

New Taxa and Combinations of Pteridophytes from Chiapas, Mexico

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This is the second and, it is intended, final report on new taxa and new combinations (beginning on p. 26) of pteridophytes in the state of Chiapas, Mexico. For the first report, see Proc. Calif. Acad. Sci., Ser. IV, 40:209–230. 1975. All of the taxa are to be included in the treatment of the pteridophytes of Chiapas, a part of the “Flora of Chiapas” project headed by Dennis Breedlove, California Academy of Sciences. English descriptions, fuller synonymies, and additional discussion will be found in the floristic account. Certain of the new names are also needed by Robert Stolze for his forthcoming treatment of the Polypodiaceae in the “Ferns and Fern Allies of Guatemala.”

I thank Colleen Sudekum for preparation of the illustrations. Scanning electron micrographs of spores were made with a Coates and Welter 50 microscope, obtained by the Electron Microscope Laboratory at the University of California, Berkeley, under a grant from the National Science Foundation (GB-38359). Breedlove collections were made with the help of National Science Foundation grants GS-383, GS-1183, and GB-29483. I am grateful to A. M. Evans, who has collaborated in the description of *Polypodium chiapense*.

7023 ***Asplenium insolitum* A. R. Smith, sp. nov.**

Figs. 1–2.

Rhizomata suberecta, caudices ca. 1 cm diametro; frondes 35–45 cm longae, stipitibus laminas fere aequantibus; stipites brunnei vel griseo-brunnei, non lustrati, ca. 1.5 mm diametro, adaxialiter viridi-alati, glabri, basi paleis paucis atrobrunneis ovatis; paleae ca. 2 mm longae, obscure clathratae, parietibus crassis et luminibus congestis parvulis; laminae ovato-lanceolatae, 18–25 cm longae, bipinnatae, apice attenuatae sed nec flagelliformes nec proliferae; rhachides adaxialiter viridi-alatae, abaxialiter brunneolae, epaleatae; pinnae 15–20-jugae, usque 6 cm longae, 2.5 cm latae; pinnae infimae (1 vel 2 paria) aliquantum reductae, deflexae; pinnulae usque 8-jugae per pinnam, saepe lobo acroscopico, aliter dentatae vel bidentatae secus marginem, basi cuneatae, plerumque inaequilatae (subdimidiatae), latere basiscopico exciso; pagina laminae et axes subter glabri vel pilis minutis (0.1 mm longis) adpressis capitatis; venae pinnatae, usque 4-jugae per pinnulam; sori 1.0–2.5 mm longi, indusia tenui albido.

✓TYPE: Terrestrial in montane rain forest, 11 km NW of junction of road to Motozintla along road to El Porvenir and Siltepec, southwest side of Cerro Mozotal, Munic. Motozintla de Mendoza, Chiapas, Mexico, 2100 m, 21 Nov 1976, *Breedlove 41653* (DS).

PARATYPE: Same locality, 27 Jun 1972, *Breedlove 25760* (DS).

Asplenium insolitum has no obvious close relatives. In dissection, it is similar to some of the more divided members of the *A. radicans* complex (e.g., *A. flabellulatum* Kunze var. *partitum* Klotzsch), but the blade apex is neither flagelliform nor budding and the stipes and rachises are not shining. A closer relative is perhaps *A. cuneatum* Lam., but that species differs in the flabellate venation of the segments, longer sori, and obviously clathrate scales. Another possible rela-

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FIGS. 1-4. New *Asplenium* species. FIGS. 1-2. Type of *A. insolitum*, habit and lower pinna. *Breedlove 41653* (DS). FIGS. 3-4. Paratype of *A. sphaerosporum*, habit and lower pinna, *Breedlove 32512* (DS). Line scale for habit drawings.

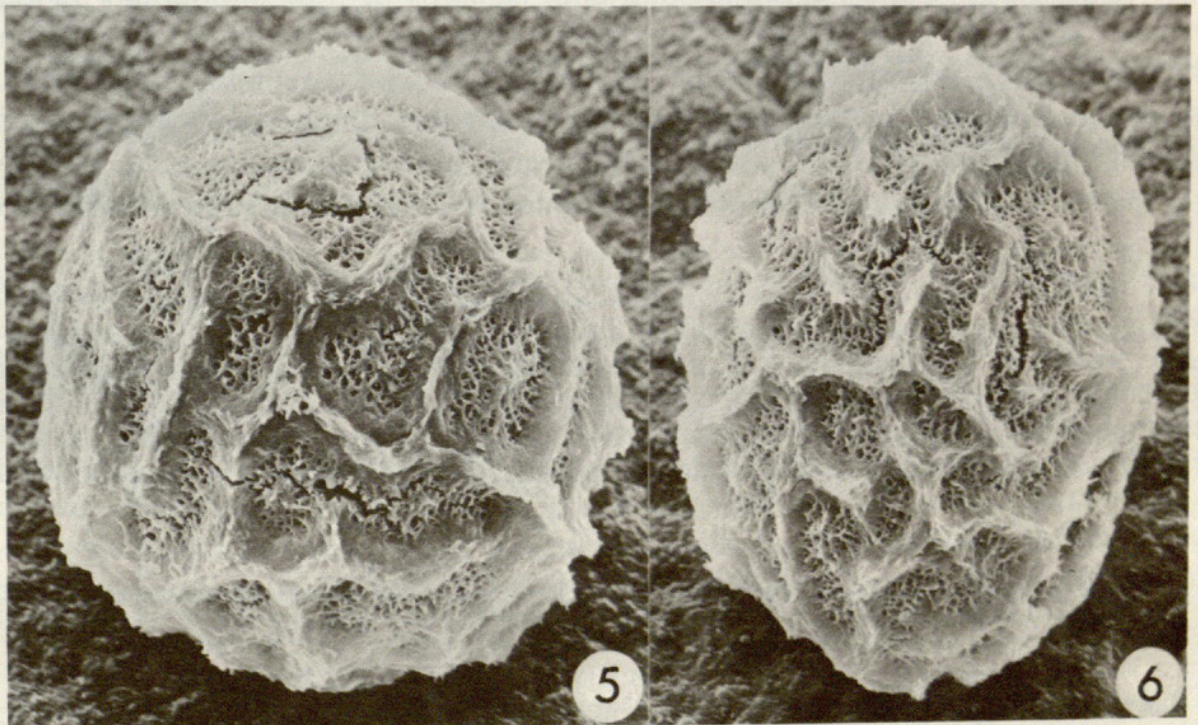
tive is *A. solmsii* Baker ex Hemsl., but that species has tripinnatifid blades and often a few minute clathrate scales in the pinna axils.

