

1941

EQUISETA OF THE DOUGLAS LAKE REGION

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During the summer of 1941, while a student at the University of Michigan Biological Station, Cheboygan County, Michigan, I had the pleasure of collecting Equiseta from many localities in the counties adjacent to the laboratory. Although most intense work was done in the vicinity of the camp, trips were made to spots in Emmet, Cheboygan, Grand Traverse, Presque Isle, Marquette, Alger, counties. To Dr. Steere I am greatly indebted for the opportunity of making many of these trips.

Although Gates and Ehlers () listed the species of the genus Equisetum found in the region, it was deemed of value to students of local flora to have a more completely annotated list the nomenclature of which was brought more up to date. For that reason I present these data in accordance with the nomenclature outlined by Schaffner (19).

The specimens in the station herbarium were inspected, and these records are added to the data presented in order to make the work as complete as possible. These as well as my own records and those of Gates and Ehlers are summarized in table I.

Of all the collecting grounds in the region, Reese's Bog, enclosed Thuja-Picea ^{Spruce} bog, proved to be most fertile. Throughout

this dense forest small openings in the canopy permitted veritable
seas of the E. sylvaticum and occasionally E. arvense to develop. The
E. scirpoides was very abundant along the road particularly on the
sandy burn, but occurred quite regularly in the forest. Toward the
shore of Burt Lake where the bog became more wet isolated specimens
of E. fluviatile and E. palustre are to be found. Just beyond the
forest on the beach stand abundant specimens of E. nelsoni forming
a significant portion of the sand society. Here, then, within an
area of less than a quarter of a square mile are to be found six
species,—a haven for the collector of this group.

At Indian River is a very remarkable stand of E. fluviatile.
In fact, the entire series of piers at which the row boats are
kept is grown up with the very large well branched specimens of
this horsetail.

At Marl Bay on Douglas Lake the E. fluviatile shows an
interesting sequence from the entirely unbranched form occurring
in the littoral and along the densely vegetated shore, to the
well-branched form occurring in the aspen grove behind the beach
ridge. It was here that the ecology classes first noticed that
the horizontal rhizomes of E. fluviatile are quite elastic and
defy breaking by mere manual stretching.

In the light of the discovery that the rhizomes of E. fluviatile
were elastic, I investigated the underground portions of a number
of the other species. Although none showed the great tensile strength
demonstrated by the first, several did exhibit this quality (table II).

Table I. Collection localities of species of Equisetum having been deposited in the station herbarium (h) or collected by me during this summer (w).

Species	Locality	Collection Method
<i>E. arvense</i>	Jack Pines, Cheboygan County.	w
	Hermit's, Cheboygan County.	w
	Sturgeon Bay, Emmet County.	w
	Pictured Rock, Alger County.	w
	Pine Point, Douglas Lake	w
	Reese's Bog, Cheboygan County.	w
	Oscil Bay,	w
	Ingle side, Douglas Lake.	w
	Ocqueoc Lake, Presque Isle Co.	w
	Mud Lake, Hardwoods Cheboygan Co.	h
	Gorge, Burt Lake	h
	Big Stone Bay, Emmet County	h
	Burt Lake	h
	Maple River, Cheboygan Co.	h
	Alansa	h
	Mackinac Island	h
<i>E. fluviatile</i>		
<i>E. kansanum</i>		
<i>E. laevigatum</i>		
<i>E. nelsoni</i>		
<i>E. palustre</i>		
<i>E. praealtum</i>		
<i>E. scirpoides</i>		
<i>E. sylvaticum</i>		

<i>E. arvense</i>	slight elasticity, easily broken
<i>E. fluviatile</i>	quite elastic, difficult to break
<i>E. kansanum</i>	fairly elastic, easily broken
<i>E. laevigatum</i>	fairly elastic, easily broken
<i>E. nelsoni</i>	not elastic, easily broken
<i>E. palustre</i> f	not elastic, very fragile
<i>E. praealtum</i>	fairly elastic, difficult to break
<i>E. scirpoides</i>	slightly elastic, easily broken
<i>E. sylvaticum</i>	not tested

Table II. Relative elastic qualities of the rhizomes of the various *Equiseta* of the Douglas Lake region.

