEN
HERBARIUM

No 3030769

Record det.

Seen for
Flora Mesoamericana

TYPE SPECIMEN

Oreopanax compactus M. J. Cannon
det. M. Cannon 1988

COSTA RICA
Provincia de Cartago

ARALIACEAE

Along camino Raiz de Hule, SE of Platanillo
(Tsipiri). Elev. 1200-1400 m. (Take trail
above home of Aziel Jones, American Minister.
Epiphytic tree 4 m; fruits greenish-white.

Thomas B. Croat 36730 1 July 1976

Missouri Botanical Garden Herbarium



Fig. 13 *Oreopanax compactus* - holotype (MO).

× 3–4 mm, ovoidei, stylis 6, 1 mm longi vel breviori, in fructa plus minusque occultis. Semina albumine ruminato.

Type: **Panama**, Prov. Chiriquí, Bambito a mas o menas 7 km del pueblo de Cerro Punta, a orillas del rio Chiriquí Veijo, 23 April 1969, *Correa A.* 1386 (hermaphrodite inflorescence) (MO-holotype). Additional specimens: **Costa Rica**: Prov. Puntarenas, San Vito de Java, *Croat* 32899 (male inflorescence) (MO); Prov. Puntarenas, Cordillera de Talamanca, 9°07'N, 83°04'W, *Davidse et al.* 25678 (BM, MO).

Tree up to 10 m, sometimes epiphytic; branchlets stout, striate; whole plant completely glabrous. Leaves simple; lamina 18–25 × 12–16 cm, ovate or broadly ovate, thinly coriaceous, 5-veined at the base, the midrib and primary veins raised above and beneath, acute at apex, rounded to cordate at base; petioles up to 15 cm, deeply striate, swollen in the lower part and markedly expanded at the base. Male inflorescence up to 20 cm, paniculate, often with several vegetative buds below, branches spreading, subtending bracts scarcely 1 mm; heads numerous, 5–8 mm, becoming more or less cylindrical, 15–30-flowered; peduncles 5–15 mm, broadest below the heads and tapering gradually towards the base, very deeply striate or winged, with acute or rounded subtending bracts 1–2 mm; floral bracts 1 × 1.5–2 mm, the tips obtuse; calyx obconic, the limb truncate; petals 1.5 mm; filaments 1–1.5 mm, anthers 0.5–0.7 mm; style 1. Hermaphrodite inflorescence up to 10 cm, compact, paniculate or sub-umbellate; heads 6–8-flowered; peduncles and bracts as the male; styles 6. Fruits 4–5 × 3–4 mm, ovoid; styles 1 mm or less, free at the base, more or less hidden within the fleshy top of the fruit; endosperm ruminant.

This large-leaved species differs from *O. donnell-smithii* Standley in its deeply striate branches, petioles, and peduncles, the swollen lower part of the petiole, and the 6 (not 8–9) styles more or less hidden within the fruit. It can be distinguished from *O. nicaraguensis* M. & J. Cannon by its deeply striate branches, petioles, and peduncles, smaller floral bracts, and shorter styles.

Moist forests from 1250–1850 m.

Panama and Costa Rica.

The name draws attention to the deeply striate branches, petioles, and peduncles.

19. ***Oreopanax costaricensis*** Marchal in *Bull. Acad. r. Belg.* II, 47: 89 (1879).

Elfin forest and humid forests.

Costa Rica and Panama.

20. ***Oreopanax spathulatus*** M. & J. Cannon, *sp. nov.*

Fig. 15.

O. nicaraguensi M. & J. Cannon affinis, sed bracteis spathulatis, stylis base vix in fructu immersis, differt.

Arbor parva, ramulis nodi incrassatis cicatricibus foliorum delapsorum conspicue notatatis. Folia simplicia, lamina 10–20 × 6–14 cm, elliptica vel late ovato-elliptica, glabra, petiolo 4–10 cm longo basi saepe conspicue expanso. Inflorescentia fructifera ad 10 cm longa, pilis stellatis sessilibus longe ramosis vestita. Fructus 5–12 in quaque capitula, 5–6 mm in diam., globosi, bracteis subtendentibus ad 4 mm longis amplitudine uniformibus, spathulatus, stylis 5–8, 1–2 mm longis base vix in fructu immerso. Semina albumine ruminato.

Type: **Panama**, Prov. Chiriquí, Llano east of El Hato de Volcán, savanna and woods on lava flow, 2000–2400 m, *Hammel, D'Arcy, Hill, Schwartz & Wolcott* 6776 (BM-holotype; MO-isotype). Additional specimens: **Panama**: Prov. Chiriquí, above Los Llanos, 8°47'N, 82°38'W, *McPherson* 9257 (BM, MO); Prov. Chiriquí, north-east of Cerro Punta on road through Bajo Grande, c. 8°50'N, 82°32'W, *Stevens* 18134 (MO).

Tree up to 8 m, branchlets stout, glabrous, rather swollen at the nodes and there conspicuously covered with leaf scars, strongly lenticillate; indumentum of long-branched sessile stellate hairs confined to the inflorescence. Leaves simple; lamina 10–20 × 6–14 cm, elliptic to broadly ovate-elliptic, coriaceous, often shining above; (3–)5–7 veined at the base, midrib and primary veins raised above and beneath, acute to somewhat rounded at apex, acute at base; petioles 4–10 cm, striate, often markedly expanded at the base. Flowering inflorescences not seen. Fruiting inflorescence paniculate, up to 10 cm, with 1–several vegetative buds below; branches widely spreading, subtending bracts 1–2 × 2–3 mm, acute; heads 5–12-fruited; peduncles 5–10 mm with subtending bracts 1–2 mm; floral bracts up to 4 mm, all of similar size, markedly spatulate; fruits 5–6 mm, globose, fleshy; styles 6–8, 1–2 mm, the bases somewhat sunken within the fruit, free but rather swollen at the base, spreading and recurved above; endosperm ruminant.

This species superficially resembles *O. nicaraguensis* M. & J. Cannon, but differs in its spatulate bracts, and the bases of the styles scarcely sunken within the fruit.

Cloud forest, and dry montane forest, sometimes on lava flows.

Confined to the province of Chiriquí, in the regions around Volcán Barú.

The name of this new species draws attention to the spatulate bracts which are particularly conspicuous after the fruit has fallen.

21. ***Oreopanax obtusifolius*** L. O. Williams in *Fieldiana Bot.* 31: 20 (1964).

Pine forests and wet forests.

S. Mexico, Guatemala, Honduras and El Salvador.

22. ***Oreopanax donnell-smithii*** Standley in *J. Wash. Acad. Sci.* 17: 315 (1927).

Premontane forests and pastures.

Costa Rica.

23. ***Oreopanax nubigenus*** Standley in *J. Wash. Acad. Sci.* 17: 315 (1927).

Cloud forest and pastures.

Costa Rica.

III. SCHEFFLERA Forster & G. Forster

Char. gen. pl.: 45 (1776). Type species: *Schefflera digitata* Forster & G. Forster.

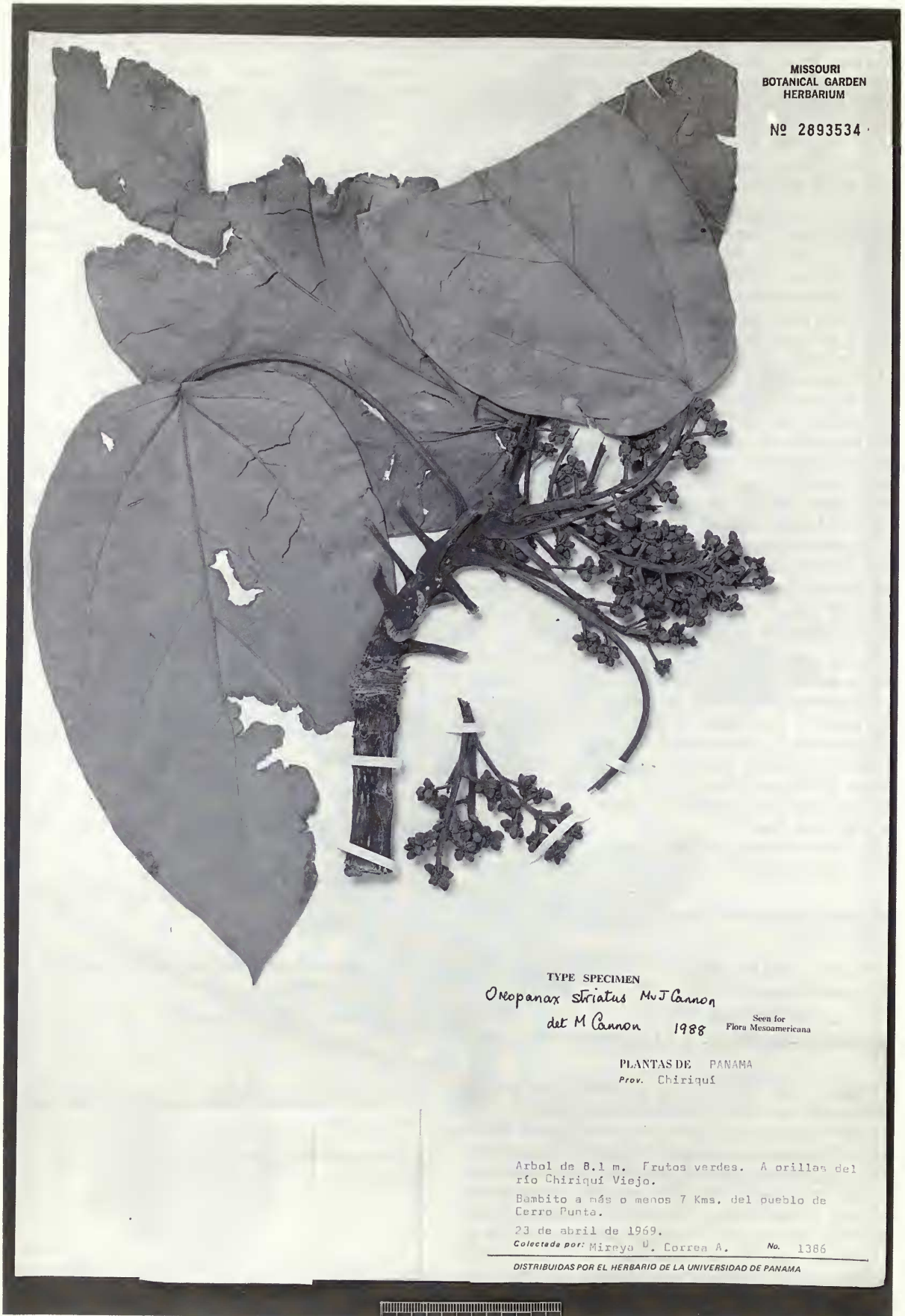


Fig. 14 *Oreopanax striatus* – holotype (MO).



Fig. 15 *Oreopanax spathulatus* – holotype (BM).

Key to *Schefflera* in the *Flora Mesoamericana* area

- 1a. Stigmas, locules, and seeds 5 or more:
- 2a. Flowers sessile or nearly so (pedicels when present less than 0.5 mm):
- 3a. Leaflets usually 12 or more, in 2 whorls:
- 4a. Peduncles 3–8 mm, subtending bracts 1–2.5 mm, fruits 2–3 mm, not swollen below the calyx limb 1. *S. robusta*
- 4b. Peduncles 10 mm, subtending bracts 3–4 mm, fruits 5 mm, swollen below the calyx limb 2. *S. coclensis*
- 3b. Leaflets usually 10 or fewer, in one whorl:
- 5a. Mature leaflets with setose margins 3. *S. macphersonii*
- 5b. Mature leaflets without setose margins:
- 6a. Plants including calyx very densely ferruginous-tomentose:
- 7a. Calyx hairs over-topping the styles in mature fruits, stigmas and locules 5 4. *S. panamensis*
- 7b. Calyx hairs not over-topping the styles, stigmas and locules 8 5. *S. octostyla*
- 6b. Plants not densely tomentose, calyx often glabrous or shortly hairy:
- 8a. Styles in a short cone 1 mm or less, fruits large, 5 × 3 mm 6. *S. sapoensis*
- 8b. Styles in a column, 1–2.5 mm, fruits smaller, 3.5 × 4 mm or less 7. *S. systyla*
- 2b. Flowers pedicellate (pedicels more than 0.5 mm):
- 9a. Leaves simple 8. *S. epiphytica*
- 9b. Leaves palmately compound:
- 10a. Styles 7–9, free nearly to the base 9. *S. jefensis*
- 10b. Styles 5–6, connate in a cone or column:
- 11a. Petioles 2–5 cm, leaflets 3–4, filaments winged 10. *S. brenesii*
- 11b. Petioles 10 cm or more, leaflets usually more than 4, filaments not winged:
- 12a. Ligules 6 cm or more, leaflets more than 8 cm wide:
- 13a. Ligule less than twice as long as broad, margin of leaflets undulate 11. *S. latiligulata*
- 13b. Ligule more than twice as long as broad, margin of leaflets not undulate:
- 14a. Pedicels 2–4 mm, of many different lengths in the same umbel, styles in a cone 12. *S. siebertii*
- 14b. Pedicels 4–5 mm, all about the same length in the same umbel, styles in a column:
- 15a. Peduncles not more than 15 mm long, flowers fewer than 10 per umbel 13. *S. nicaraguensis*
- 15b. Peduncles up to 22 mm long, flowers 12–15 per umbel 14. *S. whitefoordiae*
- 12b. Ligules 5 cm (or less), leaflets 7 cm wide or less:
- 16a. Calyx limb c. 1 mm, teeth broadly triangular, calyptra densely villose, leaflets c. 11 15. *S. caduca*
- 16b. Calyx limb 0.5 mm or less, teeth minute or 0, calyptra glabrous, leaflets 10 or fewer:
- 17a. Styler column less than 1 mm, stigmas strongly recurved at the tip 16. *S. pubens*
- 17b. Styler column more than 1 mm, stigmas erect or connate to the tip:
- 18a. Stigmas connate, bud narrowly pointed 17. *S. archeri*
- 18b. Stigmas erect, more or less spreading, never entirely connate, bud rounded or flattened 7. *S. systyla*

