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FIELD BOTANY IN ONTARIO

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Front page illustration: *Phascum cuspidatum*, a common spring moss of garden paths and disturbed soils, by R. Muma

NEWS

FAREWELL AND THANKS

Finally, in January 1988, the concluding issue of Volume 4 (dated December 1986; issued February 1988) is mailed to our readers. I regret that it has been nearly a year since the last issue (Vol. 4, No. 3) was mailed in March 1987.

Friends who suggested that it would not be possible to keep The Plant Press on schedule and raise a family were correct! Our 2-year-old is a whirling dervish of energy and activity. In 1987 we moved to a new (for us) house, carting what seemed like half the books and papers in the average city library. I have also returned to work on my Ph.D. project - the taxonomy of a particularly troublesome group of species in the genus *Carex*. It is important that I finish that work soon and so regretfully I must relinquish my position as Editor.

The Board of Directors of The Plant Press Inc. met in August 1987 and it was agreed that Jeff Kaiser would become Editor after I had completed Volume 4. All were concerned that The Plant Press was getting behind schedule but felt that readers would feel more confident receiving an issue with an explanation rather than a letter confirming our difficulties. I assured the other Board members that the final issue for Vol. 4 was imminent: I regret that it was not so imminent as I had hoped! My apologies to both readers and authors that it has taken so long to get this issue into your hands. After 5 years of so many letters and telephone calls requesting others to respect the deadlines, I am the one who has stalled production.

My years as Editor have been exciting and gratifying. Every letter of encouragement or inquiry, every new subscription, every new manuscript has thrilled me with the sense that there is a "brotherhood" of interested and keen field botanists who share my interest in the plants of Ontario. The success of this enterprise has been a source of great satisfaction and I will continue to do what I can to ensure that The Plant Press enjoys a long and successful existence.

In conclusion, I extend my sincere thanks to all those who have aided and assisted in getting The Plant Press going; to those of you who have served as formal or informal editors and manuscript reviewers; to those who have submitted material and then seen it tugged and pulled into a shape that it may not have had when you originally sent it in; to those who have submitted big or small "gems" that have gone into the journal with little more than a thorough proof-reading; to those who have faithfully sent in your renewal requests and helped finance this little enterprise; and to those who have demonstrated extraordinary faith and sent tax-deductible donations in addition to subscriptions.

Jocelyn Webber,
Retiring Editor

VOLUME 5 IN PREPARATION

The Plant Press has lost a year and there seems little point in trying to "make it up." We have decided to pick up where things stand presently and proceed from there. Thus Volume 5, No. 1, will be dated and issued in March 1988. We will follow the schedule established in the past to produce four numbers during the course of the year.

All readers who sent in subscriptions for 1987 will have those subscriptions carried forward to 1988. You will receive Vol. 5 which is already in the works. We have a considerable pile of old receipts that will be sent out either with this issue or under separate cover. Any donations received in 1987 will be acknowledged with official tax receipts.

I have every confidence that you will continue to be pleased with The Plant Press in the coming year. A few changes will be introduced in our style but I hope that they will add to readability and usefulness. We also have planned a five-year index to the contents of the journal and that should be a useful reference tool.

I hope that would-be authors will continue to send us material that is suitable for publication. Any questions about content may be addressed in a preliminary letter to the Editor at our mailing address. I hope I can serve The Plant Press as successfully as Jocelyn has.

Jeff Kaiser, New Editor

NOTES & REPORTS

THE OLDEST CANADIAN SPECIMEN IN A CANADIAN HERBARIUM ?

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In a recent publication, Brunton (1985) described what he believed to be the oldest Canadian specimen in a Canadian herbarium. When I read the article, it struck me that an exchange with the British Museum was arranged and that collections by the botanical giant Sir Joseph Banks had been received. Any collections of Banks would predate the activities of Masson in North America and the *Aralia racemosa* specimen of 1800.

Recently while examining material at the National Museum, a specimen of *Danthonia spicata* (L.) Beauv. (CAN 33746), with the label: "*Avena spicata* L., Arctic Nth Am, Sir Jos. Banks," as well as a specimen of *Festuca rubra* L. (CAN 37863), with the label: "*Festuca ovina*, Newfoundland, Sir J. Banks," were encountered. Both sheets are labeled "Ex Herbario Musei Britannici". These are undoubtedly from Banks famous 1766 voyage to Newfoundland and Labrador, recently documented by Lysaght (1971). These specimens predate the one by Masson by 34 years.

Clearly the herbarium of the National Museum is rich in historically valuable specimens. Other old specimens of Banks, Douglas and Richardson should come to light in the future.

References

- Brunton, D.F. 1985. Discovery of the oldest specimen of a Canadian plant in a Canadian herbarium. *Plant Press* 3(2):66-68.
Lysaght, A.M. 1971. Joseph Banks in Newfoundland and Labrador, 1766. His diary, manuscripts and collections. Univ. Calif. Press, Los Angeles. 512 pp. ●

FIRE MANAGEMENT IN PINERY PROVINCIAL PARK, GRAND BEND, ONTARIO

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Pinery Provincial Park has begun work on a fire management plan for the oak savanna forests as a result of the need to reestablish the natural fire cycle. The old "Smokey the Bear" thinking of putting out every fire because fires are "bad" is changing to accommodate the reality of fire as an integral part of ecosystem dynamics.

An added complication in the Pinery, is the 3.5 million trees (mainly white pine, but some red pine and other species) which were planted from 1957 to 1970 in order to enhance what was thought to be an environment degraded by logging and fire. The Department of Forests underplanted in the open oak savanna, open grassland and meadow environments. About 1,500 hectares were planted, 66% of the total area of Pinery Park. In some planted areas, the trees have now reached heights of 15 m, with well developed crowns forming a continuous canopy above and a thick mat of needle litter below. The response of understory shrubs and herbs has been dramatic, sometimes with complete elimination of the savanna flora. Considering the large areas of the park where planted pines are slowly maturing in the understory, the potential for a major change in the character of the park is present.

Areas where litter fires have recently occurred within oak savanna underplanted with pine are available for study. Based upon preliminary investigation, it is evident that the majority of planted pines are killed immediately; more light reaches the forest floor; and understory shrubs, herbs and grasses flourish. The environment has been returned to a condition similar to what existed prior to the establishment of the pines.

Having seen the effect of accidental burns, it is evident that a program of prescribed burns would eliminate the threat of planted pines creating a monoculture and would rejuvenate the remaining savanna vegetation. Further studies are underway to more precisely quantify the changes which have taken place following the accidental burns, to establish control plots in areas likely to be burnt, and to phase in a schedule of prescribed burns where needed in the Pinery Provincial Park. ●

ABERRANT FRUITS OF BLACK WALNUT (*Juglans nigra*)
FROM THE NIAGARA PENINSULA

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I have been putting off writing on the matter of aberrant black walnut fruits (Fig. 1), hoping to think of something clever to say on the matter. However, nothing remarkable is forthcoming. They were part of the contents of a bushel-basketful of black walnuts gathered in 1982 from several trees at several locations in the vicinity of Port Colborne, Regional Municipality of Niagara. For several years I tried to relocate the tree with the aberrant fruits without success. In the autumn of 1985 I found

another tree in the area with the majority of the nuts normal, but a small percentage of six-lobed nuts.

