THE MACHRIS BRAZILIAN EXPEDITION

BOTANY: PTERIDOPHYTA

By C. V. Morton
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The MACHRIS BRAZILIAN EXPEDITION from the Los Angeles County Museum was sponsored by Mr. and Mrs. Maurice A. Machris and Mrs. Maybell Machris Low. It was conducted under the auspices of the Museu Nacional do Brasil. Botanical and zoological collections were made from April through June, 1956, in the region of the headwaters of the Rio Tocantins in the state of Goiás. General accounts and itineraries are given in papers 1 and 2 of this series. Technical type specimens of new entities are deposited in the Museu Nacional in Rio de Janeiro.

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THE MACHRIS BRAZILIAN EXPEDITION

BOTANY: Pteridophyta

By C. V. Morton¹

The Pteridophyta collected by Expedition Botanist E. Yale Dawson were sent to the United States National Museum for determination. This collection, listed below, proved to contain several new records for the state of Goiás, so far as published accounts go. The region is not rich in Pteridophyta, and relatively little has been published on its species.

The collections are cited by Dawson's field numbers. The corresponding localities can be found in the general account of the botany of the Expedition.² All of the materials, however, came from the region of the Chapada dos Veadeiros (nos. 14133-14815) or the region of the Serra Dourada and immediately north (nos. 14816-15236). The first set of specimens is in the herbarium of the Los Angeles County Museum. A partial second set is in the U. S. National Herbarium.

LYCOPODIACEAE

*Lycopodium alopecuroides* L. 14652
*Lycopodium carolinianum* var. meridionale (Underw. & Lloyd)
Nessel & Hoehne 14746
*Lycopodium cernuum* L. 14837

SELAGINELLACEAE

*Selaginella erythropus* (Mart.) Spring. 14849; 14850; 14927
Easily distinguished from other Brazilian species by the erect, red lower axes.

*Selaginella marginata* (Humb. & Bonpl.) Spring. 15066
*Selaginella simplex* Baker, ex. char. 14482
Apparently the only Brazilian species with dimorphic sporophylls, according to the treatment of Brazilian selaginellas by Alston (Fedde, Repert. Sp. Nov. 40: 303-319, 1936). Baker’s original plants were much smaller, and perhaps depauperate.

*Selaginella* sp. cf. *S. tenuissima* Fée 14767 Identified from description.

SCHIZAEACEAE

*Lygodium venustum* Swartz 14984; 15181

*Anemia* Swartz³

The highlands of Brazil are extremely rich in species of *Anemia*, and any expedition into the interior of this region is sure to be highly

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³The determinations and notes on this genus were provided by John T. Mickel, Department of Botany, University of Michigan, Ann Arbor, Michigan.
rewarding. Probably the most extensive collection in southeastern Brazil was made by Ynez Mexia in 1931 in the neighboring state of Minas Gerais, but few collections have been made in Goiás itself. Nearly two-thirds of the species of *Anemia* have been found in Brazil, and the great diversity of form within the genus is shown in Dr. Dawson’s collections, which include nine or, perhaps, ten species, and represent six different sections.

Several sections of the genus, such as the Tomentosae, Oblongifoliiæ, Hirsutae, and Phyllitides, are very problematic due to the great confusion in nomenclature and in the interpretation of subtle morphological differences. For this reason, many identifications must be tentative until more detailed studies on these groups can be completed. Such work is currently in progress.

*Anemia bunifolia* (Gardner) Moore 14588 Although most specimens of this species are from Venezuela, Colombia, and Matto Grosso, Brazil, there is no doubt of the identity of this one from Goiás. The architecture of the specimen is more regularly pinnate than usual, and the fertile fronds are more strict. It is interesting from a morphological standpoint in its intermediate manner of displaying its fertile and sterile fronds. The fronds of the species are typically entirely dimorphic, but this specimen is unusual in exhibiting several intermediate stages, from completely sterile, to fronds with fertile basal pinnae, to half or three-quarters fertile, to completely fertile.

*Anemia millefolia* Gardner 14712 An average specimen of this distinctive species. It has been collected before in Goiás (Ule 360 (UC). As in the preceding species, collections have been more frequent in Matto Grosso and farther north in Venezuela, Colombia, and Panama.

*Anemia anthrisejfolia* Schrad. 15111 This species is extremely variable and widespread, ranging from northern Mexico to Argentina. The specimen is a perfect match of *Rosenstock* 18344 (US) from Goiás, and closely resembles other specimens from southeastern Brazil and Uruguay.

