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## Distribution of Pteridophytes in Iowa

By TOM S. COOPERRIDER

In 1954 and the early part of this year, in connection with a general study of the pteridophytes of Iowa (1955), the writer made dot distribution maps of the species. The maps were based upon specimens from the herbaria of Iowa State College, Iowa State Teachers College, Grinnell College and the State University of Iowa. The nomenclature and the treatment of the species followed generally that of the New Britton and Brown Illustrated Flora (Gleason, 1952).

If the fern families recognized by Copeland (1947) are adopted, there are twelve families of pteridophytes known to occur in Iowa. (The genera of four of these: Pteridaceae, Aspidiaceae, Aspleniaceae and Polypodiaceae have traditionally been included in the Polypodiaceae.) The families with the number of genera and species in each are listed below.

	No. of Genera	No. of Species
Lycopodiaceae	1	4
Selaginellaceae	1	1
Isoetaceae	1	1
Equisetaceae	1	6
Ophioglossaceae	2	5
Osmundaceae	1	3
Pteridaceae	5	5
Aspidiaceae	9	20
Aspleniaceae	2	2
Polypodiaceae	1	1
Marsileaceae	1	2
Salviniaceae	1	1
Total	26	51

These plants occupy a variety of habitats. *Cheilanthes feei* Moore is found on dry, dolomitic limestone of the northeastern counties; *Cryptogramma stelleri* (S. G. Gmel.) Prantl on cool, moist limestone ledges; *Polypodium vulgare* L. on sandstone outcrops; *Selaginella rupestris* (L.) Spring on sandy alluvium and dunes and sandy talus from sandstone and quartzite outcrops; *Equisetum laevigatum* A. Br. on sandy, prairie soils and railroad ballast; *Thelypteris palustris* Schott and *Dryopteris cristata* (L.) Gray in marshy or boggy places; and *Botrychium virginianum* (L.) Sw., among many others, in rich woodlands.

Several noteworthy distribution patterns are shown by the maps. A few species are common throughout the state—*Equisetum arvense* L., *E. laevigatum*, *E. hiemale* L., *Botrychium virginianum*,

*Adiantum pedatum* L., *Athyrium filix-femina* (L.) Roth and *Cystopteris fragilis* (L.) Bernh. *Onoclea sensibilis* L. and *Matteuccia struthiopteris* (L.) Todaro have been collected from all but the westernmost tiers of Iowa counties.

Another group of species occurs with some frequency in the northeastern half of the state, their westernmost stations being, with few exceptions, along the Des Moines River from Keosauqua to Fort Dodge, or near the Iowa River in Hardin County. Among these are *Lycopodium lucidulum* Michx., *Osmunda claytoniana* L., *Cryptogramma stelleri*, *Pellaea atropurpurea* (L.) Link var. *bushii* Mackenzie, *Pteridium aquilinum* (L.) Kuhn, *Athyrium thelypteroides* (Michx.) Desv., *Cystopteris bulbifera* (L.) Bernh., *Dryopteris goldiana* (Hook.) Gray, *D. spinulosa* (O. F. Muell.) Watt, *Thelypteris hexagonoptera* (Michx.) Weatherby, *T. palustris* and *Camptosorus rhizophyllus* (L.) Link; this last species, however, is also known from Fremont and Harrison counties on the western border.

Two other species, *Selaginella rupestris* and *Polypodium vulgare*, have ranges similar to those of the species above, but have also been collected in Lyon County. Two ferns growing for the most part in southeastern counties of Iowa are *Polystichum acrostichoides* (Michx.) Schott and *Asplenium platyneuron* (L.) Oakes. *Equisetum fluviatile* L. grows mainly in the north-central "lake district", but also occurs in eastern counties.

Several species occur quite rarely in the state, some of them not represented by any recent collections. Pfeiffer (1922) reports that *Isoetes melanopoda* Gay & Durieu was collected near Clinton, Iowa, in 1863 by Vasey. It has not been collected in Iowa since. Specimens of *Thelypteris phegopteris* (L.) Slosson were last collected by Macbride and Reppert from Delaware and Muscatine counties, respectively, near the end of the last century. *Marsilea mucronata* A. Br. was collected only once in the state, in Lyon County by Shimek in 1899.

*Equisetum pratense* Ehrh., however, has been collected since 1952 from several eastern counties: Winneshiek, Clayton, Dubuque and Muscatine. *Botrychium dissectum* Spreng. has been collected recently from Johnson County by Drexler and in Washington County by Wagenknecht. On field trips led by Dr. Robert F. Thorne in the summer of 1954, two new species of the Ophioglossaceae were found in Linn County. These were *Botrychium simplex* E. Hitchcock and *Ophioglossum vulgatum* L. This is to be reported, along with the Iowa distribution of all members of this family, in another paper by the writer (in press).

Herbarium specimens of *Osmunda cinnamomea* L. were discovered from three counties, Jackson, Muscatine and Jasper, that from the last a somewhat doubtful, sterile specimen. *Athyrium pycnocar-*

*pon* (Spreng.) Tidest., previously known only from northeastern Iowa, was collected recently in Washington County by Wagenknecht. *Marsilea quadrifolia* L., an introduced plant, has become well established at Lake Keosauqua and was lately collected there. Recent collections of other rare pteridophytes have been reported by Thorne (1954).

Our knowledge of ranges of the smallest Iowa pteridophytes is probably quite incomplete. The conspicuous aspect of most pteridophytes, however, calls to them the attention of the collector of vascular plants, and the true limits of their ranges in Iowa are doubtless near those currently known.

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