- 1b. Stigmas, locules, and seeds 2–3:
- 19a. Flowers sessile or nearly so (pedicels if present less than 0.5 mm) in capitate heads:
- 20a. Margins of leaflets thickened, translucent or revolute, outer bracts forming a corky undulate ring below the capitulum, leaflets 6–9 cm long 18. *S. bifida*
- 20b. Margins of leaflets not thickened, outer bracts free or hidden in tomentum, leaflets 16 cm long or more:
- 21a. Tips of leaflets rounded, cuspidate, flowers 10–25 per head, plants glabrous 19. *S. cartagoensis*
- 21b. Tips of leaflets acuminate, flowers 40–60 per head, plants pale-ferruginous, tomentose, or villose 20. *S. albocapitata*
- 19b. Flowers with pedicels 1 mm or more, heads umbellate:
- 22a. Petals free, leaflets pubescent below 21. *S. morototoni*
- 22b. Petals calyptrate, leaflets glabrous below:
- 23a. Lateral veins of leaflets extending to the margin, stylopodium conical, 1 mm 22. *S. aquaverensis*
- 23b. Lateral veins of leaflets anastomosing near the margin, stylopodium conical, 1.5 mm or more, or styles in a column:
- 24a. Leaflets 11, acumen up to 3 cm, pedicels 8–9 mm, styler column 3 mm or more 23. *S. instita*
- 24b. Leaflets 8 or fewer, acumen 1.5 cm or less, pedicels 7 mm or less, stylopodium conical or swollen below:
- 25a. Rachis short, often swollen below and covered with leaf scars, ligule 1.5 cm or less, truncate 24. *S. cicatricata*
- 25b. Rachis scarcely swollen below, without leaf scars, ligule 4–6 cm, lanceolate 25. *S. rodriguesiana*

1. *Schefflera robusta* (A. C. Smith) A. C. Smith in *Trop. Woods* 66: 5 (1941).

Sciadophyllum robustum A. C. Smith in *Brittonia* 2: 254 (1936).

Cloud and premontane forest.
Costa Rica.

2. *Schefflera coclensis* M. & J. Cannon, *sp. nov.*
Figs 16–17.

S. robustae (A. C. Smith) A. C. Smith similis, sed fructibus grandioribus, pedunculis multo crassibus reflexis, statura pubescentiaque foliorum maturorum, facile distinguitur.

Arbor parva, foliis pubescentibus, inflorescentia pubescentia. Folia ligula 6 cm longa, parte basali 2.5 cm longa, caulem omnino circumdata, foliola 15 in 2 verticillis disposita ad 35 × 9 cm, ovato-elliptica apice gradatim acuminata basi acuta. Inflorescentia 5-ramosa, ramis 32 cm longis, pedunculis 25–40 in quoque ramo, reflexis crassis, bractea sub pedunculo lignosa. Fructus 5 × 4.5 mm, sessilis 10–15 in quoque capitula, bracteis 3 quisque subtentus cuius 2 exterioribus ad 2 mm longis, discus carnosus, styli 5 in columnam 3 mm longam conjunctis, stigmatibus 1 mm longis super apicem columnae effusis vel parum reflexibus.

Type: **Panama**, Prov. Coclé, plants collected along trail from Caño Susio to Cerro Tifé at base of waterfall, (Caño Susio is a 5 hr walk from the sawmill at El Copé on the Atlantic slope), 300–350 m, 3 February 1980, *T. Antonio* 3684 (BM-holotype; BM-isotype).

Tree 7–10 m, leaves and inflorescence ferruginous-pubescent. Leaves palmately compound, petioles 33–65 cm, shallowly grooved, striate, swollen and sometimes lenticillate above; ligule at least 6 cm, the lower 2.5 cm encircling the stem, the



TYPE SPECIMEN

Schefflera coclensis M.J. Cannon

det. M. Cannon 1988 Seen for
Flora Mesoamericana

PANAMA
Province of Coclé

Family: *ARALIACEAE*

Plants collected along trail from Caño Susio to Cerro Tife at base of waterfall. Caño Susio is a 5 hr walk from the sawmill at El Cope on the Atlantic slope; elev 1200-1400 ft.

T. Antonio 3 Feb. 1980
MISSOURI BOTANICAL GARDEN HERBARIUM (MO)

Fig. 16 *Schefflera coclensis* - holotype (BM).

free part more or less lanceolate, inrolled, very pale coloured without; leaflets *c.* 15, up to 35 × 9 cm, in two whorls, the inner much smaller, ovate-elliptic, thinly coriaceous; lateral veins anastomosing close to the margin only at the tip of the leaflet, raised below; margin plane, scarcely inrolled; apex gradually acuminate, acumen up to 3 cm, often very slender; base acute to cuneate; petiolules 0.5–13 cm, swollen above and below. Inflorescence paniculate, 5(or more?)-branched; branches 32 cm or more, subtending bracts not seen; peduncles 25–40 per branch, 1 cm, stout, reflexed, the subtending bracts 3–4 mm, woody; flowers not seen. Fruits 10–15 per head, 5 × 4.5 mm, sessile, subtended by 3 membranaceous to woody bracts, the outer 2 up to 2 mm, the inner smaller, calyx-limb 1 mm, undulate; disc fleshy-rimmed above, strongly ribbed when dry; stylar column 3 mm, the 5 stigmas 1 mm, spreading or a little reflexed; seeds 3.5 × 2 mm, flattened.

This species is similar to *S. robusta* (A. C. Smith) A. C. Smith in its double whorl of leaflets, but is easily distinguished by the size and shape of the fruits, the much stouter reflexed peduncles, and the size and pubescence of the mature leaves. Panama, Coclé. Known only from the type collection.

3. *Schefflera macphersonii* M. & J. Cannon, *sp. nov.* Fig. 18.

A species aliis area nostram foliis maturis margine setosis, stylis apice lobatis, differt. *S. blepharidophyllae* Harms ex Colombia margine setosa et floribus sessilibus parum similis est, sed forma apicis foliolae, forma ligulae, amplitudo et numero pedunculis, numero bracteis floralibus, differt.

Arbor nana vel frutex interdum scandens, inflorescentia et foliis pubescentia. Folia ligula ad 9 cm longa, parte basali 0.5–1 cm longa caulem omnino circumdata; foliola 5–8 in uno verticillo disposito, 10–22 × 4–8 cm, oblanceolata vel oblongo-elliptica, margine setosa setis 1–2 mm longis, apice cuspidata vel caudata, basi acuta vel rotundata. Inflorescentia 4-ramosa, ramis 23–33 cm longis, pedunculis ad 90 in quoque ramo, floribus 8–12 in quaque capitula sessilibus, bracteis 3, calyx limbo integro haud undulato. Fructus 3.5 × 3.5 mm, styli 6–5 in columnam conjunctis, stigmatibus apice lobatis.

Type: **Panama**, Prov. Darién, south of El Real on trail up Cerro Pirre, *c.* 8°00'N, 77°45'W, 550–1030 m, forest, 29 March 1985, *McPherson* 7017 (BM-holotype; MO-isotype). Additional specimen: **Panama**, Prov. Panamá, Serranía de Pirre, head-waters of Rio Escucho Ruido, *c.* 16 km north of Alto de Nique, *Croat* 37945 (MO).

Tree up to 8 m, shrub or vine; young parts, leaves, and inflorescence stellate-pubescent. Leaves palmately compound, petioles 12–22 cm, terete, swollen above; ligule up to 9 cm, the lower part 0.5–1 cm, completely encircling the stem, the free part lanceolate, thickly coriaceous; leaflets 5–8 in a single whorl, 10–22 × 4–8 cm, oblanceolate to oblong-elliptic, thinly coriaceous, pubescent to glabrescent beneath; lateral veins anastomosing close to the margin only near the tip of the leaflet, raised above and beneath; margin setose, setae 1–2 mm; apex cuspidate to caudate, acumen 0.5–3 cm, base acute to rounded; petiolules 2–7 cm, channelled, somewhat swollen at apex and base. Inflorescence more or less paniculate, 4-branched; branches 23–33 cm, the subtending bracts 3–7 cm; peduncles up to 90 per branch, 4–9 mm, slender, the subtending bracts 3–4 mm; flowers 8–12 per

head, sessile, 6–5-merous, subtended by 3 bracts, one 1–2 mm, broadly ovate, the other two smaller often with ciliate tips; calyx-limb entire, less than 0.5 mm, not undulate; buds rounded, the calyptra 1.5 × 2.5 mm; mature stamens not seen; edge of the disc somewhat crenulate when dry, scarcely raised; styles fused into a column. Fruits 3.5 × 3.5 mm, succulent, ribbed when dry; stylar column 2 mm, with 5–6 stigmatic lobes at the tip; seeds 3 × 1.5 mm, flattened.

This species differs from all others of our region by the setose margins of mature leaflets and the lobed stigmas. It resembles *S. blepharidophylla* Harms, of Colombia, in its setose leaflet margins and sessile flowers, but differs in the shapes of the ligule and apex of the leaflets, the size and number of the peduncles, and the number of floral bracts.

Lower montane rain-forest, at 550–1550 m.

Apparently confined to Cerro Pirre in the Provinces of Darién and Panamá.

4. *Schefflera panamensis* M. & J. Cannon, *sp. nov.* Figs 19–20.

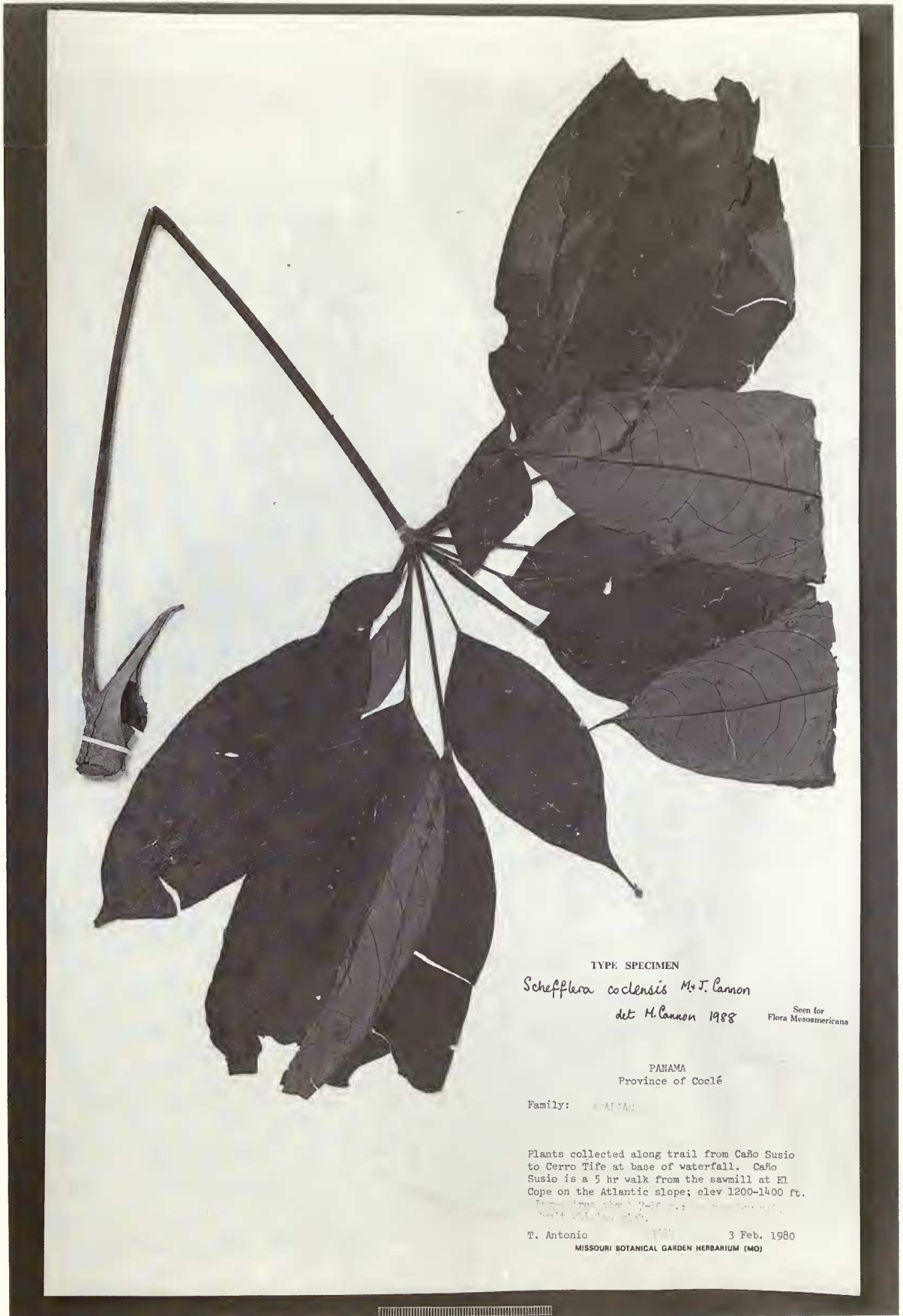
A speciebus aliis area nostrum indumento densissimo villosus vel tomentosus trichomatis longis formato, floribus sessilibus, dentibus calycis grandis, fructibus 5-angulis foveatis, facile distinguitur.