This phenomenon may not be very unusual in the Juglandaceae, as I have found a shagbark hickory (*Carya ovata*) with nuts exhibiting the same kind of aberration. In both cases, the additional membranes separating the 6 lobes add extra woody matter to the fruit and may reduce the space available for the seed tissue.

Having unloaded this quandry on others, I am ready to embark upon another season of botanizing in a new (to me) part of the world. Should my efforts bring any unusual fruits, I shall probably be in touch again. [Ed. note: Mr. Werenko recently moved to British Columbia from Port Colborne, Ontario.] ●

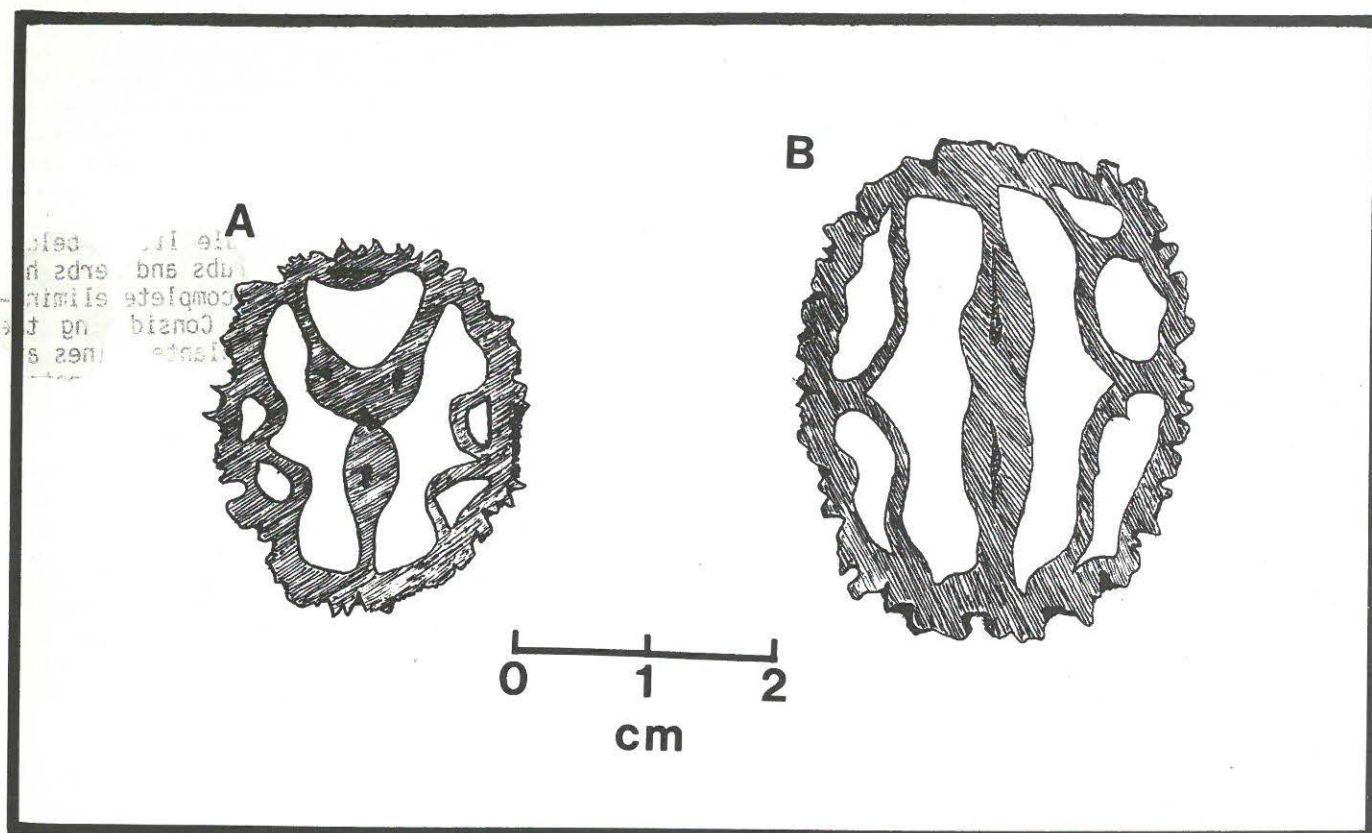


Figure 1. Abnormal (A) and normal (B) nuts of black walnut, outer husks removed. All specimens collected in the vicinity of Port Colborne, Regional Municipality of Niagara. Illustrated by John Graydon.

ADDITIONAL POPULATIONS OF *Eleusine indica* and
Tagetes minuta IN THE HAMILTON AREA

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The known distribution of *Eleusine indica* (L.) Gaertner (Poaceae; goose, wire or yard grass) in Ontario has been reviewed by Dore & McNeill (1980). Their map shows several populations in Essex and Kent Counties and isolated colonies in London, Toronto and Montreal. Their literature survey indicated that earliest reports of this grass in Canada were from Hamilton (in 1874) but its occurrence in this area has remained undocumented. Since field trips for the study of the inner-city flora were added to the Royal Botanical Gardens' educational program in 1985, I have observed *E. indica* established in north-central Hamilton along Wilson and Cannon Streets between Cathcart Street and East Avenue. Its habitats include lawns, in which it occurs as a weed; untended strips of land between sidewalks and fences, walls or streets; and crevices between streets and curbs. Documentation: Pringle 2565, 23 September 1986 (HAM, OAC).

Since reporting the discovery of *Tagetes minuta* L. (Asteraceae; wild marigold) as an addition to the naturalized flora of Ontario (Pringle 1986), I have found a large population of this species in a barley field and adjacent disturbed areas at Rock Chapel, Regional Municipality of Hamilton-Wentworth. This site is above the Niagara Escarpment and ca. 2.25 km NW of the Cootes Paradise population reported earlier. The Rock Chapel property is also owned by the R.B.G. but has been leased to a farmer. There is no history of the deliberate introduction of *T. minuta*. Because growth at this site is not delayed by spring water levels, some of the plants were considerably larger than the one illustrated in my previous paper, up to ca. 6 dm tall. This discovery supports my prediction that, as with many annual species, individual populations of *T. minuta* may come and go. The species is likely here to stay as a component of the Canadian flora. Documentation: Pringle 2564, 18 September 1986 (HAM, OAC).

References

- Dore, W.G. & J. McNeill. 1980. Grasses of Ontario. Res. Branch. Agric. Canada. Monogr. 26. 566 pp.
Pringle, J.S. 1986. *Tagetes minuta* L. (Asteraceae), an addition to the adventive flora of Canada. Plant Press 4:41-42. ●

DAVID DOUGLAS IN ONTARIO:
SEPTEMBER-OCTOBER 1823

Gerry Waldron, R.R. 1, Amherstburg, Ontario
N9V 2Y7

[Ed. note: A shorter version of this article appeared in *The Egret* in December, 1985.]

On 16 September 1823 David Douglas disembarked at Amherstburg, Ontario (Fig. 1) after a voyage of 60 hours from Buffalo, New York. Just 25 years old, he was on a trial collecting trip, a plant hunter's apprenticeship as it were, for the Horticultural Society of England. South-western Ontario was to be the farthest westerly extension of this trip which began in New York City. He was back in England by January 1824.

