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Adder's-tongue Fern, *Ophioglossum vulgatum* L., in Northwestern Ontario

Abstract. A general discussion of the Ontario distribution of *Ophioglossum vulgatum* L. is given in relation to the first collection of this species in the Thunder Bay District, northwestern Ontario. The population is located in a flush area on Mount McKay. The special local climate and enriched soil of the flush has resulted in a rich flora (86 species in 0.11 km²), which contains a number of species more characteristic of regions to the south.

Adder's-tongue fern, *Ophioglossum vulgatum* L. var. *pseudopodium* (Blake) Farwell, was first collected in northern Ontario in 1873, at Rainy River by G. M. Dawson. This collection by Dawson is the most westerly in Canada, as Scoggan (1957) and Boivin (1967) do not report this species from Manitoba or the adjacent Prairie Provinces, and *O. vulgatum* is absent even in British Columbia, although it is present in the state of Washington (Taylor 1970)*and also in Alaska (Hultén 1968). In northern Ontario, in addition to the Dawson record, *O. vulgatum* has been collected at Timagami; at Lanark Lake (Cochrane District) in 1954 by Baldwin (1958); at Agate Bay in 1966 by Soper; and has been reported from Quetico Provincial Park by Walshe (1972). While it is not common in southern Ontario and adjacent Quebec (Marie-Victorin 1964), a number of records have been made including mass occurrences in the Ottawa District (Greenwood 1967). The first collection of *O. vulgatum* for Thunder Bay District was made in 1967 (P.B.-E. No. 1553 held at Lakehead University). This first record for the district was reported by Hartley (1968). *Ophioglossum vulgatum* is absent in nearby Cook County, Minnesota (Butters and Abbe 1953), but Tyron (1954) and

Lakela (1965) list it in northern Minnesota although not within 150 kilometers of the Ontario border. Also, Hagenah (1966) and Wagner (1971) show adder's-tongue fern as not yet collected from nearby Isle Royale in northern Michigan.

The 1967 Thunder Bay record was of interest because of the rarity of the species in the area, and therefore some studies of this population were undertaken in the period May to September 1969 (G. V. Hess. 1970. Description of a unique flush community on Mount McKay. B.Sc. thesis, Lakehead University, Thunder Bay, Ontario. 66 pp.). The population is located on the south side of Mount McKay (48°20' N, 89°15' W), Fort William Indian Reserve No. 52, at an elevation of about 340 meters (1100 feet).

The immediate locale is a small unique flush area about 75 meters by 15 meters in size. The area is in a valley sheltered by cliffs and steep inclines of 70 to 120 meters on three sides and fully open only to the east, facing Lake Superior. Casual phenological observations indicate a warmer-than-normal local climate in the enclosed area. This is borne out by some of the vegetation of the valley. A number of species not common in the Thunder Bay area are found here, such as *Equisetum variegatum* and *Botrychium dissectum* in the flush area, and *Rhus radicans* and *Parthenocissus quinquefolia* on nearby dry south-facing slopes. Just to the west of the flush area is possibly the most northerly stand of *Acer saccharum* in the Thunder Bay area, which has as part of its herb layer *Polystichum braunii*. The vegetation generally is part of the transition zone between the Boreal Forest and the Great Lakes - St. Lawrence Forest. Because the area is ecotonal and because there is great topographical variation (from vertical cliffs to valleys) near the study area,

**O. vulgatum* has been collected on Vancouver Island (personal communication from T. M. C. Taylor).

quite a number of communities are present. Common tree species are *Populus tremuloides*, *P. balsamifera*, *Acer spicatum*, *Abies balsamea*, *Picea glauca*, *Pinus divaricata*, and *Pinus strobus*.

The surrounding slopes alter the local climate and they also provide the drainage area for the water that constantly moves through the flush area. The water itself is provided by the rather evenly distributed precipitation of about 7–10 centimeters per month during the growing season, out of an annual precipitation of 76.5 centimeters. The nutrient enrichment is a leachate from surrounding soils, and nutrients from the shale that makes up part of the Mount McKay mesa. The mesa is composed of hard diabase sills and softer shales; the decomposed shales, which have readily available nutrients, form the clay fraction of the soil. The soil of the flush area is immature and has a thin layer of poorly developed humus on the top, underlain by a fine light brown clay. Chunks of shale of various diameters are mixed with the clay. Ninety-two soil samples show the mean pH to be 6.3 and the mean organic content to be 13.0%.

Obvious signs of man-made disturbance are present. There is a well-used trail leading to the top of the mountain and traversing the flush area. The trail is used for foot travel in the summer and for snowmobiles in the winter. There is also the remains of an old corduroy road under part of the east end of the flush area. Apparently a road went through the whole flush area at one time. This road may have been used for purposes of logging and also perhaps for quarrying, as blasting has taken place in some of the surrounding rock areas. Therefore disturbance has taken place in the past and is continuous up to the present.