Arbor parva vel frutex, pro parte majore densissime villosus vel tomentosus, trichomatibus ad 10 mm longis. Folia ligula 2–5 cm longa lignosa, parte basali vix caulem circumdata; foliola (6–)7–10, (15–)20–35 × 7–12 cm, in uno verticillo disposita, elliptica vel ovata, apice angustata vel saepe abrupte acuminata, basi cordata. Inflorescentia 4–8(–10)-ramosa, ramis ad 8–20 cm longis, pedunculis 20–40 in quoque ramo, floribus 6–12 in quaque capitula sessilibus, gemmis villosis, calyptra umbonata, calycis dentibus 1–2 mm longis late deltoideis. Fructus 3.5–4.5 mm longus, infra 5-angulus, disco non profunde foveato; styli 5 in columnam 2–3 mm longam conjunctis, stigmatibus apice effusis.

Type: **Panama**, Prov. Panamá, east slope of Cerro Jefe, dirt track near radio tower, low cloud forest, 950–1000 m, 9°15'N, 79°30'W, 20 May 1982, *Knapp & Mallett* 5180 (BM-holotype; BM, MO-isotypes).

Additional specimens: **Panama**: Prov. Panamá, Cerro Jefe, *Sytsma* 1467 (BM, MO); Canal Zone, between Fort San Lorenzo & Fort Sherman, *Mori & Kallunki* 2731 (BM, MO); Comarca de San Blas, Cerro Brewster, *Nevers* et al. 5466 (MO).

Small tree or shrub up to 5 m, sometimes epiphytic; most parts densely ferruginous-villous-tomentose, trichomes up to 10 mm, shortly plumose at the base. Leaves palmately compound; petioles 20–40(–80) cm, stout, terete, swollen above and below; ligules 2–5 cm, truncate, often very woody, the basal part up to 1 cm, scarcely encircling the stem; leaflets (6–)7–10, in one whorl, (15–)20–35 × 7–12 cm, elliptic to ovate, coriaceous, often glossy above and more or less tomentose beneath; lateral veins anastomosing close to the margin throughout the leaflet, markedly raised beneath; margin plane; apex narrowly acuminate, often abruptly so, acumen 1–2 cm; base cordate; petioles (3–)5–10 cm, stout, terete. Inflorescence paniculate, markedly densely villous-tomentose, 4–8(–10)-branched; branches 8–20 cm, the subtending bracts 10–14 × 5–20 mm, lanceolate; peduncles 20–40 per branch, 10–15(–20) mm, the subtending bracts up to



TYPE SPECIMEN

Schefflera coclensis M. J. Cannon

det. H. Cannon 1988

Seen for
Flora Mesoamericana

PANAMA
Province of Coclé

Family: ARALIACEAE

Plants collected along trail from Caño Susio to Cerro Tife at base of waterfall. Caño Susio is a 5 hr walk from the sawmill at El Cope on the Atlantic slope; elev 1200-1400 ft.

T. Antonio 1980 3 Feb. 1980

MISSOURI BOTANICAL GARDEN HERBARIUM (MO)

Fig. 17 *Schefflera coclensis* - isotype (BM).



Fig. 18 *Schefflera macphersonii* – holotype (BM).

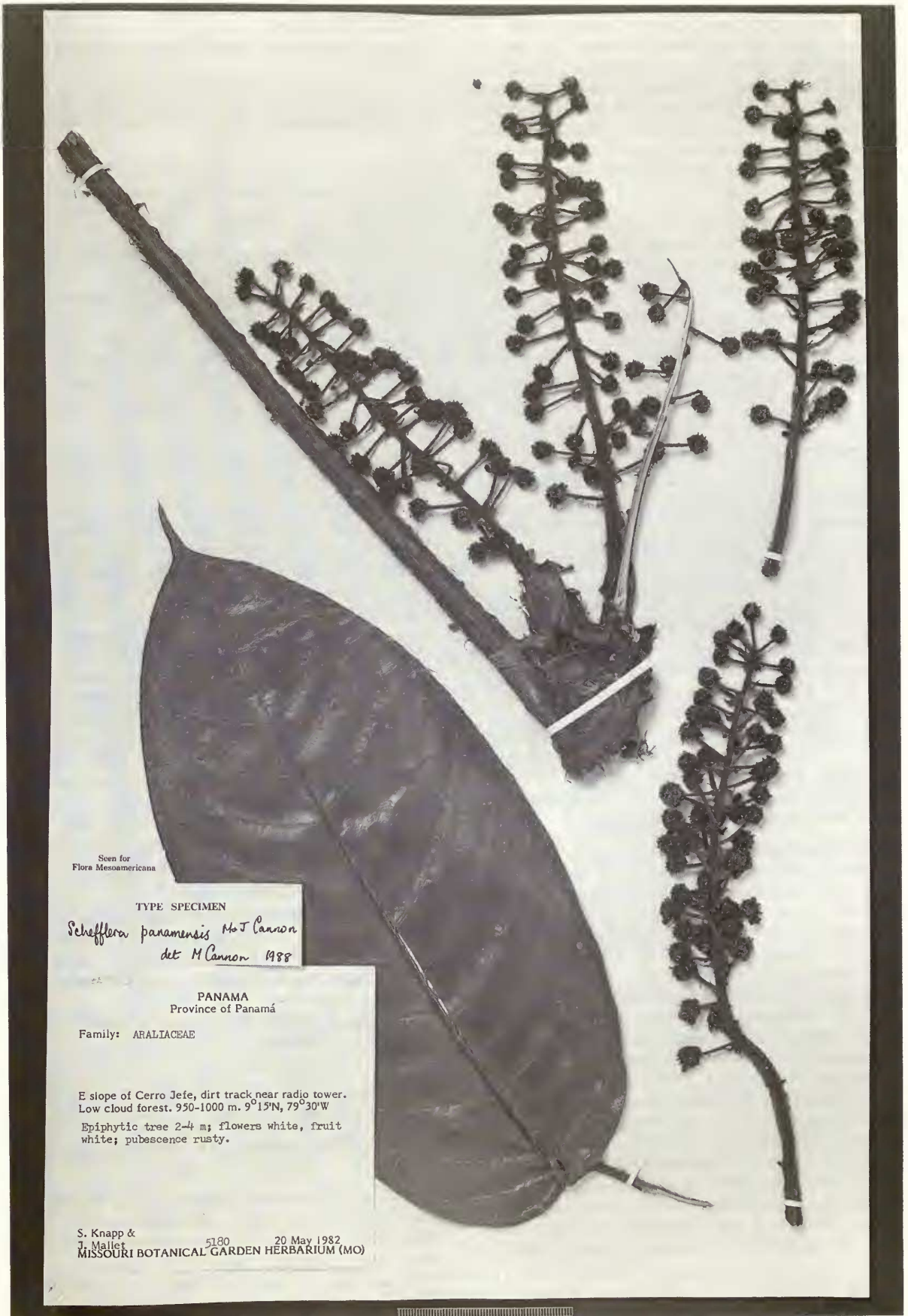


Fig. 19 *Schefflera panamensis* – holotype (BM).

5 mm; flowers 6–12 per head, sessile, 5-merous, the 2 subtending bracts 1–2 mm, scarcely visible within the indumentum; calyx densely villous-tomentose, the limb 1–2 mm with 5 broadly deltoid teeth; buds villose, glabrescent, the calyptra 2 × 3 mm, umbonate, densely tomentose; filaments 2 mm, anthers 0.5–0.7 mm, oblong; edge of the disc deeply crenate; styles fused in a column. Fruits 4–5 per head, 3.5–4.5 mm, succulent, 5-faceted beneath, with shallow pits on the disc, strongly sulcate when dry; styler column 2–3 mm, the stigmas spreading shortly.

This species differs from all others of our area in its distinctive fruits which are 5-faceted beneath and 5-pitted on the surface of the disc, in its dense indumentum with trichomes up to 10 mm long, and in its broadly deltoid calyx teeth.

Cloud forest, premontane rain-forest from 850–1000 m. Confined to Panama, Provinces of Panamá, Canal Zone, and Comarca de San Blas. All specimens that we have seen, except one, came from east of the Canal Zone.

5. *Schefflera octostyla* M. & J. Cannon, *sp. nov.*
Figs 21–22.

S. panamensi M. & J. Cannon indumento densissimo affinis sed trichomatibus multis brevioribus, ligula longiora, praesertim styli 8–9, bene distincta.

Arbor parva villosa-tomentosa trichomatibus 2–3 mm longis. Folia ligula 10–11 cm longa, parte basali 2.5 cm longa dimidium caulis minimum circumdata; foliola 6, 18–32 × 11–15 cm, elliptica, apice abrupte caudata basi cuneata vel rotunda. Inflorescentia 7-ramosa, ramis 30–35 cm longis, pedunculis circa 40, bracteis sub pedunculis 4–7 mm longis. Fructus 4 × 5 mm, sessilis, in sicco 8-sulcatis, bracteis 2 minimis in tomento occultis; styli 8 in columnam infra coniuscula conjunctis, stigmatibus apice liberis valde recurvis.

Type: **Panama**, Prov. Coclé, above Cope, c. 8°38'N, 80°35'W, forested slopes, 700–750 m, 27 November 1985, *McPherson* 7664 (BM-holotype; BM-isotype).

Tree of 5 m; leaves ferruginous-tomentose, the inflorescence densely villose, canescent, the trichomes 2–3 mm, branched or plumose at the base. Leaves palmately compound; petiole 40 cm, faintly striate, scarcely swollen above and below, ligule 10–11 cm, thickly coriaceous, the basal part c. 2.5 cm, at least half encircling the stem, the free part slender, acuminate at the apex; leaflets 6, 18–32 × 11–15 cm, elliptic, thinly coriaceous, glabrous above, pubescent beneath; lateral veins markedly anastomosing a short distance from the margin in the upper ¼, a little raised above, markedly raised beneath; margin plane; apex abruptly caudate, acumen, 1.5–2 cm; base cuneate to rounded; petiolules 4–10 cm, terete. Inflorescence paniculate, markedly villose, 7-branched; branches 30–35 cm; peduncles c. 40 per branch, 10–18 mm, the subtending bracts 4–7 mm, boat-shaped, markedly canescent; flowers not seen. Fruits c. 12 per head, 4 × 5 mm, sessile, 8-sulcate when dry, subtended by 2 small membranaceous bracts hidden within the tomentum; disc scarcely raised at the edge; styler column c. 2 mm, a little conical below, the 8 stigmas just free at the tip and strongly recurved; seeds 3 × 1.5 mm, flat.

This species is similar to *S. panamensis* in its dense indumentum but separated from it by its shorter trichomes,

much longer ligule, and its 8–9 styles. It is a plant of forested slopes at 700–750 m.

Known only from the type collection from Panama, province of Coclé.

6. *Schefflera sapoensis* M. & J. Cannon, *sp. nov.*
Fig. 23.

S. robustae (A. C. Smith) A. C. Smith foliolis 1-verticillatis, bracteis 2 fructus subtendentibus exteriore carnosa, bracteis pedunculis subtendentibus longioribus, styli in conicam conjunctis, differt.

Arbor parva epiphytica omnino glabra. Folia ligula caduca, foliola 6 in uno verticillo disposita ad 20 × 7 cm, oblongo-elliptica apice acuminata basi acuta vel rotundata. Inflorescentia ramis c. 23 cm longis, pedunculis 30–35 cm, bracteis pedunculis subtendentibus 4 mm longis ovatis papyraceis persistentis. Fructus 8–10 in quaque capitula 5 × 3 mm, sessiles, bracteis fructus subtendentes 2 exteriore carnosa, styli 5 in conicam conjunctis stigmatibus apice modo seccendentibus.