In 1823 Amherstburg was only 28 years old. Nuttall's (1818) *Genera of North American Plants* had been published five years earlier and was the most recent flora for the area. Douglas likely had a copy of this work because he had stopped in Philadelphia, where it was published, in his travels.

After breakfast on the 16th Douglas set out with a Mr. Briscoe of Amherstburg. Douglas noted in his journal, "This is what I might term my first day in America." This statement probably reflects the fact that he had been touring mainly the gardens and plant nurseries of the older, more settled east. Impressed by the primeval forest of the Amherstburg area he wrote, "The trees in the woods were of astonishing magnitude."

Douglas spent nine days collecting in Essex County, Ontario, before embarking at Amherstburg for his return to Buffalo on 25 September. Current names of plants reported in his journal (Douglas 1914) for this visit to Ontario are listed in Table 1. Several other plants reported or collected by Douglas during his Ontario trip appear in the text of a flora by Hooker (1840) which was published 17 years later (Tables 2 and 3, below).

Douglas's collection numbers for this period run from 1 to 57. He used a system of referring to unknown species by the number assigned on its first collection. Thus "Quercus 44" refers to an oak species first collected as specimen number 44. This set of collections is at Kew in Great Britain. Douglas's personal herbarium is partly at the British Museum and partly at Cambridge.

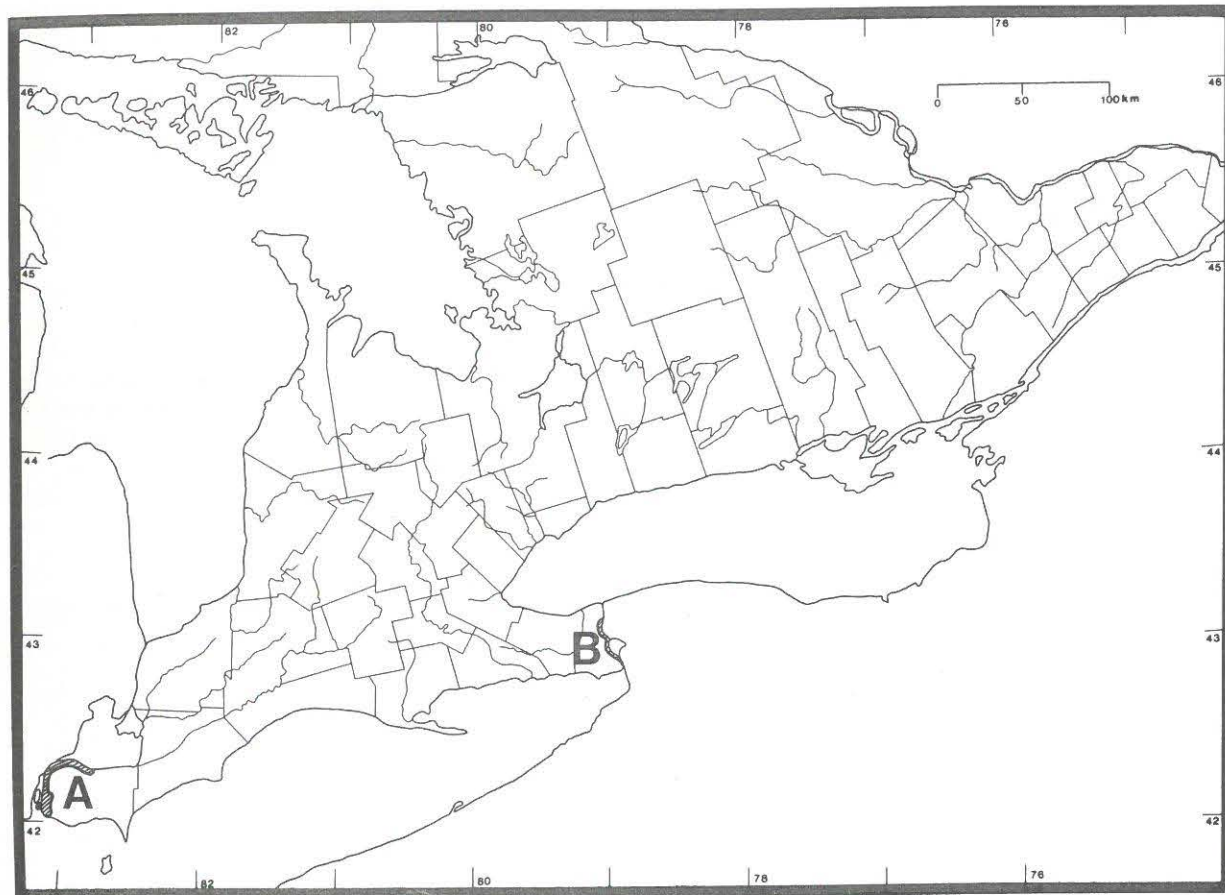


Figure 1. Plant collecting localities of David Douglas, 16 Sept. to 1 Oct. 1823.
A: Amherstburg, Essex County. B: Niagara River, Regional Municipality of Niagara.

During his Ontario trip, Douglas travelled to the shores of Lake St. Clair. Here, near the mouth of Pike Creek, an unhappy incident occurred. In Douglas's words, "I got up in the oak 43 for the purpose of procuring seeds and specimens; the day being warm, I was induced to take off my coat and in that state I ascended. I had not been above five minutes up, when to my surprise the man whom I hired as guide and assistant took up my coat and made off as fast as he could run with it. I descended almost headlong and followed, but before I could make near him he escaped in the wood. I had in my pockets my notes and some receipt of money, nineteen dollars in paper, a copy of Persoon's Synopsis Plantarum, with my small vasculum. I was thus left five miles from where I left the car, in a miserable condition and as there was no remedy that could be taken to better myself, I tied my seeds in my neckcloth and made to my lodging. I had to hire a man to take me back

to Sandwich as I could not drive and the horse only understanding the French language, and I could not talk to him in his tongue, placed me in an awkward situation. I had to borrow a coat as there was no tailor to make me one. On my getting back to Sandwich I remonstrated with the man who recommended my assistant to me but he said that he never did so to his knowledge and so on. However I found that my guide was a runaway Virginian." Presumably, his guide was a runaway slave, but why the horse spoke only French is not clear.

This was not Douglas's only visit to Ontario. After reaching Buffalo on 28 September, he made his way to the head of the Erie Canal via Lockport, New York with two crossovers to the Canadian side of the Niagara River, on 29 September and 1 October. These were accomplished without misadventure.

Upon his return to England, Douglas's trip was judged a success and the Horticultural Society then planned a more ambitious trip for him to the west coast of North America. On this second trip he created a sensation with his collections of western conifers, trees which were to change the face of the English landscape. His name is commemorated by the douglas fir, *Pseudotsuga menziesii*.

The trouble he experienced in Ontario was only a foretaste of things to come. In fact Douglas developed a penchant for mishap. Some have gone so far as to suggest that he rather enjoyed a good calamity. His untimely death exemplified his accident-prone nature. While collecting in the Hawaiian Islands in 1834 he somehow slipped into a bull pit which was unfortunately already occupied by a feral bull.

Table 1. Ontario plant species recorded by Douglas in his journal September, 1823 (Douglas 1914, pp.8-10). Current names are based on present-day nomenclature.