7034 ***Asplenium sphaerosporum* A. R. Smith, sp. nov.**

Figs. 3–6.

Rhizomata erecta; frondes plerumque 45–70 cm longae, usque 18 cm latae; stipites atri, ca. 2 mm diametro, glabri, longitudine 0.5–0.75 partes laminarum aequantes; rhachides atrae vel virides, distaliter viridi-alatae; laminae lanceolatae, ad apicem acuminatae; pinnae patentes, vulgo 25 vel plus, ad apicem acuminatae, paribus infimis plene bipinnatis, distaliter pinnis pinnatisectis, denique pinnis serrato-incisis; segmenta obovata, usque 1.3 cm longa, 5 mm lata, basi cuneata, apice dentata vel denticulata (dentibus 2–7), usque 12 paribus per pinnam, prope apices pinnarum segmentis adnatis et decurrentibus; paginae laminarum atrovirides vel aeruginosae, crassae, glabrae; sori usque 2–3 per segmentum; sporae grandes, globosae (interdum ellipsoideae), 32 per sporangium.

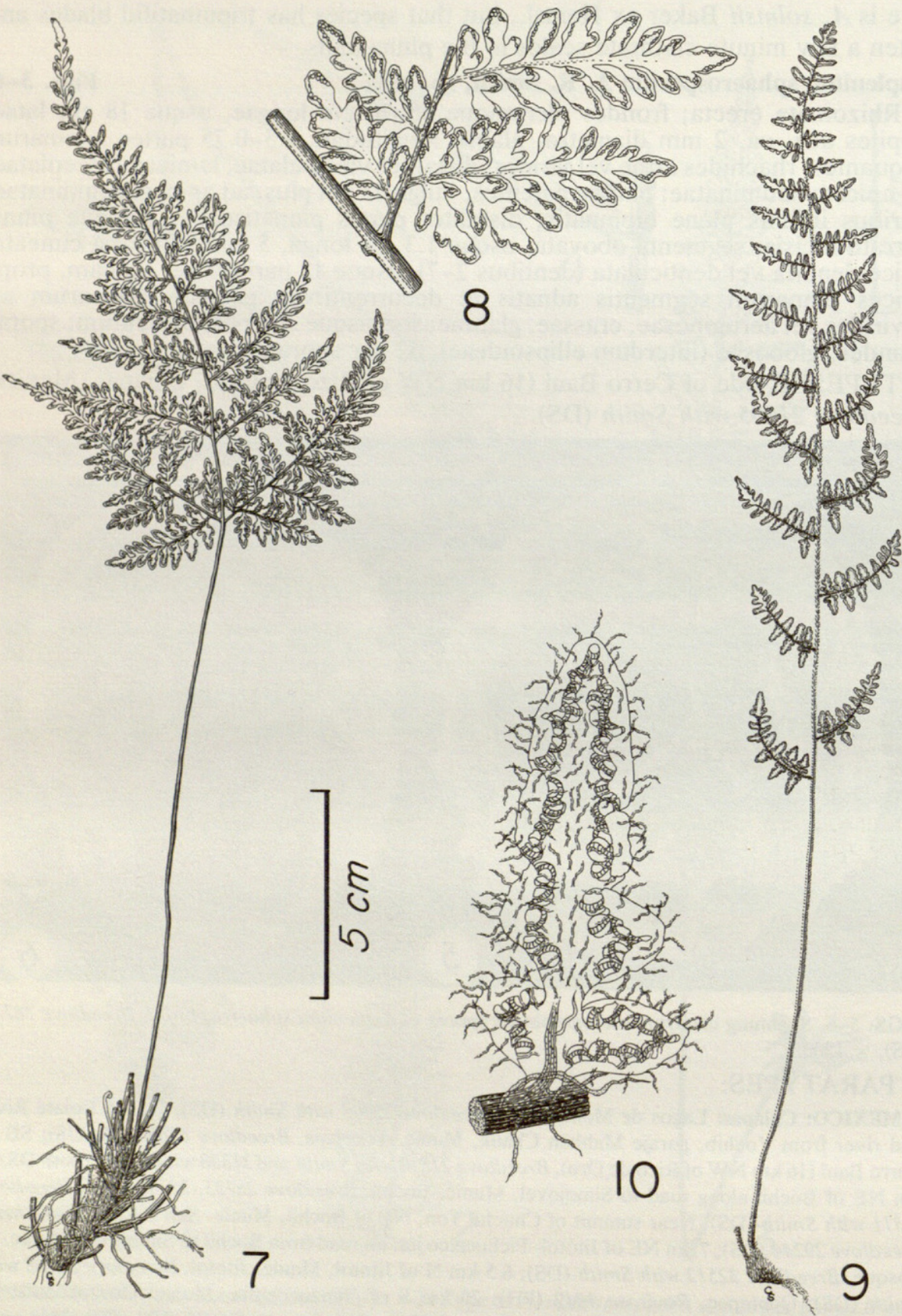
✓**TYPE:** SE side of Cerro Baul (16 km NW of Rizo de Oro), Chiapas, Mexico, *Breedlove 21805 with Smith* (DS).



FIGS. 5–6. Scanning electron micrographs of spores of *Asplenium sphaerosporum*, *Breedlove 28733* (DS), $\times 1500$.