Type: **Panama**, Prov. Darién, Cerro Sapo up to 1085 m, 1 February 1978, *Hammel* 1153 (BM-holotype; MO-isotype).

Small tree, 4 m, epiphytic, glabrous throughout. Leaves palmately compound; petioles c. 20 cm, striate; free part of ligule caducous, the lower part encircling only half the stem; leaflets 6, in one whorl, up to 20 × 7 cm, oblong-elliptic, thinly coriaceous; lateral veins anastomosing close to the margin only near the tip of the leaflet, raised above and beneath, the intermediate veinlets strongly and closely reticulate, raised above; margin plane; apex acuminate, the acumen c. 3 cm, curved; base acute to rounded; petiolules up to 5 cm, somewhat swollen at the base. Inflorescence paniculate, incomplete in our specimen, branches c. 23 cm, striate, subtending bract woody; peduncles 30–35 per branch, up to 10 mm, the subtending bracts 4 mm, ovate, papery, persistent; flowers not seen. Fruits 8–10 per head, 5 × 3 mm, sessile, succulent, markedly sulcate when dry, the subtending bracts 2, the outer 1 mm, fleshy, the inner very small, membranaceous; calyx-limb undulate; edge of disc more or less crenate; styles 1 mm, forming a cone, the stigmas just separating above; seeds 4 × 1.5 mm, flat.

This species is at first glance rather similar to *S. robusta* (A. C. Smith) A. C. Smith, but differs in having only one whorl of leaflets, two bracts per fruit, the outer of which is fleshy, larger bracts subtending the peduncles, and styles forming a cone.

Cerro Sapo in Darién, Panama, up to 1085 m. Known only from the type collection.

7. *Schefflera systyla* (J. D. Smith) R. Viguier in *Annls Sci. nat. Bot.* IX, 9: 363 (1909).

Sciadophyllum systylum J. D. Smith in *Bot. Gaz.* 31: 113 (1901).

This very variable species was originally described from Costa Rica (*Tonduz* 7395 (US!)), and considered by A. C. Smith in *Flora North America* (1944) as endemic to that region. We have seen numerous gatherings collected for the *Flora Mesoamericana* project from Panama, and a smaller number from Costa Rica, which must provisionally be ascribed to this species, a considerable extension of its range. We consider it



TYPE SPECIMEN

Schefflera panamensis M. J. Cannon
det. M. Cannon 1988

Seen for
Flora Mesoamericana

PANAMA
Province of Panamá

Family: ARALIACEAE

E slope of Cerro Jefe, dirt track near radjo tower.
Low cloud forest. 950-1000 m. 9°15'N, 79°30'W
Epiphytic tree 2-4 m; flowers white, fruit
white; pubescence rusty..

S. Knapp &
J. Mallet 5180 20 May 1982
MISSOURI BOTANICAL GARDEN HERBARIUM (MO)

Fig. 20 *Schefflera panamensis* – isotype (BM).

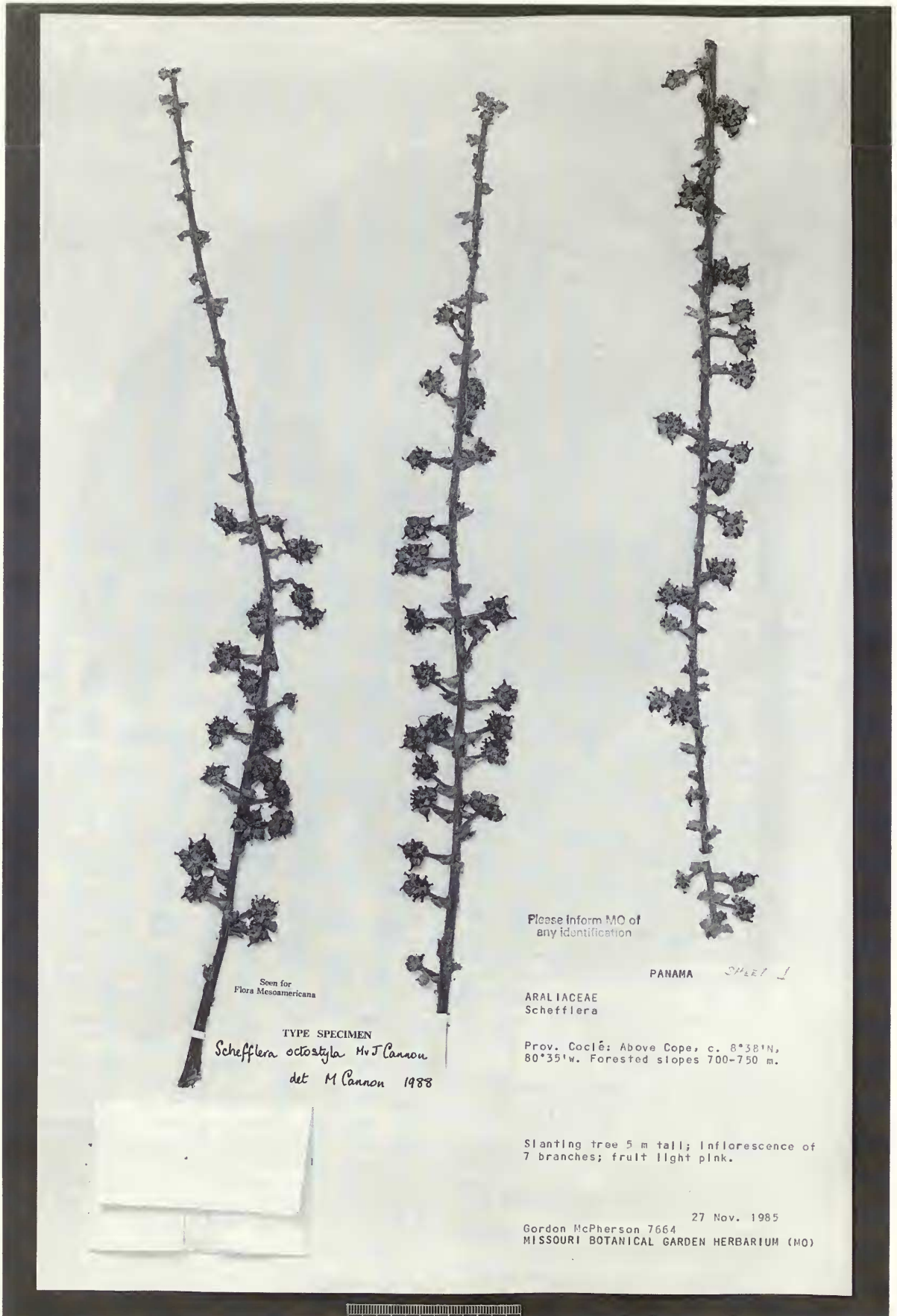


Fig. 21 *Schefflera octostyla* – holotype (BM).

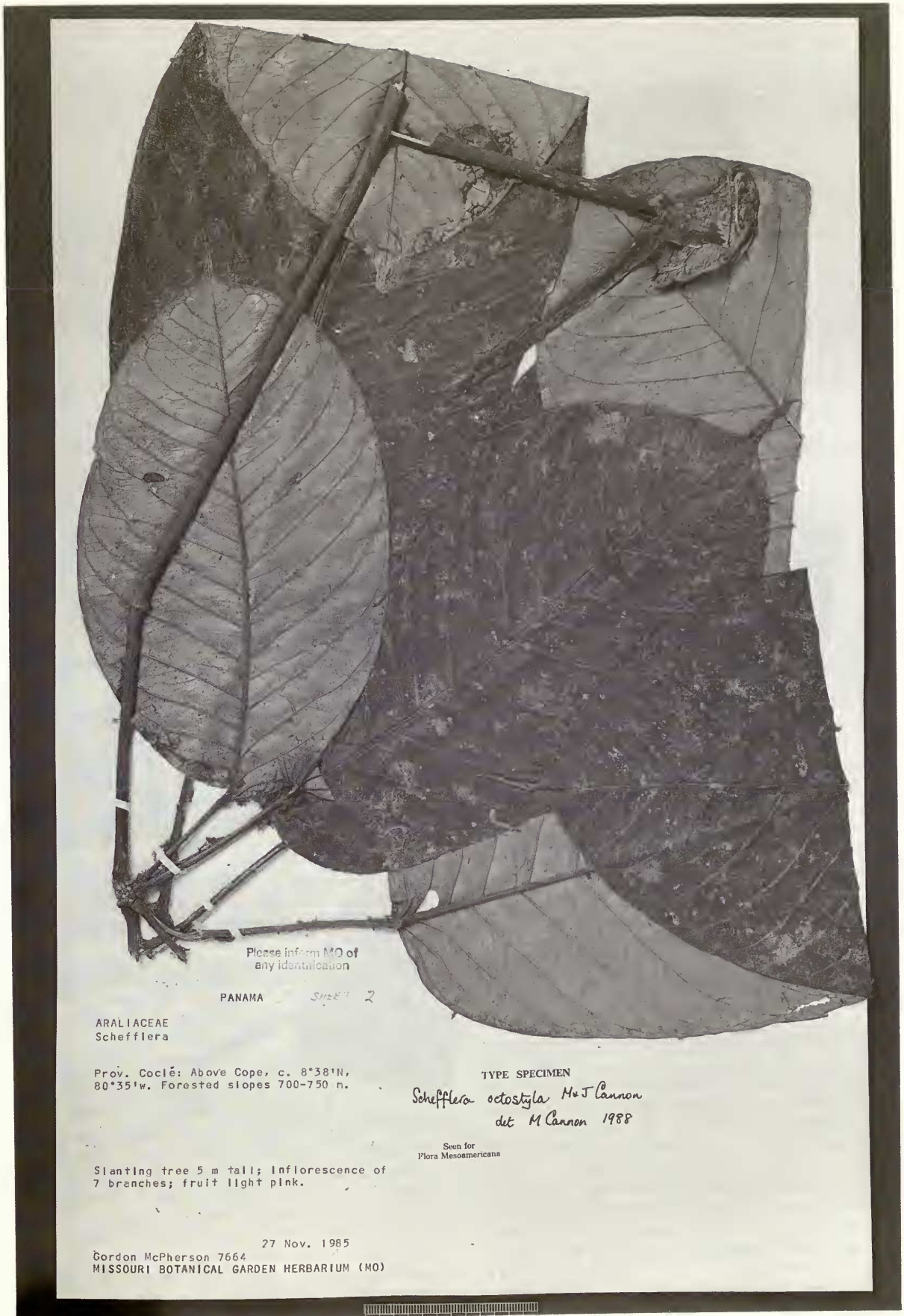


Fig. 22 *Schefflera octostyla* – isotype (BM).



Fig. 23 *Schefflera sapoensis* – holotype (BM).

to be an extremely variable species, particularly within Panama, where the variation may be considerable even within a small area.

Some plants from the El Cope region of Coclé might be assigned to a fairly well-defined group, having rather small, narrow leaflets, often obovate in shape, acute at the base, sub-peduncular bracts not caducous, and pedicels very short; nevertheless, other plants from the same small area have much larger, coarser, elliptical leaflets with cordate bases and distinctly pedicellate flowers, whilst others differ in numerous other ways. Twelve specimens from the Fortuna Dam area of Chiriquí were found to exhibit considerable variation, and when 10 characters (leaf shape, peduncle, pedicel and bract length, indumentum, etc.) were measured, none of the plants had more than two of these in common, some only one. Even the type collections from Costa Rica are variable in several characters.

To separate all of these specimens into distinct sub-species or varieties would entail the description of a very large number of taxa (possibly in excess of 25), which differ only slightly from each other. Until further research can be undertaken, particularly with living material in the field and garden, we propose to retain *Schefflera systyla* as one particularly variable species.

8. *Schefflera epiphytica* A. C. Smith in *Ann. Mo. bot. Gdn* 28: 437 (1941).

Premontane forest, cloud forest, and elfin forest.
Costa Rica and Panama.

9. *Schefflera jefensis* M. & J. Cannon, *sp. nov.*
Fig. 24.

S. pittieri Harms, non *Didymopanax pittieri* Marchal ex Venezuela aliquantum similis, sed floribus multo grandioribus et in umbella paucioribus, pedunculis multo crassioribus brevioribus, stylis longioribus, foliolis coriaceoribus, differt.

Frutex vel arbor parva praeter inflorescentiam glabra. Folia ligula 2–3 cm longa, parte basali 1 cm longa caulem ½-circumdata, foliola 4–5, 6–10 × 2.5–5 cm, oblanceolata vel elliptica, apice cuspidata basi acuta. Inflorescentia haud ramosa, pedunculis 25–35 in tertio superiore cujusque axi insertis, floribus 1–2 in quaque umbella, limbo calycis integro membranaceo, calyptra umbonata, styli 7–9 liberi vel basi vix connatis.