Douglas's entry	Current name
16 September, Amherstburg area	
<i>Acer</i>	<i>Acer</i>
<i>Crataegus</i>	<i>Crataegus</i>
<i>Fagus</i>	<i>F. grandiflora</i>
<i>Fraxinus</i>	<i>Fraxinus</i>
<i>Gentiana crinita</i>	<i>Gentianella crinita</i>
<i>Gentiana saponaria</i>	<i>G. andrewsii</i>
<i>Juglans cathartica</i>	<i>J. cinerea</i>
<i>J. nigra</i>	<i>J. nigra</i>
"immensely large"	
<i>J. porcina</i>	<i>Carya glabra</i>
<i>Lilium canadense</i>	<i>L. michiganense</i>
<i>Orobanch</i> sp. "on beech"	<i>Epifagus virginiana</i>
<i>O.</i> sp. "on oaks"	<i>Conopholis americana</i>
<i>Pyrus</i>	<i>P. coronaria</i>
<i>Quercus</i> spp.	<i>Quercus</i> spp.
"The woods consisted of <i>Quercus</i> (several species) some of immense magnitude."	
<i>Rhus</i>	<i>Rhus</i>
<i>Rosa</i> sp.	<i>R. setigera</i>
"wood resembling <i>multiflora</i> "	
<i>Vernonia</i>	<i>V. altissima</i>
<i>Aster</i> spp.	<i>Aster</i> spp.
<i>Eupatorium</i> spp.	<i>Eupatorium</i> spp.
<i>Helianthus</i> spp.	<i>Helianthus</i> spp.
<i>Liatris</i> spp.	<i>Liatris</i> spp.
<i>Solidago</i> spp.	<i>Solidago</i> spp.

17 September, Bois Blanc Island	
<i>Allium</i>	<i>Allium</i>
<i>Crataegus</i>	<i>C. mollis</i>
"large tree, large fruit"	
<i>C.</i> sp.	<i>C. crus-galli</i>
"small tree, small fruit"	
<i>Hordeum</i>	<i>H. jubatum</i>
"margins of river"	
<i>Lobelia inflatum</i>	<i>Lobelia inflata</i>
<i>Lonicera</i>	<i>L. dioica</i>
"leaves...large, woolly beneath"	
<i>Quercus</i> sp.	<i>Q. macrocarpa</i>
"acorns large...almost enveloped"	
<i>Rosa</i> sp.	<i>R. setigera</i>
"of yesterday"	
18 September, River Canard to Sandwich	
"Passed a long swamp intersected with natural ditches."	
<i>Eriocaulon</i>	<i>E. septangulare</i>
<i>Nuphar advena</i>	<i>N. advena</i>
<i>N. kalmianum</i>	<i>N. variegatum</i>
<i>Nymphaea odorata</i>	<i>N. odorata</i>
<i>Sagittaria sagittifolia</i>	<i>S. latifolia</i>
<i>Solidago</i> spp.	<i>Solidago</i> spp.
19 September, Sandwich area	
<i>Chelone glabra</i>	<i>C. glabra</i>
<i>Coreopsis</i>	<i>Bidens beckii</i>
"growing in water"	
<i>Crataegus</i>	<i>Crataegus</i>
<i>Cypripedium</i>	<i>C. calceolus</i>
"in sandy peat soil"	
<i>Gerardia quercifolia</i>	<i>Aureolaria pedicularis</i>
<i>Liatris</i> 3 spp.	<i>L. asper, L. cylindracea, L. spicata</i>
<i>Neottia</i> or <i>Satyrion</i>	<i>Goodyera pubescens</i>
<i>Phlox</i>	<i>P. pilosa</i>
"18 inches high, leaves linear"	
<i>Quercus</i>	<i>Q. ?velutina</i>
"sandy peat soil, fruit small cup...with scales"	
<i>Quercus</i>	<i>Q. macrocarpa</i>
"near one...I saw on the island"	
20 September, Lake St. Clair area	
<i>Crataegus</i> spp.	<i>Crataegus</i> spp.
<i>Euonymus</i>	<i>E. ?atropurpureus</i>
"small tree in rich soil, fruit yellow"	
<i>Plum</i>	<i>Prunus americana</i>
"brown and yellow colour, tartish...red specks"	
<i>Quercus</i>	<i>Q. macrocarpa</i>
"mossy cup"	

29 September, Niagara River above Falls
"the soil in general is rich, of black and
brown loam"

<u>Ulmus</u>	<u>U. americana</u>
"in many places...scarce"	
<u>Crataegus</u>	<u>Crataegus</u>
"such as I saw at Amherstburg and Sandwich"	
<u>Euonymus</u> sp.	<u>E. atropurpureus</u>
<u>Hamamelis</u>	<u>H. virginiana</u>

30 September, Niagara Falls

<u>Astragalus</u> sp.	<u>A. canadensis</u> or <u>A. neglectus</u>
Red cedar	<u>Juniperus virginiana</u>
<u>Juglans amara</u>	<u>Carya cordiformis</u>
<u>Quercus</u>	<u>Quercus</u>
<u>Viola</u> sp.	<u>Viola</u> sp.

30 September, Goat Island

<u>Acer saccharinum</u>	<u>A. saccharum</u>
"on...the rocks,...they had all been tapped"	
<u>Arum triphyllum</u>	<u>Arisaema triphyllum</u>
<u>Botrychium</u> 2 spp.	<u>B. virginianum</u> & ?
<u>Dracontium</u> sp.	<u>Arisaema dracontium</u>
<u>Orobanchae</u> 2 spp.	<u>Conopholis americanum</u> & <u>Epifagus virginiana</u>
Pines 2 spp.	<u>Pinus strobus</u> and <u>Tsuga canadensis</u>
<u>Pothos foetidus</u>	<u>Symplocarpus foetidus</u>
<u>Rhus</u> sp.	<u>R. radicans</u>
"the trunks of large trees"	
<u>Rhus vernix</u>	<u>R. vernix</u>
<u>Smilax</u> "some species"	<u>S. tamnoides</u> & ?
<u>Trillium</u>	<u>T. grandiflorum</u>

30 September, Whirlpool area

<u>Asplenium</u>	<u>Asplenium</u>
<u>Polypodium</u>	<u>P. vulgare</u>
<u>Pteris atropurpurea</u>	<u>Pellaea atropurpurea</u>
<u>Quercus</u> 3 spp.	<u>Q. muhlenbergii</u> & ?
"on rocks....narrow serrated leaves, acorns small & olive shaped"	

Table 2. Species collected by Douglas as reported by W.J. Hooker in his *Flora Boreali-Americana* (1840). Some had not been mentioned in Douglas's journal.

Douglas's entry	Current name
"about Lake Erie"	
<u>Crataegus CrusGalli</u>	<u>Crataegus crus-galli</u>
<u>C. coccinea</u>	<u>C. ?rotundifolia</u>
<u>C. cordata</u>	<u>C. mollis</u>

"in the Niagara area"	
<u>Desmodium bracteosum</u>	<u>D. cuspidatum</u>
<u>Polygala incarnata</u>	<u>P. incarnata</u>
<u>Sedum ternatum</u>	<u>S. ternatum</u>
<u>Silene stellata</u>	<u>S. stellata</u>

Table 3. Letter from Douglas to Joseph Sabine, secretary of the Horticultural Society, titled "Some account of the American oaks" and reprinted in Hooker's *Flora* (1840). The following species are attributed to Ontario.