*Anemia fulva* (Cav.) Swartz 14475; 15115 In cutting and texture these two specimens closely resemble several others from this region of Brazil: *Chase* 11433 (US) from Goiás, and *Chase* 9254.5 (US), *Chase* 10629 (US), *Macedo* 2334 (US), and *Regnell* 1480 (US) from Minas Gerais.

*Anemia tenella* (Cav.) Swartz 14250; 14427 The extremely fine dissection of the pinnae and the apparently limited range (southeastern Brazil) suggest that this taxon be upheld as a distinct species. However, with further study it may prove to be a variety of *A. hirsuta*, as was suggested by Baker (Hooker and Baker, Synopsis Filicum p. 433, 1868).

*Anemia Oblongifolia* (Cav.) Swartz 14268; 14572; 14713; 14714; 15114 Collections 14714 and 15114 are much smaller than
the rest, both having fronds one to four centimeters long. From a comparison with juvenile and dwarfed forms of *A. oblongifolia*, these appear merely to be depauperate.

*Anemia pastinacaria* Moritz 14737 Goiás is near the southern limit of the range of this species; the majority of collections come from Central America and the West Indies, and a few from Colombia, Venezuela, Peru, Bolivia, and Brazil. Although one of the fronds somewhat resembles *A. oblongifolia*, characters of the pinnae and spores distinguish it from that species.

*Anemia ouropretana* Christ 14332 This specimen is a good example of the species. It is apparently endemic to southeastern Brazil, for all previous specimens have been collected in Minas Gerais by Damazio and Mexia.

*Anemia phyllitidis* (L.) Swartz 14413; 14889; 14928 It is not surprising to find this species among the collections since it is probably the most widespread species of *Anemia* in America. The pinnae are rather narrow in these specimens, but the species as a whole is extremely variable.

*Anemia sp. nov.? 15180 This specimen is definitely related to the *A. phyllitidis* group in having reticulate venation, but its extremely narrow pinnae (0.5 by 3.5 cm.) are distinctive. The somewhat rounded apices of the pinnae suggest *A. tweediana* of Uruguay and northern Argentina, although some specimens of the West Indian *A. underwoodiana* and juvenile forms of *A. phyllitidis* show the same condition. The pinnae are much narrower than any found in *A. tweediana*, and even taking into consideration the extreme variation of *A. phyllitidis*, there are no specimens that I have seen with such slender pinnae. A detailed study of the entire complex must be undertaken before the identity of this specimen can be determined.

GLEICHERNIACEAE

*Dicranopteris flexuosa* (Schrader) Underw. 14206

*Gleichenia pennigera* (Mart.) Moore 14656 I am tentatively following Holttum (Reinwardtia 4: 257-280. 1957) in regarding the genus *Sticherus* as not generally separable from *Gleichenia*.

HYMENOPHYLLACEAE

*Trichomanes pellucens* Kunze 14738

*Trichomanes pinnatum* Hedwig 14269; 14869a

CYATHEACEAE

*Alsophila paleolata* Mart. 1463 A collective species as currently recognized.

*Alsophila villosa* (Humb. & Bonpl.) Desv. 14790

*Cyathea sternbergii* Pohl 14968
POLYPODIACEAE

Adiantopsis radiata (L.) Fée 14501; 14506
Adiantum delicatulum Mart. 14925
Adiantum intermedium Swartz 14335; 14530; 14929
This species has been, and still is, somewhat dubious. The specimens cited agree with a photograph of the type in the herbarium at Stockholm.

Adiantum poiretii Wikstr. 15113 Probably the first record from Goiás of this widely distributed species.
Adiantum serrato-dentatum Willd. 14868; 14869
Adiantum sinuosum Gardner 15112; 14873 (?)
Asplenium formosum Willd. 14503

Bakeropteris pinnata (Kaulf.) Kuntze (Cassebeera pinnata Kaulf.; Pellaea pinnata Pranil) 14711 Probably known previously only from Minas Gerais. The ultimate generic disposition of this species remains to be determined. It has been considered allied to Pellaea. Cf. Tryon, Contr. Gray Herb. 143:67. 1942.

Blechnum asplenioideae Swartz 14492; 14573; 15067
Blechnum brasiliense Desv. 15105
Blechnum fraxineum Willd. 14573a Theoretically differs from B. occidentale and its allies in having a conform terminal pinna, but there are intermediate conditions in which it is difficult to decide if the apex is conform or pinnatifid. The present collection is one of these uncertain intermediates.

Blechnum imperiale (Fée & Glaziou) Christ ? 14665
This collection is slightly different from collections from Rio de Janeiro and Minas Gerais. Further study might show it to be separable. It is a Brazilian endemic.