Type: **Panama**, Prov. Panamá, east slope of Cerro Jefe, dirt track near radio tower, low cloud forest, 950–1000 m, 9°15'N, 79°30'W, 20 May 1982 *Knapp & Mallet* 5189 (MO-holotype; BM-isotype).

Additional specimens: **Panama**: Cerro Jefe, *D'Arcy* 11378 (MO); Tocumen area, *Dwyer et al.* 7278 (MO).

Shrub or tree up to 6 m, sometimes epiphytic, glabrous except for the inflorescence. Leaves palmately compound; petioles up to 10 cm, channelled, ligules 2–3 cm, the lower part c. 1 cm, half encircling the stem, the free part oblong, truncate, papyraceous, usually pale coloured; leaflets 4–5 in one whorl, 6–10 × 2.5–5 cm, oblanceolate or elliptical, rather rigidly coriaceous; lateral veins anastomosing close to the margin in the upper half of the leaflet, not raised above or beneath; margin plane or slightly undulate, light coloured and slightly thickened; apex cuspidate, the acumen less than 1 cm, base acute; petiolules 1–3 cm, thickened and probably articulate

below, striate, channelled. Inflorescence a simple spike, up to 30 cm, the flowers in the upper third, ferruginous stellate-pubescent, the subtending bract like the ligules; peduncles 25–35 per axis, 2–5 mm, the subtending bracts 1–2 mm; flowers 1–2 per umbel, 7–9-merous; pedicels 1–3 mm, the 2 subtending bracts 0.5 mm; calyx broadly obconic, or campanulate, puberulent, the limb 0.5 mm, entire, membranaceous; buds umbonate, puberulent, calyptra 3 × 5 mm; filaments 2.5 mm, carnose, anthers 2 mm, oblong; edge of disc smooth, not raised, styles 7–9, more or less free. Fruits 5 × 4 mm, urceolate, sulcate when dry; styles 2–2.5 mm, free or scarcely connate at the base; seeds 3.5 × 2 mm, flattened.

This species somewhat resembles *S. pittieri* Harms (non *Didymopanax pittieri* Marchal) from Venezuela, but has much larger flowers, fewer flowers per umbel, the peduncles much shorter and stouter, the styles longer, and the leaf texture more coriaceous.

Cloud forest, from 800–1000 m.

Confined to the Cerro Jefe and surrounding areas of Panama.

10. *Schefflera breneisii* A. C. Smith in *Trop. Woods* 66: 5 (1941).

Sciadophyllum chartaceum A. C. Smith in *Fieldiana Bot.* 18: 1562 (1938), non *Schefflera chartacea* Merrill (1915).

Rain-forest.
Costa Rica.

11. *Schefflera latiligulata* M. & J. Cannon, *sp. nov.*
Figs 25–26.

Ligula latissima lignosa bene distincta.

Arbor hemiepiphytica, inflorescentia et foliis pubescentibus. Folia ligula maxima, 6–8 × 4–5 cm, latissima 2-porcata lignosa, foliola 11 in uno verticillo disposita, ad 20 × 14 cm, late ovata, margin valde undulata apice cuspidata basi cordata. Inflorescentia ramis 8 vel plus, 60–70 cm longis, pedunculis 100 vel plus in quoque ramo. Fructus juvenalis 7–8 in quaque umbella, pedicellatus, stylis 5 in conicam dispositis, stigmatibus apice conicis effusis rigide divergentibus.

Type: **Panama**, Prov. Coclé, on Atlantic slope near the continental divide along lumbering road north of El Cope, 9.4 km above El Cope (2.2 km north of lumber sawmill), 750–900 m, 20 January 1978, *Croat* 44600 (MO-holotype; MO-isotype).

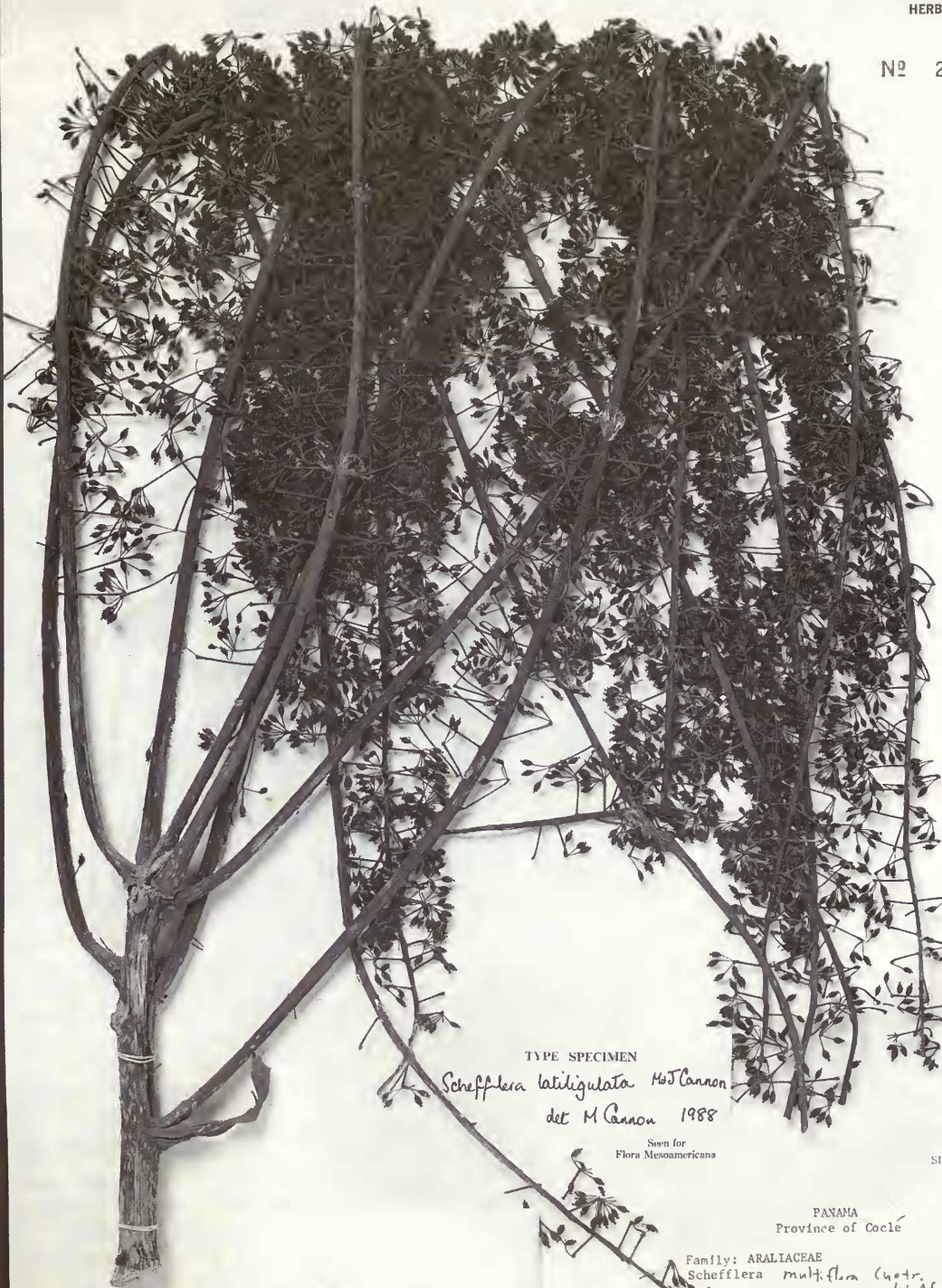
Hemiepiphyte; inflorescence and leaves stellate-pubescent, branchlets very stout, striate and lenticellate. Leaves palmately compound; petioles 50 cm or more, striate, somewhat channelled; lenticels elongate, numerous; ligules massive, 6–8 cm × 4–5 cm, the lower part c. 1 cm, almost completely encircling the stem, the free part very broadly ovate with a central depression bordered by two ridges on the outer surface, lenticellate, very thickly coriaceous to woody; leaflets 11 in one whorl, up to 20 × 14 cm, broadly ovate, coriaceous, glossy above, ferruginous-pubescent beneath; lateral veins anastomosing close to the margin in the top ½, raised above and beneath, markedly curved, the intermediate veinlets loosely reticulate; margin strongly undulate; apex cuspidate, the acumen 1.5 cm; base cordate; petiolules up to 11 cm, stout, terete, somewhat striate, swollen above and below. Inflorescence paniculate, 8(or more)-branched; bran-



Fig. 24 *Schefflera jefensis* – holotype (MO).

MISSOURI
BOTANICAL GARDEN
HERBARIUM

Nº 2604361



TYPE SPECIMEN

Schefflera latiligulata M.C. Cannon
det. M. Cannon 1988

Sown for
Flora Mesoamericana

Schefflera sphaerocarpa (Benth.) Harms

Determined by A. Gentry 1979
Missouri Botanical Garden

SHEET 1 OF 2

PANAMA
Province of Coclé

Family: ARALIACEAE

Schefflera multiflora (Sw.)
det. A. Gentry

On Atlantic slope near the continental
divide along lumbering road N of El Cope,
9.4 km above El Cope (2.2 km N of lumber
sawmill) elev. 750-900 m.
Hemiepiphytic; fruits green.

Thomas B. Croat 44600

20 Jan. 1978

MISSOURI BOTANICAL GARDEN HERBARIUM (MO)



Fig. 25 *Schefflera latiligulata* - holotype (MO).



Fig. 26 *Schefflera latiligulata* – isotype (MO).

ches 60–70 cm, closely adpressed-pubescent, the subtending bracts 4–5 cm, linear, caducous; peduncles 100 or more per branch, 10–16 mm, subtending bracts 0; flowers not seen. Young fruits 7–8 per umbel, pedicels up to 5 mm, the subtending bracts minute or 0; calyx-limb minutely denticulate; edge of the disc slightly raised, more or less crenate; stylar cone 1 mm, stigmas 5, c. 0.5 mm, spreading stiffly above; ovary longer than broad. Mature fruits not seen.

Easily distinguished by its very broad woody ligules.

Forest at 750–900 m.

Panama, Prov. Coclé. Known only from the type specimen.

The name draws attention to the massive woody ligule.

12. *Schefflera siebertii* A. C. Smith in *Trop. Woods* 66: 5 (1941).

Panama. Known only from the type collection.

13. *Schefflera nicaraguensis* (Standley) A. C. Smith in *Trop. Woods* 66: 5 (1941).

Sciadophyllum nicaraguense Standley in *J. Wash. Acad. Sci.* 17: 316 (1927).

Forest.

Nicaragua and Costa Rica.

14. *Schefflera whitefordiae* M. & J. Cannon, *sp. nov.*

Figs 27–28.

Species foliis maximis et inflorescentia maxima bene distincta, *S. nicaraguensis* (Standley) A. C. Smith e Nicaragua et Costa Rica forsan affinis, sed multo maiora petiolis distaliter haud incrassatis, calyce obconico vel campanulato, differt.

Frutex vel arbor parva, partibus juvenalibus et inflorescentia puberulenta. Folia maxima, petiolo ad 1 mm longa, ligula ad 14 cm longa, foliola 8–12 in uno verticillo disposita ad 35 × 20 cm, apice acuminata basi cordata. Inflorescentia maxima 30-ramosa ramis ad 80 cm longis, pedunculis 200 vel plus, floribus 8–15 in quaque umbella, pedicellatis subbracteatis, calyce obconico vel campanulato, styli 5.

Type: **Panama**, Prov. Darién, Mamey, Serrania de Jungorodo, c. 1700 m, small tree c. 20 ft, 10 March 1982, *Whiteford & Eddy* 468 (BM-holotype; BM-isotype). Additional specimens: **Panama**: Prov. Coclé, hills north of El Valle, near Cerro Gaital, *Knapp* 5361 (BM, MO); Prov. Panamá, El Llano–Carti Rd, *Croat* 25095 (G); Prov. Veraguas, above Primero Brazo de Río Santa María, west of Santa Fé, *Knapp & Dressler* 5361 (BM, MO).

Shrub or tree to 10 m, sometimes epiphytic; young parts and inflorescence ferruginous- or pale-puberulent. Leaves palmately compound, petioles often 60–100 cm, stout, terete; ligules up to 14 cm, the lower part c. 2 cm, scarcely encircling the stem, the free part lanceolate, the tip often truncate or bifurcated, becoming rather woody; leaflets 8–12 in one whorl, up to 35 × 20 cm, broadly oblong-elliptic or broadly ovate, thinly coriaceous; lateral veins anastomosing near the margin only in the upper ½, raised above and beneath; margin more or less plane; apex more or less acuminate, the acumen up to 1.5 cm; base cordate to rounded; petioles up to 15 cm, stout, terete, sometimes triquetrous but not swollen above. Inflorescence paniculate, massive, up to 30-branched; branches up to 80 cm, the subtending bracts like the ligules

below, becoming much shorter and very broadly based above, sometimes bifurcated; peduncles often 200 or more per branch, up to 22 mm, the subtending bracts minute or 0; flowers 8–15 per umbel, 5-merous; pedicels up to 5 mm, almost ebracteate; calyx conical or campanulate, the limb minutely 5-toothed; buds somewhat umbonate, calyptra 1–2 × 1–2 mm; filaments 1.5–2.5 mm, anthers 0.5–0.7 mm, oblong; edge of disc a little raised, somewhat crenate; stylar column 1–1.5 mm, styles free.