Douglas's entry	Current name
<u>Quercus alba</u>	<u>Q. alba</u>
"On the banks of the River Detroit from Amherstburg to the junction of the Thames with the St. Clair."	
<u>Q. bicolor</u>	<u>Q. ?muhlenbergii</u>
"high ground of Niagara, at the Falls"	
<u>Q. borealis</u>	<u>Q. ?velutina</u>
"near the Falls of Niagara....and at Sandwich."	
<u>Q. castanea</u>	<u>Q. muhlenbergii</u>
"high grounds of the Niagara."	
<u>Q. coccinea</u>	<u>Q. ?shumardii</u> or <u>velutina</u>
"Between Amherstburg and Sandwich, Upper Canada, it constitutes with <u>Q. rubra</u> and <u>Q. alba</u> the largest trees in the forest."	
<u>Q. macrocarpa</u>	<u>Q. macrocarpa</u>
"near Amherstburg and on the eastern shore of Lake St. Clair."	
<u>Q. montana</u>	<u>Q. muhlenbergii</u>
"On both sides of the Niagara....dry, rocky situations."	
<u>Q. olivaeformis</u>	<u>Q. ?schutteii</u> (= <u>Q. bicolor</u> X <u>macrocarpa</u>)
"Amherstburg and Sandwich"	
<u>Q. rubra</u>	<u>Q. rubra</u>
"Canada"	

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- Douglas, D. 1914. *Journal, 1823-1827*. William Wesley & Son. London.
- Hooker, W.J. 1840. *Flora Boreali-Americana*, Vols. 1 & 2. Reprinted, 1960, by Engelmann, Wheldon & Wesley. Weinheim.
- Nuttall, T. 1818. *The genera of North American plants*. Philadelphia. ●

THE GENUS METZGERIA (HEPATICAEE) IN ONTARIO

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The hepatic genus Metzgeria includes some of the most delicate of the thalloid liverworts to be found in northeastern North America. Although the genus has a world-wide distribution, most of its nearly 200 species are found in the neotropics. Only a few representatives occur in the cool temperate zones and occasionally as far north as 70° latitude. Two species of the genus occur in Ontario: Metzgeria conjugata Lindb. and M. furcata (L.) Dum. They have been infrequently collected in the last 100 years and so appear to be rare in the province. However, M. furcata has recently been found at several sites in eastern Ontario, indicating that it is more common than previous collections suggest, being overlooked and undercollected rather than truly rare.

Our knowledge of Metzgeria in Ontario is scanty. John Macoun made the first known collections from the Ottawa area and from Algonquin Park in the years between 1884 and 1900. His specimens became the basis for all

reports in the literature for the next 50 years. While his collections included both species, for the most part, they were reported only as M. conjugata. Harry Williams and Roy F. Cain (1959) made the next known collections between the years 1955-1959 and reported M. conjugata and M. furcata var. ulvula in their list of additions to the hepatic flora of Ontario. Three localities were thus known for each of the species: M. conjugata from Algonquin Park, Ottawa and Northern Hastings County; and M. furcata from Algonquin Park, Ottawa and Peterborough County.

There have been no further Ontario reports of Metzgeria in the last 25 years and a recent survey of Ontario Herbaria failed to uncover any additional records. In 1984, while collecting in Frontenac County, it was with a little tingle of excitement that I recognized a thin yellow-green mat on a rock outcrop to be Metzgeria furcata. This collection raised the possibility of finding it in similar habitats in other areas of eastern Ontario. To my gratification, this search has proven successful and the presence of this diminutive hepatic throughout the area is now well established (Fig. 1). It appears to be both a frequent and distinctive member of the hepatic flora.

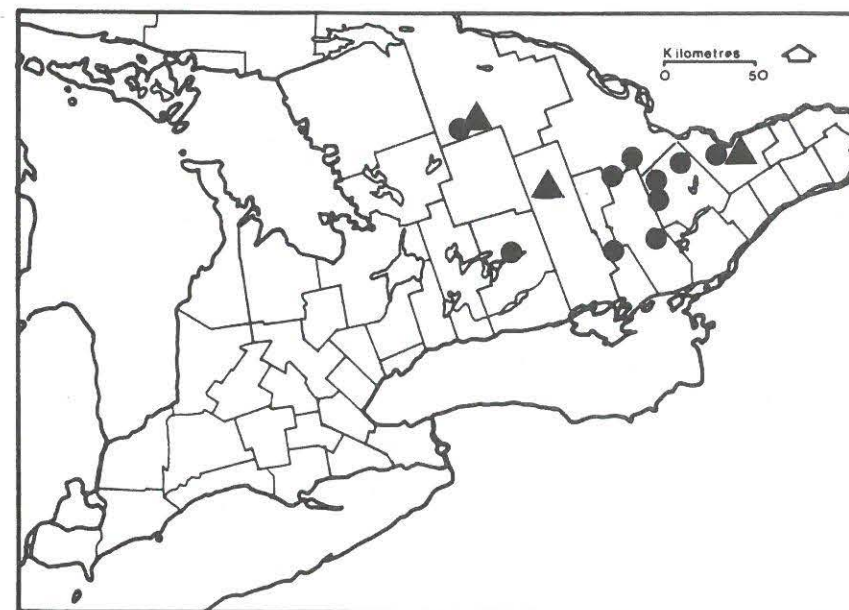


Figure 1. The distribution of Metzgeria conjugata (▲) and M. furcata (●) in Ontario.