Blechnum lanceola Swartz 14739
Blechnum occidentale L. 14251; 14334; 14861; 14891; 14924
Blechnum regnellianum (Kunze) C. Chr. 14744 Perhaps new to Goiás. A Brazilian endemic.

Ctenitis deflexa (Kaulf.) Copel. 14932
Dorystoperis ornithopus (Mett.) J. Smith 14589 The only collection previously known from Goiás is Ule 798 (p.p.) from Serra Dourada, the type of D. ornithopus var. pygmaea Brade, which is not considered by Tryon (Contr. Gray Herb. 143: 29. 1942) to be separable from the typical variety.

Dryopteris meniscioides var. conferta (Kaulf.) Morton 14893
Elaphoglossum burchelli (Baker) C. Chr. 14507 The determinations of elaphoglossums must be considered tentative, pending a revision of the genus.

Elaphoglossum dusenii Christ 14574
Elaphoglossum glabellum J. Smith 14741
Elaphoglossum macahense (Fée) Rosenst. ? 14508
Elaphoglossum scalpellum (Mart.) Moore 14359; 14477
Lindseaea guianensis (Aubl.) Dryand. subsp. lanceastrum Kramer 14870; 14866 This is the common subspecies in Brazil, the subspec.
guianensis being restricted to Amazonas. It has been collected once
previously in Goiás, at Sucuri, Rio das Femeas, Luetzelburg 13749a.
Pityrogramma calomelanos (L.) Link 14651; 14987
Polypodium aureum L. 14333; 14766
Polypodium latipes Langsd. & Fisch. 14683
Pteridium aquilinum var. arachnoideum (Kaulf.) Herter 14529
Pteris quadriaurita Retz. 14985; 14986
Thelypteris angustifolia (Willd.) Proctor 14930 This
specimen from deep forest along the Ribeirão Cristalino, 25 km. east of
Formoso, Serra Dourada, Goiás, is a new record for Brazil. For distribution

Thelypteris opposita (Vahl) Ching var. rivulorum (Raddi) Morton,
comb. nov.
Polypodium rivulorum Raddi, Plant. Bras. 1: 23, pl. 35. 1825.
Dryopteris opposita var. rivulorum C. Chr. ex Rosenst., Hedwigia
46: 120. 1906.
14497; 14939 The variety is characterized by Christensen

Thelypteris salzmanni (Fée) Morton, comb. nov.
Meniscium salzmanni Fée, Gen. Fil. 223. 1853.
65: 357. 1938.
14493 Another collection of this alliance, perhaps different,
is 14931.
THE MACHRIS BRAZILIAN EXPEDITION

No. 2. Botany: General, by E. Yale Dawson.
No. 4. Botany: The Lichens, by Carroll W. Dodge.
No. 5. Botany: Cyanophyta, by Francis Drouet.
No. 6. Botany: A New Mint from Goiás, by Carl Epling.
No. 12. Entomology: General; Systematics of the Notonectidae (Hemiptera), by Fred S. Truxal.
No. 17. Botany: Phanerogamae, Bromeliaceae and other smaller families, by Lyman B. Smith.
No. 23. Botany: Phanerogamae, Alstroemeriaceae and other families, by Lyman B. Smith and collaborators.
No. 30. Botany: Phanerogamae, Amaranthaceae and other families, by Lyman B. Smith and collaborators.
No. 33. Ornithology: Two new birds from Central Goiás, Brazil, by Kenneth E. Stager.

OTHER SUBJECTS

No. 9. A New Species of Passerine Bird from the Miocene of California, by Hildegardre Howard.
No. 15. Marine Algae of the Pacific Costa Rican Gulfs, by E. Yale Dawson.
No. 16. A Classification of the Oscines (Aves), by Jean Delacour and Charles Vaurie.
No. 19. A New Race of the Pocket Gopher Geomys bursarius from Missouri, by Charles A. McLaughlin.
No. 20. Further Bird Remains from the San Diego Pliocene, by Loly Miller and Robert L. Bowman.
No. 25. Miocene Sulids of Southern California, by Hildegardre Howard.
No. 27. Marine Algae from the 1958 Cruise of the Stella Polaris in the Gulf of California, by E. Yale Dawson.
No. 29. Quaternary Animals from Schuiling Cave in the Mojave Desert, California, by Theodore Downs, Hildegardre Howard, Thomas Clements and Gerald A. Smith.
No. 31. Late Pleistocene Invertebrates of the Newport Bay area, California, by George P. Kanakoff and William K. Emerson.
No. 34. A new Giant Water Bug from Mexico, by Arnold S. Menke.