PARATYPES:

MEXICO: Chiapas: Lagos de Montebello, *Breedlove 22303 with Smith* (DS); Jct. of Tanaté River and river from Yochib, paraje Mahben Chauk, Munic. Tenejapa, *Breedlove 6368* (DS, US); SE of Cerro Baul (16 km NW of Rizo de Oro), *Breedlove 21810 with Smith* and *31338 with Smith* (both DS); 7 km NE of Bochil along road to Simojovel, Munic. Bochil, *Breedlove 28723*, *28733* (DS), *Breedlove 32311 with Smith* (DS); Near summit of Chuchil Ton, NE of Bochil, Munic. San Andres Larrainzar, *Breedlove 29244* (DS); 7 km NE of Jitotol–Pichucalco jct. on road from Bochil to Simojovel, Munic. El Bosque, *Breedlove 32512 with Smith* (DS); 6.5 km N of Jitotol, Munic. Jitotol, *Breedlove 32758 with Smith* (DS); Ocoatepec, *Rovirosa 1049* (PH); 20 km S of Ocozocoautla, Munic. Ocozocoautla de Espinosa, *Breedlove 29138 p. p.* (DS), *Münch s.n.* (DS); *Ghiesbreght 404* (K, NY, PH). **Veracruz:** Techolo, *Sanchez 6* (UC, US); along Camino Real, near Jalapa, *Weatherwax 176* (UC). **State unknown:** *Schnee s.n.* (K); *Bourgeau 2365* (K). **GUATEMALA:** Fuego ?, *Salvin & Godman 368* (K); *Heyde & Lux [Donnell-Smith 3231]* (K, US).



FIGS. 7-10. New *Cheilanthes* taxa. FIGS. 7-8. Type of *C. complanata*, habit and base of lowermost pinna, *Breedlove* 41747 (DS). FIGS. 9-10. Type of *C. microphylla* var. *fimbriata*, habit and pinnule, *Breedlove* 39018 (DS). Line scale for habit drawings.

This species resembles somewhat *A. achilleifolium*, but I do not think that they are closely related. The affinity seems closest to *A. monodon* Liebm. and *A. cuspidatum* Lam. The former has large, globose spores, 32 per sporangium, like those of *A. sphaerosporum* (Figs. 5–6); all specimens of *A. cuspidatum* that I have looked at have small, reniform spores, 64 per sporangium. It is possible that *A. sphaerosporum* arose through hybridization between some member of the *A. auritum* group and *A. cuspidatum*. Alternatively, it could have speciated from *A. monodon*. Additional studies are needed to understand the evolutionary relationships within this complex group.

Asplenium auritum Swartz has often been applied in a broad sense, encompassing plants that are simply pinnate (sometimes with a basal auricle) to fully bipinnate. I would restrict the application of the name to those plants of the complex that are simply pinnate; such plants also have tan, reniform, relatively small spores, 64 per sporangium. In Chiapas (and apparently elsewhere in the range), *A. auritum* s. s. occurs only at low elevations, 200–500 m.

Asplenium sphaerosporum occurs at higher elevations—(900)1250–2700 m—than any other member of the *A. auritum* complex in Chiapas, at elevations where *A. cuspidatum* can occur. The latter is chiefly from Montane Rain Forests, while *A. sphaerosporum* is most common in Pine-Oak-Liquidambar Forests.

7084 ***Cheilanthes complanata* A. R. Smith, sp. nov.** Figs. 7–8.

Differt a *C. hirsuta* Link paleis rhizomatis distincte bicoloris, ad marginem cinnamomeis, ad medium nigrescentibus; laminis pentagonis, latitudine longitudinem fere aequantibus, planis, segmentis ultimis non pendulis; segmentis ultimis obovatis vel anguste ellipticis, 2–4-plo longioribus quam latioribus; laminis atroviridibus, utrinque glabris; indusiis membranaceis, non valde dissimilibus laminae, integris (sine glandibus vel pilis), non vel leviter ad axe decurrentibus.

✓TYPE: North and west slope of Cerro Mozotal below microwave tower along road from Huixtla to El Porvenir and Siltepec, Munic. Motozintla de Mendoza, Chiapas, Mexico, 3000 m, *Breedlove* 41747 (DS).

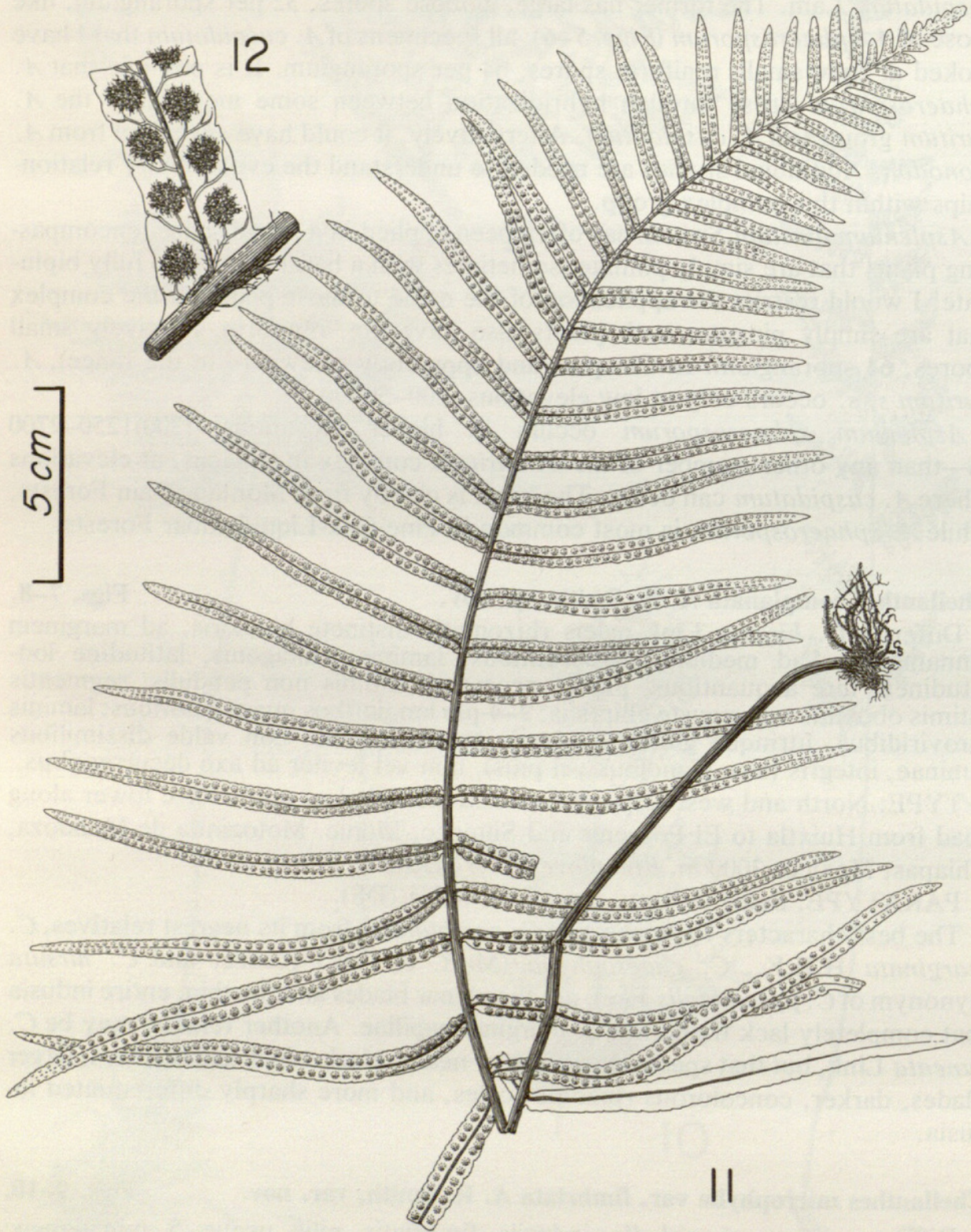
PARATYPE: Same locality, *Breedlove* 40335 (DS).