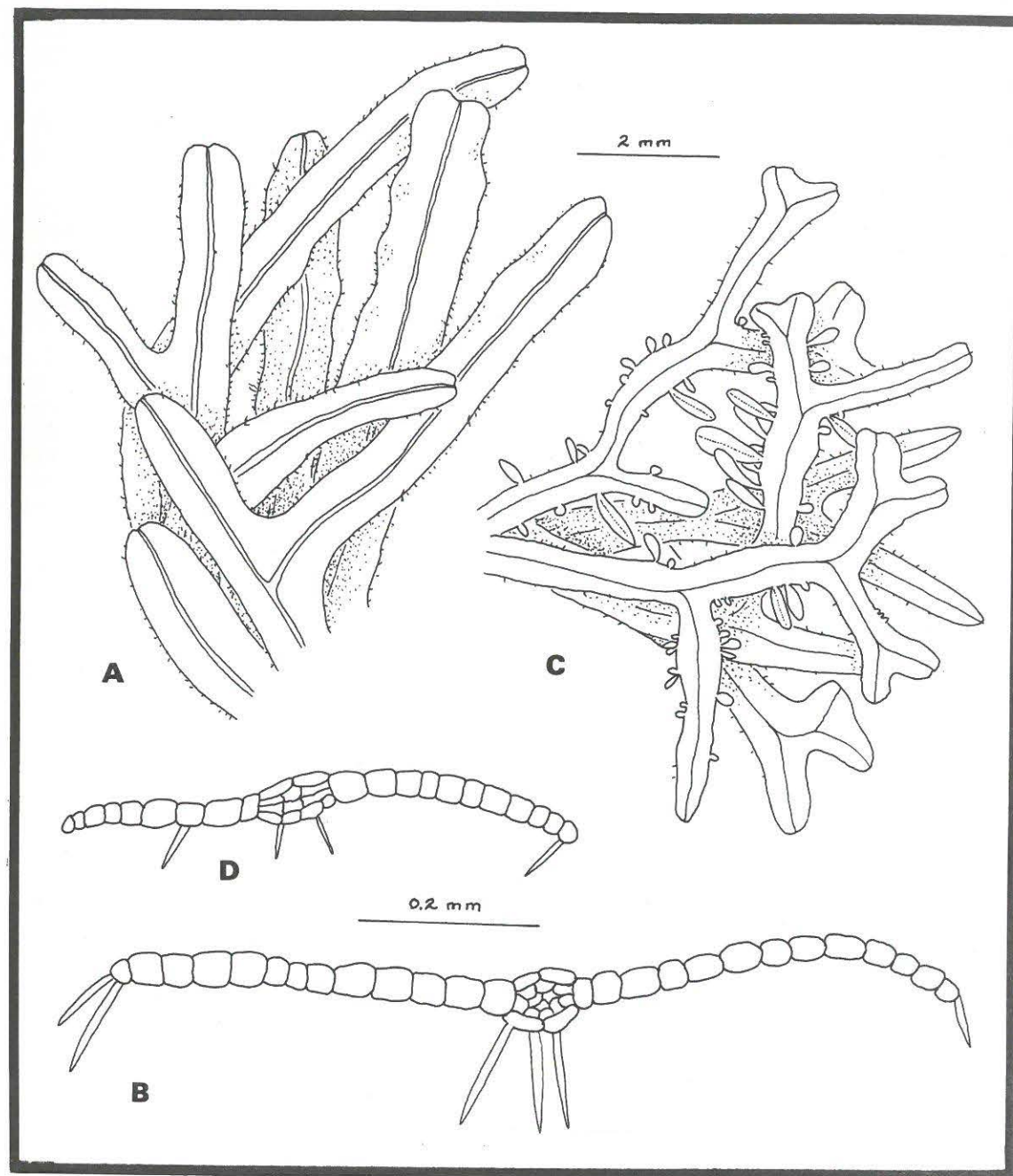


Figure 2. *Metzgeria conjugata*: A. Habit. B. Cross section of the thallus. *M. furcata*: C. Habit. D. Cross section of the thallus.

Metzgeria conjugata appears to be the rarer of the two species in Ontario. It is perhaps at the northern limit of its eastern range in the Great Lakes-St. Lawrence Region. It is the larger of the two species (Fig. 2), forming yellowish to yellow-green or green mats on shaded and humid cliff faces or boulders. Schuster (1948; 1953) reports a strong preference for, or tolerance of, calcareous rock, but this observation may not be true for our Ontario plants. The Algonquin Park collection is labelled as coming from a granite cliff, while the other two collected specimens have labels with no substrate data.

The translucent, dichotomous and unistratose thalli with strongly marked midribs and bordering marginal hairs distinguish *Metzgeria conjugata* from all other thalloid liverwort species in Ontario, except *M. furcata*. *M. conjugata* is separated from *M. furcata* by its larger size, marginal hairs in pairs and lack of gemmae. The known stations of *M. conjugata* in Ontario, with the collector and year of collection in parentheses, are: Carleton County (coll. Macoun 1885); Hastings County (coll. Williams 1955); Nipissing District (coll. Cain & Williams 1959). In North America, this species is common on the west coast, from Alaska to California; in the east it ranges from New Brunswick to Ontario and Minnesota and south to Florida, based on specimens in CANM.

Metzgeria furcata grows as a pioneer on vertical faces of acidic rock outcrops and boulders, usually shaded by mixed deciduous woods. It forms thin yellow-green to green mats on rock surfaces, sometimes over extensive areas. It appears superficially similar to, and often occurs with, mats of *Lejeunea cavifolia*. Besides its small size and single marginal hairs, the main diagnostic feature of this species is the numerous multicellular gemmae borne at the margins of the furcate thalli. These gemmae are visible with the aid of a hand lens and permit instant identification in the field. The known distribution of *M. furcata* in Ontario is: Carleton County (coll. Macoun 1884, Ley 1986); Frontenac County (coll. Ley 1984, 1986); Lanark County (coll. Ley 1985, 1986); Lennox & Addington County (coll. Ley

1987); Nipissing District (coll. Macoun 1900); Peterborough County (coll. Williams 1955, 1957); Renfrew County (coll. Ley 1985, 1987). In North America it is confined to the east, from Newfoundland to Ontario and Michigan, south to Florida, based on specimens in CANM.

The present status of *Metzgeria furcata* var. *ulvula* is not clear. This name has been applied to the small, highly gemmiferous and nearly hairless forms of *M. furcata*. The larger "typical" *M. furcata* with very few gemmae and numerous hairs along the margin, midrib and underside of the thallus has not yet been seen in Ontario. Only the variety *ulvula* has so far been collected. While this variety has appeared in many older taxonomic works, more recent North American and Asian treatments have not recognized this taxon. Frye & Clark (1937) make no mention of it and Schuster (1953) treats it as a bark-colonizing xeric form of *M. furcata*. Most recently, Kuwahara (1978) ignores it in his synopsis of the family Metzgeriaceae.

I hope that in the future collectors of bryophytes in Ontario will not ignore these fine yellowish-green mats when out in the field. Rather than being an insignificant "green fuzz on rock," under magnification they may become the beautiful thalli of *Metzgeria*. The author would welcome the opportunity to verify any specimens submitted to the National Museum.

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ENSHEATHED DROPSEED, *Sporobolus vaginiflorus* (POACEAE), IN NORTHERN ONTARIO

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The ensheathed dropseed, *Sporobolus vaginiflorus* (Torr.) Wood, is a small, inconspicuous annual grass of open rocky, usually calcareous ground. The species flowers and fruits in late summer and fall. Its plain appearance, small size and the characteristic maturation of its spikelets within its leaf sheaths encourage its obscurity for many observers (Fig. 1). Although displaying a broad native range across eastern and midwestern North America, the species is found only in the more southern portions of Ontario. Until quite recently, it was considered to be uncommon or rare across