Distinguished by its massive inflorescence and large leaves. This is a rather variable species, perhaps related to *S. nicaraguensis* (Standley) A. C. Smith of Nicaragua and Costa Rica, from which it differs in the shape of the leaflets, the lack of swelling at the top of the petiolule, the shorter peduncles, and the shape of the calyx.

Lower montane, premontane rain-forest, at altitudes of 360–1700 m.

Confined to Panama in the provinces of Darién, Panamá, Veraguas, and Coclé.

This species is named in honour of Miss Caroline Whiteford, who has supplied much useful information about the Araliaceae of our area.

15. *Schefflera caduca* M. & J. Cannon, *sp. nov.*

Fig. 29.

S. panamensis M. & J. Cannon tomento denso similis, sed trichomatibus multis brevioribus, floribus pedicellatis, differt.

Frutex epiphytica vel arbor parva, omnino dense pubescens, trichomatibus 1–2 mm longis. Folia ligula caduca, foliola 7–11, 13–16 × 4–4.5 cm, elliptica, apice acuminata angustata, basi rotundata. Inflorescentia 3–4 ramosis, ramis ad 30 cm longis, bracteis caducis, pedunculis ad 80 in quoque ramo, floribus 8–12 in quaque umbella pedicellatis, gemmis rotundatis villosis, limbo calycis dentato dentis 1 mm longis patentibus caducis, styli 5 in conicam conjunctis.

Type: **Panama**, Prov. Veraguas, trail on ridge to summit of Cerro Tuté, Cordillera de Tuté, 1 km past Escuela Agrícola Altos de Piedras, west of Santa Fé, 8°36'N, 81°06'W, upper montane and elfin forest, 1250–1410 m, 15 December 1981, *Knapp & Sysma* 2649 (BM-holotype; MO-isotype). Additional specimen: **Panama**, Prov. Bocas del Toro, region of Cerro Colorado on continental divide, *McPherson* 8814 (MO).

Epiphytic shrub or treelet; all parts densely ferruginous-pubescent, the indumentum with crisped trichomes 1–2 mm, shortly plumose at the base, the mature leaves glabrescent above. Leaves palmately compound; petioles 22 cm; ligule of young leaf c. 5 cm, caducous. Leaflets 7–11 in one whorl, 13–16 × 4–4.5 cm, elliptic, thinly coriaceous; lateral veins anastomosing near the margin only at the tip, raised beneath and slightly raised above; margin scarcely undulate, inrolled; apex narrowly acuminate, the acumen 1–2 cm; base rounded; petiolules 4–5 cm, stout, striate, swollen above and below. Inflorescence paniculate, 3–4-branched; branches up to 30 cm, the subtending bracts caducous, not seen in our specimens; peduncles up to 80 per branch, 25–30 mm, the subtending bracts 1–2 mm, caducous; flowers 8–12 per umbel, 5-merous; pedicels 2–5 mm, bracts 1–2 mm or sometimes reduced to a tuft of hairs; calyx-limb up to 1 mm with markedly patent, broadly denticulate caducous teeth; buds rounded, calyptra, 1.5 × 1.5 mm, villose; filaments 1.5 mm, anthers 1 mm, oblong; disc obscured by the calyx teeth; styles

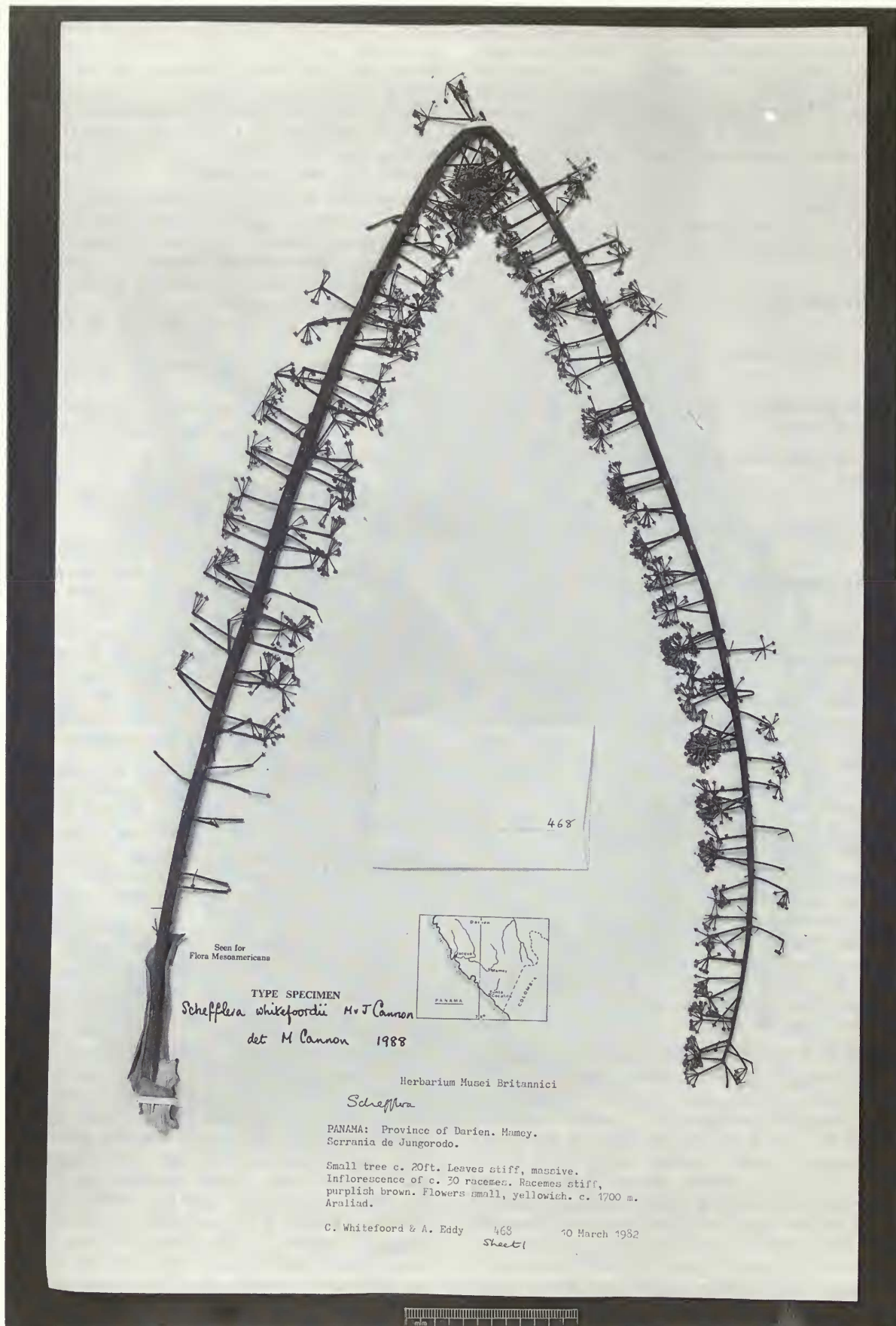
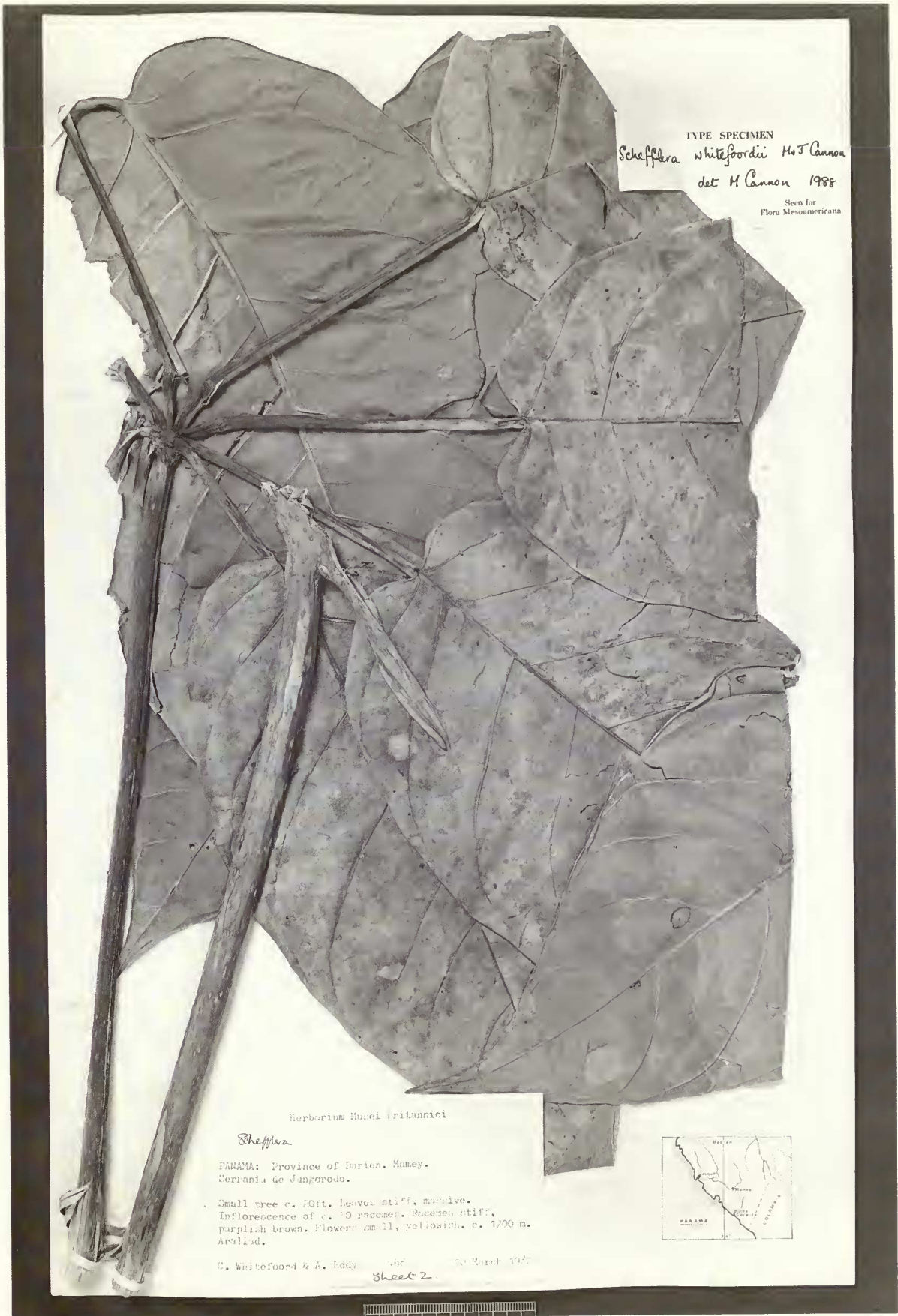


Fig. 27 *Schefflera whitefoordiae* – holotype (BM).



TYPE SPECIMEN
Schefflera whitefordii H. J. Cannon
 det H. Cannon 1988
 Seen for
 Flora Mesomerica

Herbarium Muzei Britannici

Schefflera

PANAMA: Province of Darien. Mamey.
 Terrania de Jangorodo.

Small tree c. 20ft. Leaves stiff, massive.
 Inflorescence of c. 10 racemes. Racemes stiff,
 purplish brown. Flowers small, yellowish. c. 1700 m.
 Araliid.

C. Whiteford & A. Eddy 1957
 1000 March 1957

Sheet 2



Fig. 28 *Schefflera whitefordiae* – isotype (BM).



Fig. 29 *Schefflera caduca* – holotype (BM).

5 in a cone, the tips of the stigmas just free at anthesis. Fruit not seen.

This species is similar to *S. panamensis* M. & J. Cannon in its dense indumentum and broadly deltoid calyx teeth, but easily separated by its much shorter trichomes and pedicellate flowers.

Upper montane and elfin forest, cloud forest, at 1250–c. 1500m.

Confined to Panama, provinces of Bocas del Toro and Veraguas.

The name draws attention to the caducous nature of the bracts and ligule.

16. *Schefflera pubens* M. & J. Cannon, *sp. nov.*

Fig. 30.

S. systylae (J. D. Smith) R. Viguier affinis, sed tomento denso, foliis longioribus, umbellis pluribus, floribus minoribus, fructu juvenali pubescenti recedit.