The occurrence of certain species along regularly used roads seemed somewhat unusual. Perhaps as to be expected, the *E. arvense* was very commonly a roadside form, but I was somewhat more surprised at the frequency of *E. scirpoides* in the sandy burms. However, I was downright amazed to find the center lane of a road paralleling Burt Lake west of Reese's Bog to be almost a pure and very well-developed stand of *E. sylvaticum*. Several patches of *E. arvense* occurred among the wood horsetail in this road. The most unique of all was the presence of *E. palustre* quite commonly in the sand-gravel burm at the Hermit's. This plant was quite different from the usual isolated form by being densely tufted and much smaller in stature, although mature and bearing strobili.

Summary

1. The present paper is based on work done at the University of Michigan Biological Station, Cheboygan County, Michigan, during the summer of 1941.
2. Collections of *Equiseta* were made in Emmet, Cheboygan, Presque Isle, Grand Traverse, Marquette, and Alger counties.
3. Nine species of *Equiseta* were recorded including *E. arvense*, *E. fluviatile*, *E. kansanum*, *E. laevigatum*, *E. nelsoni*, *E. palustre*, *E. praealtum*, *E. scirpoides*, *E. sylvaticum*.

4. The elastic qualities of the rhizomes of various species were investigated and in general E. fluviatile was the most elastic, E. kansasum, E. laevigatum, and E. praesaltum being fairly elastic, E. arvense and E. scirpoides being slightly elastic, and E. nelsoni and E. palustris being not elastic at all.
5. Examples of species growing on the actual material of roads included E. arvense, E. scirpoides, E. sylvaticum, and E. palustris.

LITERATURE CITES

Gates, F.C. and J.H. Ehlers. An annotated list of the higher plants of the region of Douglas Lake, Michigan. Mich. Acad. Sci, Arts, Let. 4: 183-284

Schaffner, J.H. 1932(?). A diagnostic Key to the species of Equisetum.

University of Michigan Biological Station
Cheboygan, Michigan.
August 20, 1941.

Dr. Steere
University of Michigan Biological Station
Cheboygan, Michigan.

Dear Dr. Steere:

The present paper entitled Equiseta of the Douglas Lake Region is offered in partial fulfillment of the requirements of Botany 196, Advanced Systematic Botany. It is the result of several years' association with a dynamic character and authority in this field, an intense interest in these forms, a chance to collect and study, and the fact that the published records to date are established with an old and perhaps confused nomenclature. I wish to express my gratitude to the station for an opportunity to inspect the herbarium material.

Beyond this work in Equiseta, I have accompanied the Beginning Systematic course on all field trips, and become acquainted with the plants, somewhat over 250 species, which they recorded. Of these approximately one hundred were new to me. Beyond this, I made collections of many plants which were turned over to J.C. Myers, Harval; and a number of Orchidaceae and ecologically significant plants were retained for my own herbarium. These include some seventy species beyond those studied in course work. Further, a specialized collection of Pteridophytes including about thirty-five sheets was made on the Upper Peninsula expedition including the following species:

Polypodium virginianum
Phegopteris polypodioides Fee
P. Dryopteris (L) Fee.
Adiantum pedatum L.
Pteris aquilina L.
Cryptogramma Stelleri (Gmel.) Prantl.
Asplenium Trichomanes L.
Athyrium felix-femina (L) Bernh.
Polystichum Lonchitis (L) Roth.
P. Braunii (Spencer) Fee.
Dryopteris Thelypteris (L) Sw.
Dryopteris marginale (L) Sw.
D. spinulosum (O.F. Miller) Sw.
Cystopteris bulbifera (L) Bernh.
C. fragilis (L) Bernh.
Woodsia ilvensis (L) R.Br.
Onoclea sensibilis L.
O. struthiopteris (L) Hoffm.
Osmunda regalis L.
Botrychium virginianum (L) Sw.
Equisetum laevigatum A.Br.
E. scirpoides Michx.
E. arvense L.
Lycopodium lucidulum Michx.

Lycopodium clavatum L.
L. obscurum L. var. dendroideum (Michx.) D.C. Eaton.
Selaginella rupestris (L) Spring.

The author wishes to express his appreciation for the opportunity of taking this course and furthering his acquaintance with a flora strikingly new and interesting to him.

Sincerely,

R. D. Wood.

Richard D. Wood

Biological Station