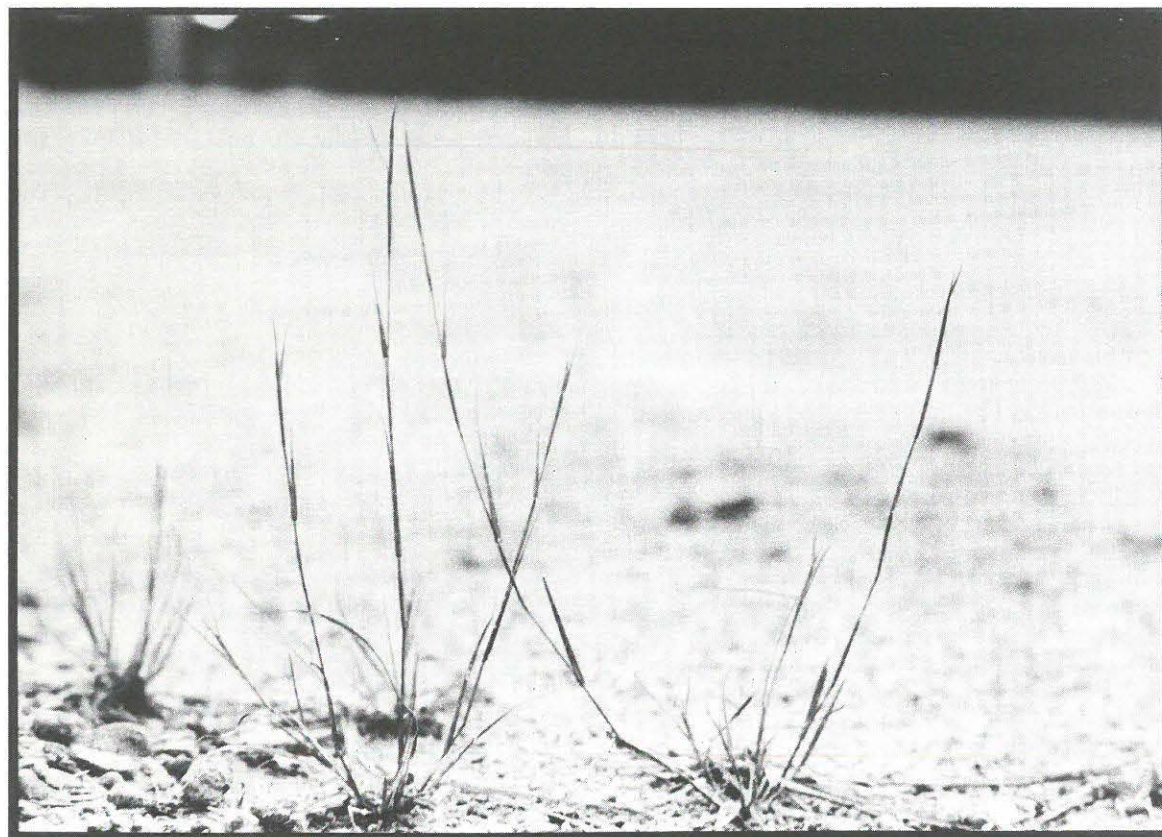


Figure 1. Ensheathed dropseed (*Sporobolus vaginiflorus*) beside a roadway. Shown here at approximately life size.

its range in the province (Dore & McNeill 1980). Three varieties have been recognized in the province, var. *inaequalis*, var. *ozarkanus*, and var. *vaginiflorus*, but they are weakly defined in Ontario (cf. Morton & Venn 1984). The typical variety appears to be frequent on open limestone alvars across southern Ontario (Catling et al. 1975) and was considered to be provincially rare in the initial survey of our vascular flora (Argus & White 1977). However, it is also found as a roadside weed in eastern Ontario and elsewhere (Brunton 1985). Rare status was revoked because of the uncertain taxonomy of the varieties (Argus & Keddy 1984) and the weedy nature of the species.

Sporobolus vaginiflorus grows in dense stands, often less than a meter wide but paralleling major roadways for many meters, sometimes even kilometers, at the outermost edge of the roadside vegetation (Fig. 2). It is often found

with the closely related *S. neglectus* Nash, a species with distinctly smaller spikelets. A wash of yellow-green colour along roadsides in late summer is indicative of immature plants of either species; clumps of taller, purplish-red plants of *S. vaginiflorus* are distinctive by early September. These signs are easily observed from an automobile moving at highway speed and can be employed in determining *Sporobolus* distribution along roadways. Such stands are easily seen across southern Ontario, but become increasingly spotty as one moves northward.

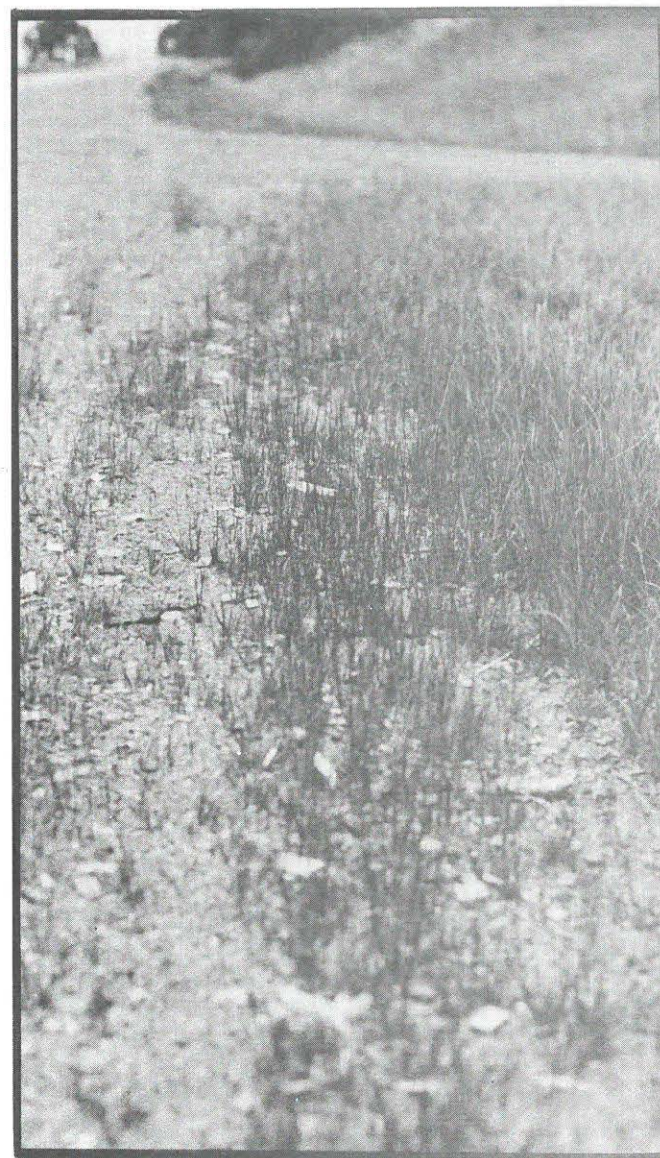


Figure 2. Population of *Sporobolus vaginiflorus* forming a continuous border in the gravel along the edge of a roadway.

I have found *S. vaginiflorus* to be abundant along the TransCanada Highway (Route 17) in the Ottawa Valley northward to Renfrew. Thereafter it becomes increasingly infrequent until the last stands are observed on the sand plains around Petawawa and Mackay Station. Vouchers verifying this distribution have been deposited in DAO, TRT, CAN and DFB; acronyms follow Boivin (1980). Although I have looked for this species along the TransCanada Highway north of Mackay Station and west of Mattawa since 1984, I was unable to locate any stands here or elsewhere in northern Ontario until 1986. In August and September, 1986, I was able to find a number of locations for *S. vaginiflorus* north of the documented range, representing the first northern Ontario records (cf. Dore & McNeill 1980; J. Riley, pers. comm.). Morton & Venn (1984) map a site for *S. vaginiflorus* in the LaCloche Peninsula, just inside the boundary of northern Ontario. That record is actually the first for northern Ontario for either *S. neglectus* or *S. vaginiflorus*. As they lump the two species together, it is not clear which taxon is present at the LaCloche site.

Figure 3 illustrates the distribution of stations of *S. vaginiflorus* along Highway 17 between Sudbury and Sault Ste. Marie as determined by my 1986 survey. They were found by scanning the roadside for *Sporobolus* stands while driving at normal traffic speeds. I was especially attentive when driving westward around sunset for then the back-lit *Sporobolus* plants were particularly conspicuous, relatively speaking. Vouchers were collected to document the presence of this species in Algoma and Sudbury Districts.