Arbor parva saltem partibus junioribus dense tomentosis trichomatibus 1–1.5 mm longis. Folia ligula 3 cm vel plus longa, parte basali caulem circumdata sed per fere totem longitudinem libera, foliola 6–8, 14–25 × 6–7 cm, elliptica, apice acuminata basi acuta vel subcordata. Inflorescentia ramis c. 35 cm longis, pedunculis ad vel ultra 100, floribus 5–10 in quaque umbella pedicellatis bracteis 2 subtentis. Fructus juvenalis dense pubescens, styli 5 minus quam 1 mm longis in columnam conjunctis, stigmatibus apice liberis valde reflexis.

Type: **Costa Rica**, cleared pasture-lands and forests on crests of nearby hills, near Moravia and along the road towards Turrialba, ± 1000 m alt., 9°51'N, 83°26'W, small tree at forest edge, 5 m tall, in deep shade on a steep slope, 19 & 20 December 1966, *Burger & Ramirez B.* 3965 (BM-holotype; F-isotype).

Small tree to 5 m, the young parts and inflorescence ferruginous-pubescent, the indumentum mostly of sessile stellate hairs. Leaves palmately compound; petiole c. 20 cm, terete; ligule 3 cm or more, the basal part encircling the stem but free for almost the entire length, thinly coriaceous, densely villose without; leaflets 6–8, in one whorl, 14–25 × 6–7 cm, oblong-elliptic, thinly coriaceous, young leaflets with a matted tomentum, trichomes 1–1.5 mm, mature leaflets glossy above, puberulent beneath; lateral veins anastomosing near the margin in the top 1/3, raised beneath, intermediate veinlets closely reticulate; margin plane; apex acuminate, acumen 1–1.5 cm; base acute to sub-cordate; petiolules 2–5 cm, rather stout, channelled. Inflorescence paniculate, incomplete in our specimens, probably several-branched; branches 35 cm, the subtending bract not seen; peduncles up to 100 or more per branch, up to 15 mm, the subtending bracts 1–2 mm, caducous; flowers 5–10 per umbel, 5–7-merous; pedicels 3–3.5 mm, the 2 subtending bracts 0.5 mm, the outer larger than the inner; calyx-limb very small, minutely denticulate when young; buds more or less rounded, calyptre 1.5 × 1.5 mm; filaments 2 mm or less, anthers 0.5 mm, oblong; edge of disc raised, markedly ruminant-crenate. Young fruits densely pubescent; stylar column less than 1 mm, the stigmas free and strongly recurved at the tip.

This species is related to *S. systyla* (J. D. Smith) R. Viguier, from which it differs in the density of the indumentum, larger leaflets, greater number of umbels per branch, smaller flowers, and young fruit pubescent. A specimen from Panama

(Wedel 2200 (A)) was determined by A. C. Smith as *S. siebertii* A. C. Smith, but we consider it to have closer affinities with the new species than with the latter. It differs from *S. siebertii* in calyptre shape, indumentum, leaf shape and venation, and, although the leaf venation and the lesser amount of indumentum does not quite correspond with the type specimen, we provisionally ascribe it to the new species. Forest edge in shade, at ± 1000 m.

Costa Rica and Panama.

The name draws attention to the dense indumentum.

17. *Schefflera archeri* Harms in *Notizbl. bot. Gart. Mus. Berl.* 13: 446 (1937).

Tropical wet forest and premontane forest.

Panama and Colombia.

18. *Schefflera bifida* M. & J. Cannon, *sp. nov.*

Fig. 31.

A speciebus aliis areae nostrum, bracteis bifidis, bracteis sub capitulo in annulo suberoso undulato dispositis, styli 2–3 in columnam conjunctis, bene distincta.

Arbor nana glabra epiphytica, ramulis nodosis. Folia ligula 4–5 cm longa, parte libero parte basali parum longiora, foliola 5–6, 6–9 × 3–4 cm, ovata, venatione non nisi apice brochidodroma, apice acuminata basi rotundata. Inflorescentia ramis 15–28 cm longis, pedunculis 35–50, bracteis sub pedunculis 2–5 mm longis saepe bifidis. Fructus 4 × 4 mm, sessilis vel subsessilis, 10–15 in quaque capitula bracteis extimis in annulo suberoso undulato connatis, styli 2–3 in columnam conjunctis, stigmatibus apice columnae minute divergentibus.

Type: **Panama**, Prov. Chiriquí, north of San Felix at Chiriquí – Bocas del Toro border, on Cerro Colorado copper mine road along continental divide, lower montane rain forest (cloud forest, trees to 5 m tall), 1250–1500 m alt., 4 May 1975, *Mori & Kallunki* 5888 (BM-holotype; MO-isotype).

Epiphytic tree of 5 m; glabrous throughout, branchlets nodose. Leaves palmately compound; petioles 10–15 cm, striate; ligules 4–5 cm, obtuse, the basal part not completely enclosing the stem, the free part a little longer than the basal part; leaflets 5–6, 6–9 × 3–4 cm, in one whorl, ovate, coriaceous; lateral veins anastomosing near the margin only at the tip, slightly raised above, not raised beneath, but of a darker colour than the leaf surface, the intermediate veinlets closely reticulate; margin somewhat thickened and translucent; apex acuminate, the acumen 0.5–1 cm; base rounded; petiolules 2.5–4 cm, striate, slightly sulcate, swollen at the base. Inflorescence stout, paniculate, 10-branched, the rachis c. 14 cm; branches 15–28 cm, the subtending bracts up to 15 mm, ovate; peduncles 35–50 per branch, c. 15 mm, the subtending bracts 2–5 mm, coriaceous, often bifid; flowers not seen. Fruits 4 × 4 mm, sessile, or pedicels less than 1 mm, 10–15 per head, flattened or trigonous; outer bracts connate in a corky, undulate ring, inner bracts minute; edge of disc undulate; styles 2–3, fused into a column, the stigmas minutely spreading at the tip; seeds not seen.

This species is distinguished from all others in our area by its bifid bracts and ring of corky, connate outer bracts below the capitulum, and the 2–3 styles forming a column.

Lower montane cloud forest.



Fig. 30 *Schefflera pubens* – holotype (BM).



Fig. 31 *Schefflera bifida* – holotype (BM).

Panama, Chiriquí, Cerro Colorado. Known only from the type collection.

The name draws attention to the bifid sub-peduncular bracts.

19. *Schefflera cartagoensis* M. & J. Cannon, *sp. nov.*

Fig. 32.

A speciebus *Schefflerae* 2–3 stylis aliis areae nostrum foliolis apice longioribus cuspidatis, bracteis sub pedunculis longioribus recedit.

Arbor glabra. Folia ligula 8–10 cm longa, parte libera quam parte basali 4-plo longiore vel plus; foliola 7–9, 16–25 × 6–9.5 cm, oblonga, venatione non nisi apice brochidodroma, apice rotunda cuspidata basi rotunda. Inflorescentia ramis 20–26 cm longis, pedunculis 25–30 bractea sub pedunculo 5–7.5 mm longis, floribus 10–25 in quaque capitula sessilibus, bracteis extemis et intimis liberis; filamenta 3 mm longa, antheris 1 mm longis; styli 2.

Type: **Costa Rica**, Prov. Cartago, premontane rain forest, Reserva de Tapanti, 1300–1800 m, November 1982, *Gomez* 18792 (MO-holotype; BM-isotype).

Tree of *c.* 15 m; glabrous throughout. Leaves palmately compound; petioles 24–40 cm, terete; ligules 8–10 cm, the basal part not completely encircling the stem, the free part narrowly lanceolate, 4 or more times as long as the basal part; leaflets 7–9, 16–25 × 6–9.5 cm, in one whorl, oblong, coriaceous; lateral veins anastomosing near the margin only at the tip, scarcely raised above or beneath, the intermediate veinlets closely and finely reticulate; margin plane; apex rounded, cuspidate, the acumen 0.5 cm; base rounded; petiolules 3.5–11 cm, striate, slightly sulcate, somewhat flattened at the base. Inflorescence branches 20–26 cm, rather stout, peduncles 25–30, 1–2 cm, spreading or reflexed, the lower shorter than the upper, the subtending bracts 5–7.5 mm, boat-shaped, with pale margins; flowers 10–25 per head, sessile, the outer and inner bracts free, 1–3 mm; calyx-limb undulate; buds narrowly conical, the calyptra 3 × 2 mm; filaments 3 mm, the anthers 1 mm, oblong; edge of the disc rugose when dry; styles 2. Fruits not seen.

This species may be separated from other 2–3-styled *Schefflera* species of our area by its cuspidate leaflet tips, the length of the leaflets, and the length of the bracts subtending the peduncles.

Premontane rain-forest.

Costa Rica, Cartago. Known only from the type gathering.

20. *Schefflera albocapitata* M. & J. Cannon, *sp. nov.*

Fig. 33.

A speciebus 2–3 stylis aliis areae nostrum, capitulis pallentibus globosis, floribus multis, bene distincta.

Arbor parva dense villosa trichomatibus usque ad 7 mm longis albidus vel pallentibus. Folia ligula usque ad *c.* 21 cm longa, parte libero quam parte basali minimum 6-plo longiore, foliola 7, *c.* 45 × 14 cm, elliptico-oblongata, venatione in quarta parte superiore brochidodroma, apice anguste acuminata, basi rotundata vel cordata. Inflorescentia ramis saltem 35 cm longis, pedunculis *c.* 50 in quoque ramo reflexis, bracteis sub pedunculis 5 mm longis, floribus 40–60 in quaque capitula globosa confertis, bracteis flores subtendentibus liberis floccosis, filamenta 2.5–3 mm longa, anthesis minus quam 0.5 mm longis.

Type: **Panama**, Prov. of Colón, in wet forest, top of ridge, 1000 m, 18 May 1978, *Hammel* 3156 (BM-holotype; MO-isotype).

Slender tree of 5 m, 15 cm diameter at breast height; densely canescent-villose, trichomes up to 7 mm, shortly plumose at the base. Leaves palmately compound; petioles *c.* 55 cm, terete; ligules up to *c.* 21 cm, the basal part partly enclosing the stem, the free portion narrowly lanceolate, the tip inrolled, at least 6 or more times as long as the basal part; leaflets 7, *c.* 45 × 14 cm, in one whorl, elliptic-oblong, coriaceous, glossy above, more or less villous beneath; lateral veins anastomosing a little distance in from the margin in the upper ¼, scarcely raised above, markedly raised beneath; margin plane; apex narrowly acuminate, the acumen up to 4 cm; base rounded to cordate; petiolules up to 8 cm, stout, terete, swollen above and below. Inflorescence incomplete in our specimens, branches at least 35 cm; peduncles *c.* 50, 8–10 mm, reflexed, all of similar lengths, the subtending bracts *c.* 5 mm, ovate; flowers 40–60 per head, sessile, closely packed in markedly globose heads, subtending bracts free, 1–2 mm, covered with whitish floccose tomentum, the margins long-villous; calyx whitish floccose, the hairs stellate, the limb more or less undulate, villous; buds villous, pointed, calyptra 2 × 2 mm; filaments 2.5–3 mm, the anthers less than 0.5 mm, semi-globose; edge of disc crenulate; styles 3, becoming free above, locules 3. Fruit not seen.

This species is quite distinct from all other 2–3-styled *Scheffleras* of our area in its pale globose capitula of 40–60 flowers.

Wet forests at 1000 m.

Panama, Colón.

Known only from the type gathering.

The name draws attention to the pale-coloured capitula.

21. *Schefflera morototoni* (Aublet) Maguire, Steyerl. & Frodin in *Mem. N.Y. bot. Gdn* 38: 51 (1984).

Panax morototoni Aublet, *Hist. pl. Guiane* 2: 949 (1775).

Dry tropical forest and savannas.

Mexico to Panama, West Indies and South America.

22. *Schefflera aquaverensis* M. & J. Cannon, *sp. nov.*

Fig. 34.

S. rodriguezianae Frodin affinis, sed foliolis parvioribus angustioribus margine incrassatis, bracteis pedunculos subtendentibus minutis, staminibus et fructibus parvioribus, differt.

Arbor parva glabra. Folia ligula 2.5–3.5 cm longa, parte libero partem basalem longitudine plus minusque aequanti, foliola 5–6, 6–10 × 2–4.5 cm, elliptica vel late elliptica, venatione non brochidodroma, margine incrassata ad apicem sensim acuminata, basi acuta. Inflorescentia ramis usque ad 25 cm longis, pedunculis 20–40 in quoque ramo, bracteis sub pedunculis minutis, floribus 6–12 in quaque umbella, pedicellatis, pedicellis quadrangulis striatis; filamenta 1–1.5 mm longa antheris 0.7 mm longis, styli 2. Fructus 4.5 × 4 mm, stylopodiis conicis, 1 mm longis.