A quadrat 75 × 15 meters was established in the flush area and systematically investigated to establish cover and distribution of vascular plants and bryophytes. A total of 86 vascular plants and 11 bryophytes was recorded. The species encountered are as follows, with the vascular plants according to Fernald (1950), and the bryophytes according to Watson (1968); a number of adventives were present and are indicated with an asterisk (*): Bryophytes—*Tortella tortuosa*, *Mnium cuspidatum*, *M. medium*, *Aulacomnium palustre*, *Climacium dendroides*, *Thuidium delicatulum*, *Hygroamblystidium* sp., *Drepanocladus revolvens*, *Heterophyllum haldanianum*, *Marchantia polymorpha*, and *Blasia pusilla*; Vascular Plants—*Equisetum arvense*, *E. hyemale*, *E. variegatum*, *Botrychium dissectum*, *B. virginianum*, *Ophioglossum vulgatum*, *Osmunda claytoniana*, *Pteritis pensylvanica*, *Onoclea sensibilis*, *Athyrium filixfemina*, *Abies balsamea*, *Typha latifolia*, *Glyceria striata*, *Poa saltuensis*, *Calamagrostis canadensis*, **Agrostis scabra*, **Phleum pratense*, **Muhlenbergia mexicana*, *Scirpus rubrotinctus*, *S. atrocinctus*, *Carex stipata*, *C. bebbii*, *Juncus tenuis*, *J. brevicaudatus*, *Lilium philadelphicum*, *Clintonia borealis*, *Streptopus roseus*, *Habenaria hyperborea*, *Salix lucida*, *S. rigida*, *S. discolor*, *Populus tremuloides*, *P. balsamifera*, *Betula papyrifera*, *Alnus*

crispa, *A. rugosa*, *Asarum canadense*, *Stellaria longifolia*, **Ranunculus acris*, *Aquilegia canadensis*, *Cardamine pensylvanica*, *Parnassia palustris*, *Ribes hirtellum*, *Pyrus decora*, *Amelanchier spicata*, *Fragaria vesca*, *Geum aleppicum*, *G. macrophyllum*, *Rubus parviflorus*, *R. idaeus*, *Prunus pensylvanica*, **Trifolium hybridum*, *Acer spicatum*, *Impatiens capensis*, *Parthenocissus quinquefolia*, *Viola selkirkii*, *V. pallens*, *V. incognita*, *V. renifolia*, *Epilobium angustifolium*, *E. glandulosum*, *Circaea alpina*, *Aralia nudicaulis*, *Osmorhiza obtusa*, *Cornus stolonifera*, *Mertensia paniculata*, **Plantago major*, *Galium triflorum*, *Diervilla lonicera*, *Sambucus pubens*, *Solidago missouriensis*, *S. canadensis*, *S. graminifolia*, *Aster macrophyllus*, *A. puniceus*, *A. lateriflorus*, *A. umbellatus*, **Erigeron philadelphicus*, *Anaphalis margaritacea*, *Achillea millefolium*, **Chrysanthemum leucanthemum*, *Cirsium muticum*, **Sonchus arvensis*, *Lactuca biennis*, *Prenanthes alba*, and **Hieracium florentinum*.

In the quadrat *Salix* spp., *Alnus* spp., *Diervilla lonicera*, and *Rubus parviflorus* are the dominant shrubs. The major herb species is *Equisetum arvense* with the important bryophyte species being *Marchantia polymorpha* and *Mnium* spp.

Ophioglossum vulgatum is present in seven stands well distributed through the flush area (for distribution map see Hess (1970)). There are at least 70 individuals, of which at least 47 were bearing sporangia. Probably more plants are present too, as *O. vulgatum* is very inconspicuous and the herbaceous vegetation in the flush area is very dense.

Finally, there is a significant population of adder's-tongue fern on Mount McKay but its future is not completely certain because of the proximity of the population to a well-used trail. It is hoped, however, that this interesting community is able to persist into the future.

We thank The Fort William Indian Band for their co-operation during the course of this study, Mr. D. R. Lindsay for noting and indicating the adventive species in the plant species list, Mr. C. E. Garton for bryophyte determinations and assistance with some vascular plant determinations.

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Blackpoll Warbler on Cornwallis Island, Northwest Territories

On 23 May 1971 a female Blackpoll Warbler, *Dendroica striata* (Forster), was observed near the laboratory of the Char Lake Project at what is known as the "South Camp" at Resolute Bay, Cornwallis Island, Northwest Territories, 74°41' N, 94°53' W. The bird appeared to be exhausted, and periodically sat with its head under its wing for several seconds. It was possible to approach the bird quite closely and several 35-millimeter color slides of it were taken. An attempt was made to capture the bird by advancing forward when it put its head under its wing, and I was able to approach within a foot of it. Unfortunately as I was about to grasp the bird in my hand a noise from another member of the party frightened it, and it flew behind some buildings. A thorough search of the area was to no avail and the bird was not seen again.

Snyder (1957) states that this species is characteristically subarctic and only rarely occurs much farther north than the tree-line. He notes a sighting recorded from the lower Firth River in the Yukon and a nesting record at Tununuk, north of the tree-line in the Mackenzie Delta.

Godfrey (1966) states that the species breeds as far north as Old Crow in the Yukon, the northern Mackenzie Delta, Fort Anderson, Artillery Lake, and the Thelon River in the Northwest Territories; Churchill, Manitoba; Fort Severn in northern Ontario; northern Quebec and Labrador. The American Ornithologists' Union (1957) lists the species as "accidental in Greenland," having been recorded at Narssarmiut, Godthaab, and Isua.

This sighting on Cornwallis Island would therefore appear to be the northernmost occurrence of this species to date, since it is several hundred miles north of any previous record.

I thank Dr. J. D. Rising for his help in identifying this species and for encouraging me to publish this record. Thanks are also due to Doctors W. E. Godfrey of the National Museum of Natural Sciences, J. C. Barlow and R. O. James of the Royal Ontario Museum, who identified the bird as a female Blackpoll Warbler from the color slides I had taken.

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