The best characters for separating *C. complanata* from its nearest relatives, *C. marginata* H.B.K., *C. chaerophylla* (Mart. & Gal.) Kunze, and *C. hirsuta* (synonym of *C. pyramidalis* Fée), are the planar blades and the thin, entire indusia that completely lack trichomes or marginal papillae. Another relative may be *C. cuneata* Link, but that species has black or nearly black stipes and rachises, larger blades, darker, concolorous rhizome scales, and more sharply differentiated indusia.

7091 ***Cheilanthes microphylla* var. *fimbriata* A. R. Smith, var. nov.** Figs. 9–10.

Differt a var. *microphylla* indusiis fimbriatis pilis usque 5 mm longis; trichomatibus numerosioribus albidis prope margines laminae supra; et laminis generaliter parvioribus bipinnatis subdimorphis.

✓TYPE: Along road to Ciudad Cuauhtemoc 6–8 km E of Frontera Comalapa, Munic. Frontera Comalapa, Chiapas, Mexico, *Breedlove* 39018 (DS).



FIGS. 11-12. Type of *Polypodium alavae*, habit and base of pinna, *Alava 1287* (UC). Line scale for habit drawings.

PARATYPES:

GUATEMALA: Petén: Lake Petén Itza, NW of San Andres, *Contreras* 3571 (US); Lake Petén Itza, along shore W of San Andres, *Lundell* 17251 (US). **MEXICO: Chiapas:** El Carmen, *Münch* 184 (DS); without locality, *Münch* (DS); Same locality as type, *Breedlove* 26976 (DS); Munic. Ocozocoautla de Espinosa, Río de la Venta at the Chorreadero near Derna, *Breedlove* 36556 (DS); Munic. Ocozocoautla de Espinosa, 13–18 km S of Ocozocoautla, *Breedlove* 37838 (DS); Villa de Yajalón, *Rovirosa* 971 p. p. (PH). **Tamaulipas:** 2 mi S of Tres Palos and 1 mi down road to Loreto, *Johnston* 4884 (TEX). **Yucatán:** San Anselmo, *Gaumer* 1238bis (US); Izamal, *Gaumer* 534 (UC, US), *Gaumer* 1409 (US); Chichankanab, *Gaumer* 1473 (US), *P. Valdez* 65 (US), *Gaumer* 533 (US); Ruins of Nojpat, *Schott* 686 (US); Mérida, *Schott* 135 (US).

Variety *microphylla* is known from the Antilles, southeastern United States, and eastern and southern Mexico. I have not seen collections from the Yucatan peninsula, where var. *fimbriata* is common. In Chiapas, var. *fimbriata* seems to be more common than the type variety and does not grow with it.

7141 **Diplazium drepanolobium** A. R. Smith, sp. nov.

Differt a *D. lonchophyllo* Kunze segmentis pinnarum magis obliquis et falcationibus; frondibus plerumque grandioribus, pinnis vulgo 20–25 cm longis, 3.5–6.0 cm latis.

—TYPE: 10 km above Rayon, Chiapas, Mexico, *Breedlove* 26122 (DS).

PARATYPES:

MEXICO: Chiapas: 26–28 km N of Ocozocoautla, *Breedlove* 22451 with Smith (DS); 45 km N of Ocozocoautla, *Breedlove* 20760, 32852 (DS); 2–4 km below Ixhuatan, *Breedlove* 24163 (DS); 32 km N of Ocozocoautla, *Breedlove* 38162 (DS); 46 km N of Ocozocoautla, *Breedlove* 38676 (DS); Without precise locality, *Ghiesbreght* 361 (K); Arroyo de Ona, cerca Ixtacomitan, *Rovirosa* 59 (K, PH). **Veracruz:** *Schaffner* 470 (P).