Type: **Panama**, Prov. of Veraguas, Cerro Tuté, *c.* 10 km north-west of Santa Fé, on ridgetop in cloud forest (lower montane rain-forest) above 1000 m alt., 3 August 1975, *Mori, Bolten & Dressler* 7562 (BM-holotype; MO-isotype). Addi-

MISSOURI
BOTANICAL GARDEN
HERBARIUM

Nº 3102147



Record 364



Seen for
Flora Mesoamericana

TYPE SPECIMEN

Schefflera cartagoensis H. Cannon
det. H. Cannon 1988

MUSEO NACIONAL DE COSTA RICA
HERBARIO NACIONAL
SAN JOSE

Indico

Tree ± 15 m. Flowers greenish, rather
red.

Montane rainforest. Reserva de Tapanti,
Cartago, 1200-1600 m.

L.D. 26 Nov. 1988 Nov. 1988

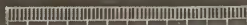


Fig. 32 *Schefflera cartagoensis* – holotype (MO).



Fig. 33 *Schefflera albocapitata* – holotype (BM).



PANAMA
Province of Veraguas

TYPE SPECIMEN

Schefflera aquaverensis M. J. Cannon
det. H. Cannon 1988

Seen for
Flora Mesoamericana

Family: Araliaceae

Schefflera

Cerro Tute, ca. 10 km NW of Santa Fe.
a. On lower slopes, 750-1000 m alt.
b. On ridgetop in cloud forest (Lower
Montane Rain Forest), above 1000 m
alt.

Tree, 5 m tall.

3 Aug 1975

S. Mori, A. Bolten, R. Dressler 7562

THE MISSOURI BOTANICAL GARDEN HERBARIUM

Fig. 34 *Schefflera aquaverensis* – holotype (BM).

tional specimen: Same locality, *Mori Bolten & Dressler 7587* (BM, MO).

Tree of 5 m, glabrous throughout; branchlets markedly nodose. Leaves palmately compound; petioles 11–14 cm, striate; ligules 2.5–3.5 cm, lanceolate, the basal part only partly encircling the stem, the free part about as long as the basal; leaflets 5–6, 6–10 × 2–4.5 cm, in one whorl, elliptic to broadly elliptic, coriaceous, pale below, dark above; lateral veins not anastomosing near the margin even at the tip, scarcely visible above, slightly raised beneath; margin thickened and often inrolled; apex gradually acuminate, the acumen c. 1 cm, often curved, the tip often hooked; base acute; petioles up to 5 cm, striate, slightly sulcate, somewhat swollen at the base. Inflorescence paniculate, the rachis 8–9 cm; branches several, up to 25 cm; peduncles 20–40 per branch, 20–45 mm, the subtending bracts minute; flowers 6–12 per umbel, umbels subtended by a ring of more or less free bracts, often caducous; pedicels 5 mm, striate, 4-sided; calyx-teeth minute; buds shortly apiculate, calyptra 1.25 × 2 mm; filaments 1–1.5 mm, anthers 0.7 mm; styles 2. Fruits 4.5 × 4 mm, flattened, stylopodium conical, 1 mm, the stigmas somewhat separated above; seeds not seen.

This species is rather similar to *S. rodriguesiana* Frodin, but the leaflets are smaller and narrower, with thickened and often inrolled margins (which appear darker than the rest of the leaf in the dried state), the bracts subtending the peduncles are minute, and it has smaller stamens and fruit. Cloud forest (lower montane rain-forest) at above 1000 m. Found only in the Veraguas province of Panama.

23. *Schefflera instita* M. & J. Cannon, *sp. nov.*
Fig. 35.

S. rodriguesiana Frodin affinis, sed foliolis margine institioribus, acumine longo, pedicellis longioribus, fructibus grandioribus, stigmatibus vix liberis, differt.

Arbor glabra. Folia ligula 5 cm longa, parte libero partem basalem longitudine aequanti, foliola 11, 8–12 × 4–6 cm, ovata, venatione in tertia parte superiore brochidodroma, margine valde arcte undulata instita aspectu, apice anguste acuminata acumine usque ad 3 cm longo, basi obtusa vel rotundata. Inflorescentia ramis c. 30 cm longis, pedunculis c. 20 in quoque ramo. Fructus 5 × 5 mm, 8–12 in quaque umbella, pedicellis 8–9 mm longis, styli 2, 2–3 mm longi in columna gracili conjuncti, stigmatibus apice vix liberis.

Type: **Costa Rica**, Prov. Heredia, edge of pasture near Río Para Blanco, 10°03'N, 84°01'W, 1600 m, 28 April 1973, *Lent 3463* (F-holotype).

Tree, possibly epiphytic, glabrous throughout. Leaves palmately compound; petiole 20 cm, striate; ligule 5 cm, rather membranaceous, acute, the basal part as long as the free part, only half encircling the stem; leaflets 11, 8–12 × 4–6 cm, in one whorl, ovate, coriaceous; lateral veins anastomosing near the margin in the upper 1/3, raised above and beneath, the intermediate veinlets only loosely reticulate; margin markedly closely undulate, appearing frilled; apex narrowly acuminate, the acumen up to 3 cm, curved; base obtuse to rounded; petiolules 5.5–6 cm, striate, somewhat sulcate, scarcely swollen at the base. Inflorescence (incomplete in our specimen) paniculate; branches c. 30 cm, the subtending bracts c. 20 mm, with c. 8 progressively smaller bracts above; peduncles c. 20 per branch, up to 30 mm, the subtending

bracts 1–2 mm; flowers not seen. Fruits 5 × 5 mm, almost circular in outline, flattened; pedicels 8–10 mm, 8–12 per umbel, striate, subtending bracts 0 or minute; calyx-limb undulate; edge of disc a little raised, crenulate; styles 2, fused into a slender column 2–3 mm, the stigmas only just free at the tip.

This species somewhat resembles *S. rodriguesiana* Frodin ex M. & J. Cannon, but differs in the larger number of leaflets, which are markedly frilled around the margin, with long acumen, longer pedicels, and larger fruits with the stigmas scarcely free at the tip.

Edge of pasture at 1600 m altitude.

Costa Rica, province of Heredia. Known only from the type gathering.

The name draws attention to the markedly frilled margin of the leaflets.

24. *Schefflera cicatricata* M. & J. Cannon, *sp. nov.*
Fig. 36.

S. rodriguesiana Frodin affinis, sed foliis angustioribus, petiolis brevioribus, petiolulis et ligulis brevioribus basi incrassato cicatricato, amplitudine fructo magna, differt.

Arbor nana glabra vel frutex glaber, ramulis valde nodosis. Folia ligula 1–1.5 cm longa, parte libera partem basalem longitudine aequanti, foliola 5–7, 3–7(–8) × 1.5–2.5(–3) cm, elliptica, venatione per totem longitudinem foliolae brochidodroma, apice acuminata basi acuta. Inflorescentia plerumque haud ramosa axo basi incrassato, apice gradatim decrescenti cicatricibus foliorum vel bracteorum notato, pedunculis 8–12(–20), floribus 15–25 in quaque umbella pedicellatis. Fructus 4–5 × 4–5 mm, stylopodio conico vel aliquantam tumido, styli 2, stigmatibus distaliter divergentibus, semina subglobosa vel triquetra pilosa.

Type: **Panama**, Prov. Chiriquí, path from Linares farm, c. 1400 m, to top of Cerro Hornito, 1750 m, 27 December 1977, *Folsome, Dressler & Channell 7239* (BM-holotype; MO-isotype). Additional specimens: **Panama**: Prov. Chiriquí, Cerro Hornito, *Knapp, Kress & Hammel 4206* (BM, MO); Prov. Chiriquí, Bocas del Toro, Cerro Colorado, *Folsome, Small & Robbins 4695* (BM, MO).

Shrub or tree up to 5 m, glabrous throughout; branchlets markedly nodose. Leaves palmately compound; petioles 4–9 cm, striate; ligules 1–1.5 cm, truncate, the free part about as long as the basal, the basal part encircling less than 1/2 the stem; leaflets 5–7, 3–7(–8) × 1.5–2.5(–3) cm, in one whorl, elliptic, coriaceous; lateral veins anastomosing a little distance from the margin throughout the leaflet, somewhat immersed above, scarcely raised beneath, the intermediate veinlets only loosely reticulate; margin plane; apex acuminate, acumen 0.5–1 cm; base acute; petiolules 1–1.5 cm, striate and sulcate, swollen at the base. Inflorescence paniculate, much condensed, usually unbranched, rachis rarely exceeding 6 cm, often tapering from a swollen base and bearing numerous leaf- or bract-scars; peduncles 8–12(–20) per inflorescence, 2.5–4 cm, the subtending bracts minute, undulate, often corky; umbels subtended by a whorl of scarcely connate ovate bracts, flowers 15–25 per umbel; pedicels 5–7 mm, quadrangular in section, sometimes winged; calyx-teeth minute, apiculate; buds shortly apiculate, calyptra 2 × 2 mm; filaments 2 mm, anthers 0.7–1 mm, ovoid; styles 2. Fruits 4–5 × 4–5 mm; stylopodium 1.5 mm, conical or rather



TYPE SPECIMEN

Schefflera instita M. J. Cannon

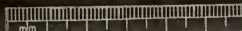
det. M. Cannon 1988

Seen for
Flora Mesoamericana

FLORA OF COSTA RICA

Didymopanax pittieri March.

==1797510

FIELD MUSEUM
OF
NATURAL HISTORYTree (epiphytic?) 6m up. Fruits pale green.
Edge of pasture near Rio Para Blanco.
Date: 28 Apr. 1973 Alt. 1600 meters
10° 05' N. 84° 01' W. No. 3463
Prov. Heredia Collected by Roy W. LentFig. 35 *Schefflera instita* - holotype (F).



TYPE SPECIMEN

Schefflera cicatricata M. J. Cannon

det. M. Cannon 1988

Seen for
Flora Mesoamericana

PANAMA

Province of Chiriqui

Family: ARALIACEAE
ScheffleraPath from Linares farm circa 1400 m to top
of Cerro Hornito at 1750 m. Flat heath-
like area, a bald with a 3-5 m canopy.Shrub of 3-4 meters; fruit white; flowers
yellow green.J.P. Folsom & 7239
R. Dressler & R.R. Channell 27 Dec. 1977
MISSOURI BOTANICAL GARDEN HERBARIUM (MO)Fig. 36 *Schefflera cicatricata* - holotype (BM).

swollen below, stigmas spreading above; seeds subglobular or triquetrous, pilose.

A species close to *S. rodriguesiana* Frodin, but differing in its narrower leaflets, smaller petioles, petiolules, and ligule, and particularly in its swollen, scar-covered rachis and in the size of the fruit.

Elfin forest and cloud forest at altitudes of 1500–2238 m.

Confined to Panama, provinces of Chiriquí and Bocas del Toro borders.

The name draws attention to the markedly scarred axis of the inflorescence.

25. *S. rodriguesiana* Frodin ex M. & J. Cannon, **nom. nov.**

Didymopanax pittieri Marchal in *Bull. Soc. r. Bot. Belg.* **30**: 280 (1891), non *Schefflera pittieri* Harms.

Cloud and rain-forest.

Costa Rica and Panama.

This species is named in honour of the late Dr R. Rodriguez of Costa Rica.

Doubtful species

Schefflera sphaerocoma (Benth.) Harms. Frodin (1975: 431) refers in discussion to this species as occurring from Costa Rica to Colombia. We have no evidence for its presence in Central America.

ACKNOWLEDGEMENTS. We are particularly grateful to Dr D. G. Frodin, who has freely discussed our Araliaceae problems with us in

the light of his long-term studies in the family and his own extensive first-hand knowledge of the plants in the field in Malesia. However, the conclusions reached are entirely those of the authors, other than the publication of one new name in *Schefflera*, a need which he had previously recognized. We have had much helpful discussion with many other colleagues, both in the BM and elsewhere, especially those involved with us in the *Flora Mesoamericana* project. Sandra Davies' contribution in word-processing our often difficult manuscripts is much appreciated. We are grateful to our colleague Norman Robson for his advice on the Latin descriptions. We also thank those who have collected material in the field, and have tried to answer our questions on biology and variability; the account has benefited from their views. We are grateful to those responsible for the loan of specimens from the following herbaria: A, C, F, G, K, MEXU, MO, NY, SMU, US.

REFERENCES

- Cannon, M. J. & Cannon, J. F. M. 1986. Studies in the Araliaceae of Nicaragua and a new widespread species of *Oreopanax*. *Ann. Mo. bot. Gdn* **73**: 481–485.
- Croat, T. B. 1978. *Flora of Barro Colorado Island*. Stanford. [Araliaceae on pp. 682–685.]
- Frodin, D. G. 1975. Studies in *Schefflera* (Araliaceae): the *Cephaloschefflera* complex. *J. Arnold Arbor.* **56**: 427–448.
- Maguire, B., Steyermark, J. A. & Frodin, D. G. 1984. Araliaceae. In B. Maguire et al., *The botany of the Guayana Highland – part XII. Mem. N.Y. bot. Gdn* **38**: 46–82.
- Smith, A. C. 1944. Araliaceae. In N. L. Britton et al. (Eds), *North American flora* **28B**: 3–41. New York.