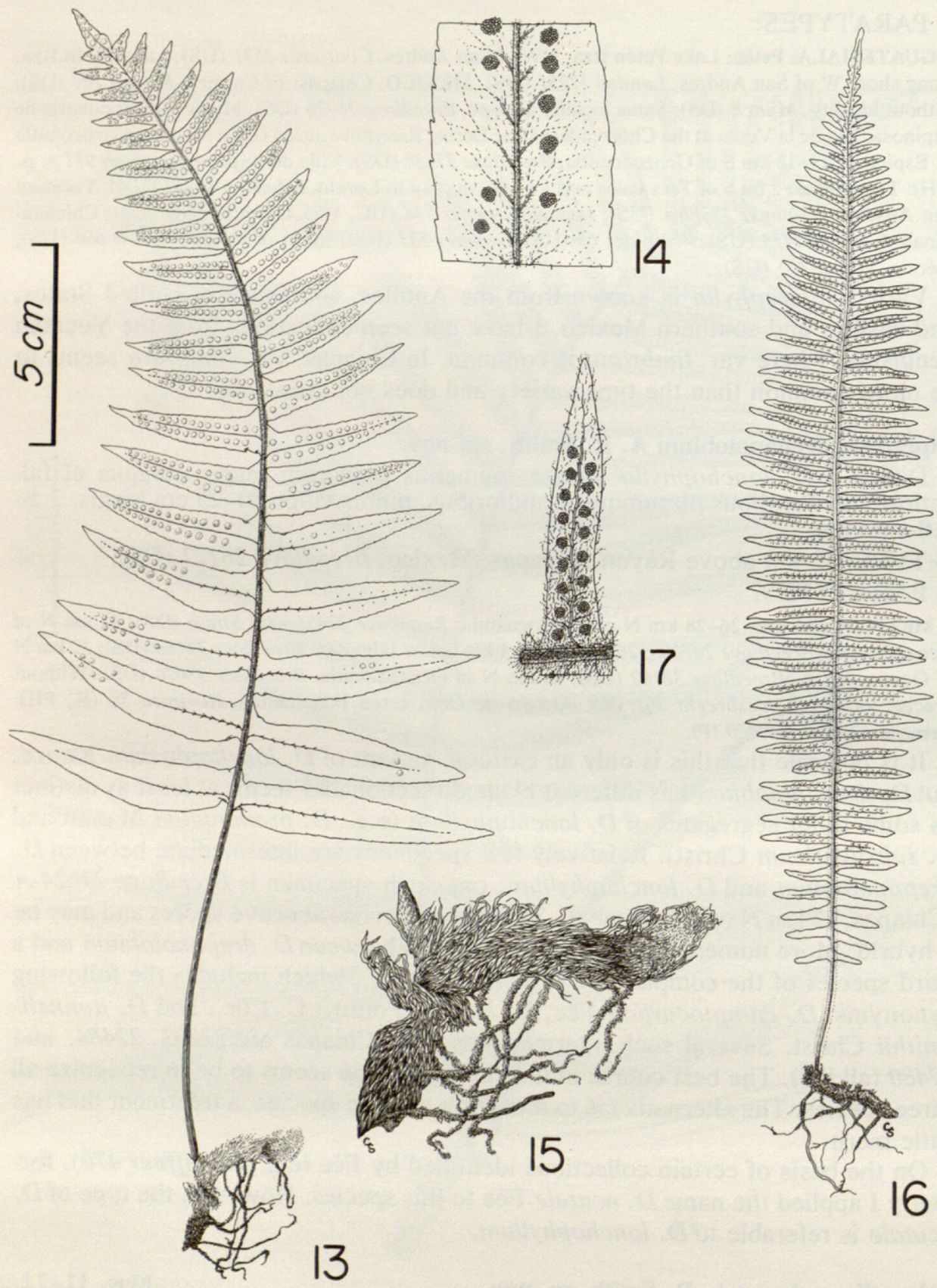
It is possible that this is only an extreme variant of *D. lonchophyllum* Kunze, but *D. drepanolobium* has different blade dissection and seems at least as distinct as some other segregates of *D. lonchophyllum* (e.g., *D. prominulum* Maxon and *D. subsilvaticum* Christ). Relatively few specimens are intermediate between *D. drepanolobium* and *D. lonchophyllum*; one such specimen is *Breedlove* 21624-A (Chiapas, 13 km N of Berriozabal). This collection has abortive spores and may be a hybrid. More numerous are the intermediates between *D. drepanolobium* and a third species of the complex, *D. franconis* Liebm., which includes the following synonyms: *D. camptocarpon* Fée, *D. hahnii* (Fourn.) C. Chr., and *D. donnell-smithii* Christ. Several such intermediates from Chiapas are 22293, 22484, and 27480 (all DS). The best course in this difficult group seems to be to recognize all three species. The alternative is to recognize a single species, a treatment that has little merit.

On the basis of certain collections identified by Fée (e.g., *Schaffner* 470), formerly I applied the name *D. acutale* Fée to this species. However, the type of *D. acutale* is referable to *D. lonchophyllum*.

7352 **Polypodium alavae** A. R. Smith, sp. nov.

Figs. 11–12.

Rhizomata repentia, 5–8 mm diametro, paleis aurantiaco-fulvis, aliquantum patentibus, concoloribus, glabris, ca. 5–10 mm longis; frondes (17)40–85 cm longae; stipites straminei vel brunneoli, parce pubescentes, longitudine 0.3–0.7 partes laminae aequantes, (1)3–5 mm diametro; laminae deltoideo-lanceolatae,



FIGS. 13–17. New *Polypodium* species. FIGS. 13–15. Type of *P. fuscopetiolatum*, habit, portion of pinna, and rhizome, *Breedlove* 37155 (DS). FIGS. 16–17. Type of *P. chiapense*, habit and segment, *Breedlove* 27453 (DS). Line scale for habit drawings.

(7) 14–30 cm latae, basi latissimae, pinnatae praeter apicem, apice pinnatifido vel subconformi, confluenti; rhachides moderate vel conspicue pubescentes, sine paleis; pinnae plerumque 7–16 cm longae, 7–10 mm latae, integrae vel leviter crenulatae, ad apicem acutae, basi rotundatae, lateribus parallelis, pinnis sessilibus dimidio proximali laminae, adnatis dimidio distali laminae, nunquam dilatatis; venae (2) 3-furcatae, liberae; paginae laminarum inter venas atrovirides vel olivaceae, subcoriaceae, utrinque glabrae vel sparse pubescentes; costae venaeque infra pilis dispersis vel numerosis, laxis, septatis, 0.4–0.8 mm longis; sori rotundati, mediales vel supramediales, vulgo ca. 2 mm diametro; sporangia pilis 0.2–0.3 mm longis, laxis, ca. 6 pilis per capsulam.

✓TYPE: About 3 mi from Jola along trail from Jola to Chanal, Chiapas, Mexico, *Alava 1287* (UC; isotype DS).

PARATYPES:

HONDURAS: Francisco Morazán: Km 24 on Tegucigalpa–Zamorano Rd., *Kimnach 449* (UC).

MEXICO: Chiapas: Lagos de Montebello, *Breedlove 22337 with Smith and 32126 with Smith* (both DS); same locality, *Breedlove 37005* (DS).

Polypodium alavae is related to *P. adelphum* Maxon, from which it differs in the narrower, more parallel-sided, mostly entire pinnae, long-hairy sporangia, and more coriaceous, dark-green leaf tissue. It is also related to *P. puberulum* Schlecht. & Cham., but it lacks the densely hairy leaf tissue on both surfaces and the lower pinnae are constricted at the base.

7355 *Polypodium chiapense* Evans & Smith, sp. nov.

Figs. 16–17.

Rhizomata longe repentia, usque 10 cm longa, 3–5 mm diametro; paleae rhizomatis lanceolatae, basi interdum dilatatae, ferrugineae, acuminatae, inconspicue comosae, non clathratae, ad marginem interdum denticulatae; frondes 12–40 cm longae, distantes (ca. 7–10 mm), paucae, 1–2(3) per plantam; stipites longitudine 0.1–0.2 partes laminae aequantes, 0.5–1.0 mm diametro, straminei vel fulvi, pilis ca. 1 mm longis, mollibus, argenteis, laxis, septatis; laminae 11–35 cm longae, 2.5–7.0 cm latae, anguste ovatae vel lanceolatae, basi subtruncatae vel truncatae; rhachides sine paleis, utrinque laxe villosae pilis 1–2 mm longis; segmenta 13–40 mm longa, 3–6 mm lata, patentia, lineari-lanceolata, apice obtusa vel subacuta, basi pariter dilatata, integra vel versus apicem obscure undulata; venae 1-furcatae, liberae; paginae laminarum dilute virides, pilis numerosis, 1–2 mm longis, laxis, argenteis, secus costas densissimis; costae decurrentes ad rhachim; sori rotundati, inframediales; sporangia glabra.

✓TYPE: Selva del Ocote, 32 km NW of Ocozocoautla, Munic. Ocozocoautla de Espinosa, Chiapas, Mexico, *Breedlove 27453* (DS).

PARATYPES:

MEXICO: Chiapas: Finca Mexiquito, *Purpus 6754, p. p.* (UC, US); Finca Irlanda, *Purpus 7225* (UC, US); 13 km N of Berriozabal, *Breedlove 20281, 31231* (both DS); Same locality, *Breedlove 21671 with Smith, 31537 with Smith* (both DS).

Polypodium chiapense is similar to *P. hygrometricum* Splitg., but differs in the stramineous to tan stipes, these villose with soft, silvery, lax, septate hairs ca. 1 mm long; rachises stramineous with similar hairs 1–2 mm long; segments all perpendicular to the rachis; leaf tissue with numerous, lax, silvery, septate hairs 1–2 mm long, these densest along the costa; and in the glabrous sporangia.

Polypodium fuscopetiolatum A. R. Smith, sp. nov.**Figs. 13–15.**

Rhizomata repentia, 3–6 mm diametro, brunneola, paleis arte adpressis, lanceolatis; paleae fulvae, in medio brunneo-vittatae, margine minute denticulatae vel papillatae, apice attenuato-filiformes; frondes (8)25–70 cm longae; stipites fulvi vel plerumque castanei (minimum infra), glabri vel glabrescentes, nitidi, longitudine 0.25–0.6 partes laminarum aequantes, (1)2–4 mm diametro; laminae ovato-deltaeae vel ovato-lanceolatae, (5)8–22 cm latae, profunde pinnatisectae vel paribus infimis fere liberis pinnarum, ad apicem segmento confluenti subconformi terminali usque 10 cm longo; rhachides pubescentes vel glabrescentes, plerumque castaneae, sine paleis; pinnae lanceolatae, apice acutae vel acuminatae, plerumque 9–15 mm latae; venae 3- vel 4-furcatae, anastomosantes, areolis 1-seriatis in quoque latere costae; pagina laminae utrinque pubescens vel glabrescens vel fere glabra; venae costaeque pubescentes; sori rotundi, ca. 1.0–1.5 mm diametro, mediales vel inframediales; sporangia glabra vel setosa, setis minus quam 0.1 mm longis.

✓**TYPE:** 6–8 km WNW of Soyalo, Chiapas, Mexico, *Breedlove* 37155 (DS).

PARATYPES:

EL SALVADOR: San Salvador: Santa Tecla, *Jaurequi* 67 (UC); Same locality, *Garcia* 22 (UC). **GUATEMALA:** Santa Rosa: Jumaytepeque, *Heyde & Lux* [Donn. *Smith* 4090] (US). Sololá: Near Pueblo San Jorge, *Hatch & Wilson* 317 (US). Suchitepequez: Cuyotenango, *Rojas* 146 (US). Guatemala: Sapoti barranca, *Hayes* (US); Pinala, *Hayes* (US); San Gerónimo, *Salvin & Godman* (K). **MEXICO:** Chiapas: Salto de Agua, Escuintla, *Matuda* 18397 (MEXU, DS); Cacaluta, Escuintla, *Matuda* 17005 (MEXU, DS); Finca Mexiquito, *Purpus* 6755, 6858 (UC, US); Huitla, *Purpus* 7223 (UC); El Sumidero, 22 km N of Tuxtla Gutierrez, *Breedlove* (all with *Smith*) 21584, 21593, 21595 (DS); 3 km N of Ocozocoautla, *Breedlove* 21923 with *Smith* (DS); 5–6 km W of Teopisca, *Breedlove* 22867 (DS); NW side of Cerro Vernal, 25–30 km SE of Tonalá, *Breedlove* 25616 (DS); 6–8 km E of Frontera Comalapa, *Breedlove* 26978, 39083 (DS); 27 km NE of Huixtla, *Breedlove* 28612, 28653 (DS); 65 km S of Hwy. 190 on rd. to Nuevo Concordia, *Breedlove* 37784 (DS); Cerro Vernal, 21 km S of Tonalá, *Breedlove* 38135 (DS). Guerrero: 25 mi S of Chilpancingo, *Storer* 111 (US); Dist. Mina, Manchon, *Hinton et al.* 9451 (K); Dist. Montes de Oca, Vallecitos, *Hinton et al.* 11390 (K). Jalisco: Sierra del Halo, 7 mi SSW of Tecalitlán, *McVaugh* 16189 (US). México: Dist. Temascaltepec, Rincón del Carmen, *Hinton* 1737 (K, UC, US). Michoacán: Dist. Coalcoman, Pto. Zarzamora, *Hinton et al.* 12249 (K).

This appears to be one of the more common species of *Polypodium* at lower elevations (500–1350 m in Chiapas) on the Pacific slope of southern Mexico and northern Central America. *Polypodium fuscopetiolatum* is closely related to *P. hispidulum* Bartlett, but it can be distinguished by the narrower rhizome scales that are denticulate or papillate on the margin and filiform at the tip and also by the stipes and rachises usually castaneous and shining. There is also a resemblance to *P. plesiosorum* Kunze, which has broader, ovate rhizome scales and grows at higher elevations. Specimens of *P. fuscopetiolatum* have often been identified as *P. plesiosorum* in herbaria.

Several Costa Rican collections are close to *P. fuscopetiolatum* but differ in having smaller, thicker-textured fronds, broader, squared sinuses, and broader and lighter-colored rhizome scales. I am not certain that they are conspecific with *P. fuscopetiolatum*, but they appear to be closely related: *Pittier* 904, *Tonduz* 8796, *Standley* 41904, *Tonduz* 8804, *Mickel* 2394, *Stork* 2987, and *Allen* 547 (all US).

7392 ***Polystichum mickelii* A. R. Smith, sp. nov.**

Rhizomata erecta, caudices 1.5–3.0 cm diametro; frondes 45–110 cm longae; stipites longitudine 0.6–1.0 partes laminarum aequantes, basi paleis ovatis margine erosis usque denticulatis, usque 15 mm longis et 6 mm latis, bicoloribus, paleis fulvis in medio anguste brunneo-vittatis vel paleis concoloribus et uniformiter fulvis; laminae ovato-attenuatae, 12–35 cm latae; rhachides non proliferae, glabrescentes vel paleis capillaceis praesertim basi pinnarum; pinnae pinnatae, pinnulae lobo parvo deltoideo acroscopico, aliter integrae, vel in frondis grandis pinnulis crenulatis vel grosse dentatis et lobo fere libero elliptico acroscopico; costulae infra glabrescentes vel basi paleis fibrillosis; pagina laminarum et venarum infra plus minusve glabra, coriacea, supra nitida, atroviridis; sori parvi, ut videtur exindusiati, non confluentes.

✓TYPE: NE slope of Cerro Zempoaltepetl, trail from La Candelaria to Zacatepec, Dist. Mixes, Oaxaca, Mexico, *Mickel 4836 with Leonard* (NY).

PARATYPES:

GUATEMALA: San Marcos: Near Aldea Fraternidad, between San Rafael Pié de la Cuesta and Palo Gordo, *Williams et al. 26103* (F), 26299 (F, US). Above Finca El Porvenir, up Cerro de Mono, Volcán Tajumulco, *Steyermark 37397* (F). **HONDURAS: Intibuca:** Quebrada del Pelon de Guise, *Molina R. 6375* (F). **MEXICO: Chiapas:** SE side of Cerro Tres Picos, *Breedlove 25379, 34385* (DS); Without precise locality, *Ghiesbreght 401* (YU). **Oaxaca:** Type locality, *Mickel 4823 with Leonard* (NY); Dist. Mixes, vicinity of Zacatepec, *Mickel 1565* (NY); Dist. Choapan, Lovani to river toward La Selva, *Hallberg 1577* (NY); Dist. Tuxtepec, 24 km S of Valle Nacional, *Mickel 5929* (NY); Dist. Ixtlán, 5 km S of Vista Hermosa, *Mickel 7189* (NY, UC); Dist. Ixtlán, 29 km S of Valle Nacional, *Mickel 6363* (NY, UC). **Veracruz:** Munic. Yecuatla, El Haya, *Ventura A. 3431* (NY); Munic. Yecuatla, El Cajón, *Ventura A. 4812* (NY).

In Oaxaca and Veracruz this species grows at rather low elevations, 450–1450 m; the Chiapas collections were made at 2100–2500 m. At the lower elevations, the only other *Polystichums* encountered in Mexico are *P. platyphyllum* (Willd.) Presl and occasionally *P. muricatum* (L.) Fée. *Polystichum mickelii* appears to be without close relatives in Mexico and Central America. It is possibly of the group of *P. platyphyllum*, as indicated by the exindusiate sori. It resembles somewhat species from southern Brazil, e.g., *P. montevidense* (Spreng.) Rosenst.

7537 ***Selaginella chiapensis* A. R. Smith, sp. nov.**

Species heterophylla ex affinitate *S. idiosporae* Alston, sed foliis intermediis ovatis, acuminatis (nec aristatis), foliis argenteis subtus, rhizophoris gracilioribus, 0.2–0.4 mm diam. differt.

✓TYPE: 18–20 km N of Ocozocoautla, Munic. Ocozocoautla de Espinosa, Chiapas, Mexico, 800 m, *Breedlove 28159* (DS).

PARATYPE: Above Rancho San Luis, ca. 2 mi N of Ocozocoautla, Chiapas, Mexico, *Carlson 2127* (BM, US).

In addition to the differences between *S. chiapensis* and *S. idiospora* mentioned above, the new species seems to have the median leaves more obviously in two ranks adjacent to one another, the ranks scarcely or not at all overlapping. The paratype cited differs from the type in having acute median leaves, eciliate lateral leaves, and stouter rhizophores. It was originally annotated by Alston as "*S. idiospora* ined.", and presumably later in pencil, "sp. nov." In the sum of its characters, *S. chiapensis* seems more different from *S. idiospora* than the latter does from *S. guatemalensis* Baker.

6144 **Diplopterigium bancroftii (Hook.) A. R. Smith, comb. nov.**

6140 *Gleichenia bancroftii* Hook., Sp. Fil. 1:5, t. 4A. 1844. ✓LECTOTYPE: Jamaica, *Bancroft* (K!; isolecotype BM!), chosen by Proctor in Howard (Fl. Less. Antill. 60. 1977). Hooker may never have seen the other syntype, which is Jamaica, *Swartz*.

Nakai (Bull. Natl. Sci. Mus. 29:50. 1950) regarded *Gleichenia bancroftii* as a synonym of *Diplopterigium farinosum* (Kaulf.) Nakai, but the original description and subsequent illustrations suggest that *Mertensia farinosa* Kaulf. is really a species of *Sticherus*. Löve, Löve, and Pichi Sermolli (Cytotax. Atlas Pterid., 1977), apparently following Nakai, also adopt the name *Diplopterigium farinosum* for *Gleichenia bancroftii*.

7261 **Grammitis xiphopteroides (Liebm.) A. R. Smith, comb. nov.**

7255 *Polypodium xiphopteroides* Liebm., Kongel. Danske Vidensk. Selsk. Skr., Naturvidensk. Afd., V. 1:196. 1849. ✓LECTOTYPE (here chosen): Mexico, Veracruz, "Hac. de Mirador," *Liebmann* [Pl. Mex. 2548, Fl. Mex. 189] (C!).

I regard *Grammitis rigens* (Maxon) Proctor as a taxonomic synonym.

7367 **Pellaea cordifolia (Sessé & Moc.) A. R. Smith, comb. nov.**

7314 *Adiantum cordifolium* Sessé & Moc., Naturaleza (Mexico City), ser. II, 1(App.):182. 1890. ✓TYPE: Mexico, Cuyuacan and San Agustín near Mexico City (MA?).

I regard *Pellaea cordata* (Cav.) J. Smith (*non* Fée, 1852), *P. cardiomorpha* Weath., and *P. sagittata* (Cav.) Link var. *cordata* (Cav.) A. Tryon as taxonomic synonyms.

Pellaea cordifolia differs from *P. sagittata* in having segments rotundate-cordate (vs. ovate-triangular to sagittate), rachis and segment stalks glabrous (vs. usually puberulous), and spores tetrahedral-globose, 64 per sporangium (vs. ellipsoidal, 32 per sporangium) (A. Tryon, Ann. Missouri Bot. Gard. 44:125–193. 1957). *Pellaea cordifolia* is a sexual diploid ($2n=29$ II), whereas *P. sagittata* s. s. is an apogamous triploid ($n=2n=87$). The two species are partially sympatric, but *P. cordifolia* has a much more restricted distribution than *P. sagittata*. The morphological, chromosomal, and chorological differences between the two taxa seem of a magnitude to justify recognition of two species.

7340 **Pleopeltis macrocarpa var. interjecta (Weath.) A. R. Smith, comb. nov.**

7342 *Polypodium peltatum* var. *interjectum* Weath. Amer. Fern J. 34:17. 1944. ✓TYPE: Cerro de Tecpam near Santa Elena, Chimaltenango, Guatemala, *Standley* 60957 (F).

As Weatherby stated, var. *interjectum* is closely related to var. *trichophora* (Weath.) Pic. Ser. and var. *macrocarpa* (Weatherby's var. *lanceolata*) on the one hand and *Pleopeltis polylepis* (Roem. ex Kunze) Moore (= *Polypodium peltatum* Cav., according to Christensen, Dansk. Bot. Ark. 9(3):11. 1937) on the other hand. It is quite possible that var. *interjectum* is an evolutionary link to *P. polylepis* from *P. macrocarpa*. My reason for placing it with the latter is that I find that scale size and number (large and numerous in *P. polylepis*, small and sparse in *P. macrocarpa* including var. *interjectum*) on the abaxial surface of the blade are more consistent than characters of scale margin (entire in *P. polylepis* and entire to erose to denticulate in *P. macrocarpa*). Weatherby used characters of the scale margin to distinguish between *P. macrocarpa* and *P. polylepis*.

7389 **Polystichum fournieri** A. R. Smith, nom. nov.

17120 *Polystichum muelleri* Fourn., Mex. Pl. 1:91. 1872 (non Schum., 1803). LECTOTYPE (here chosen): "In pinetis prov. Chiapas," Mexico, Linden (P!). The other syntypes (all from Mexico) are: "San Luis de Potosi," Virlet d'Aoust 46 (P-4 sheets!); "Orizaba," F. Müller 1496 (not found at P); and "Prope ignovomum Río Frio," Bourgeau (P!). Of the syntypes I have seen, only the Linden specimen is fertile.

7414 **Sticherus brevipubis** (Christ) A. R. Smith, comb. nov.

7415 *Gleichenia brevipubis* Christ, Bull. Herb. Boissier, II. 6:280. 1906. LECTOTYPE: Valle del Río Navarro, Cartago, Costa Rica, Wercklé (P; isolectotype US), chosen by Lellinger, Proc. Biol. Soc. Wash. 89:713. 1977.

7427 **Tectaria transiens** (Morton) A. R. Smith, comb. & stat. nov.

7428 *Tectaria incisa* subsp. *transiens* Morton, Amer. Fern. J. 56:133. 1966. TYPE: Cordoba, Veracruz, Mexico, Finck 57 (US).

In the sum of its characters, *T. transiens* is intermediate between *T. heracleifolia* (Willd.) Underw. and *T. incisa*, and it is possible that it has arisen through hybridization. However, in Chiapas it has been collected in areas where neither of the suspected parents have been found. It differs from *T. heracleifolia* in its nonpeltate indusia, greater number of lateral pinnae, shorter-stalked lower pinnae, and lack of strongly developed acroscopic lobes on lower pinnae. From *T. incisa*, it differs in the pinnae being serrately incised most of their length with two or three large basal basiscopic lobes. From both species (Chiapas material only), *T. transiens* differs in the presence of short, glandular hairs on the costae, veins, and leaf tissue below and also on the indusia. Spores of several collections appear well-formed. Throughout its range, *T. transiens* seems to grow at higher elevations than either *T. heracleifolia* or *T. incisa*.

Additional collections seen are Sanchez 63 (UC) from Veracruz; Tuerckheim 839 (UC) from Guatemala; and Brade 47 (UC), Stork 2107 (UC), and Stork 1546 (UC) from Costa Rica. Similar collections have been seen from Ecuador and Peru.



Smith, Alan R. 1980. "New Taxa and Combinations of Pteridophytes from Chiapas, Mexico." *American fern journal* 70, 15–27.

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