Discussion

Sporobolus vaginiflorus is well established along the TransCanada Highway between western Sudbury District and the City of Sault Ste. Marie in Algoma District. However, there are large gaps between stands suggesting that it is recently established. Although one might expect that it had migrated here from northern Michigan, Voss (1972) indicates that it is local and uncommon there. I found no stations within 35 km of the border crossing. Similarly, while Morton & Venn (1984) describe it as common on the limestone bedrock of Manitoulin Island just to the south of this area, I found only one station between the turn-off at Espanola leading to Manitoulin Island and the area of more regular occurrence, about 20 km further west along Highway 17.

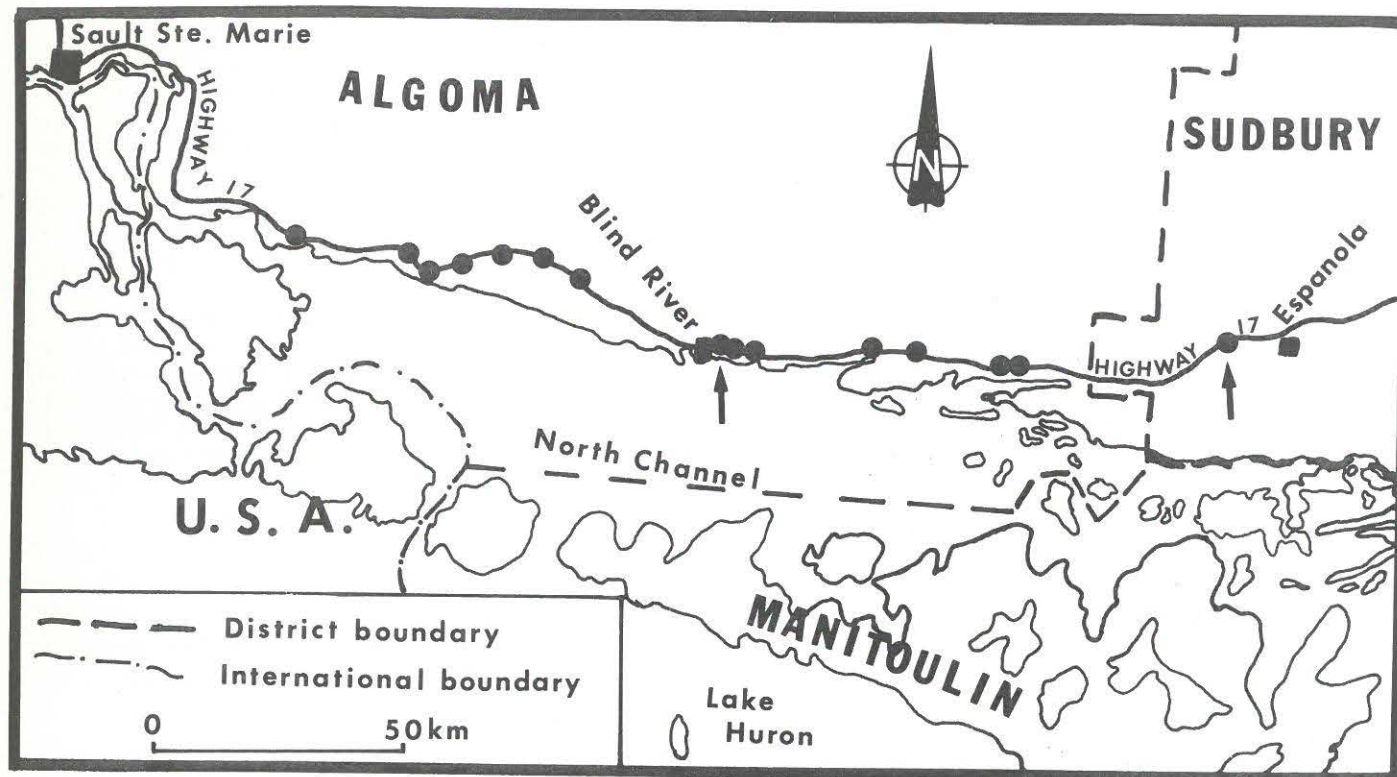


Figure 3. Distribution of *Sporobolus vaginiflorus* along Highway 17 in Algoma and Sudbury Districts based on 1986 survey data.

Sporobolus vaginiflorus along major roadways in southern Ontario appears to be tolerant of relatively high salt levels that result from accumulations following winter de-icing programs (Catling & McKay 1980; Zgierska 1986). Its preference for dry, loose, well-drained gravel areas closest to the pavement may permit leaching of the salt before its late season growth begins. Thus, this habitat preference suggests that it might be a poor competitor with species that would colonize such sites were it not for the high salt concentrations in the early part of the growing season. The stands I found in Algoma and Sudbury Districts were superficially identical to those I have seen on many roadside sites in southern Ontario; they too may benefit from road de-icing programs as a means of keeping back competitors.

The spread along the roadway may be assisted by snow-plowing and late-season grass cutting operations. I have observed that mature seed is held in the sheaths of the plants until well into winter. Seed would be moved along with the plants cut or ripped up during such road-

side maintenance work. This may be the essential means of spread for *Sporobolus* along roadways, here and elsewhere. This possibility has been suggested for other halophytes in similar situations (Reznicek *et al.* 1976; Brunton & Catling 1982).

It seems reasonable to expect *Sporobolus vaginiflorus* elsewhere along major highways in northern Ontario, and perhaps along railways too. The recent discovery of the closely related *S. neglectus* along a roadside near Thunder Bay (Brunton 1988) suggests that such sites need not be expected only along the southern fringe of northern Ontario.

Documentation: Algoma District: east of Blind River on south side of Highway 17 at U.T.M. 507160 (Map 41 J/2), Stricker Tp., 48° 01'N., 82° 56'W., Brunton 7014, 9 Sept. 1986 (TRT, DFB, DAO).
Sudbury District: south side of Highway 17, 1 km west of Webbwood, Hallam Tp., at U.T.M. 300227 (Map 41 I/5), 48° 15.5'N., 81° 54'W., Brunton 7015, 9 September 1986 (CAN, DFB).

Acknowledgements: My thanks to Dr. Clarence Frankton for his review of an earlier draft of the manuscript and to J. L. Riley for information on the northern Ontario distribution of *Sporobolus*.

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CAMP KEE-MO-KEE: AN AREA WITH AN OUTSTANDING FLORA, NEAR KOMOKA, MIDDLESEX COUNTY, ONTARIO

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Camp Kee-Mo-Kee is a 225 hectare seasonal children's camp and religious retreat operated by the United Church of Canada, London Conference. It is located in Middlesex County, Caradoc Township, 2 km southwest of Komoka, near London (Fig. 1). The landform of the area is predominantly a gently rolling sand plain with scattered, low, relict sand dune ridges. A ravine valley with a permanent stream is cut into the sand plain along the northern edge of the camp property. The valley slope and flood plain terraces of the Thames River valley lie on its eastern edge. However, the present channel of the Thames River is more than 500 m from the camp boundary.

The property supports a flora of at least 457 species of vascular plants, probably representing well over 90% of the total flora which can be expected for the area. Not only is this a notable number, given the relatively small size and limited number of habitats of the camp, but the flora includes three provincially rare, 19 regionally rare or scarce and 47 regionally or locally interesting species.

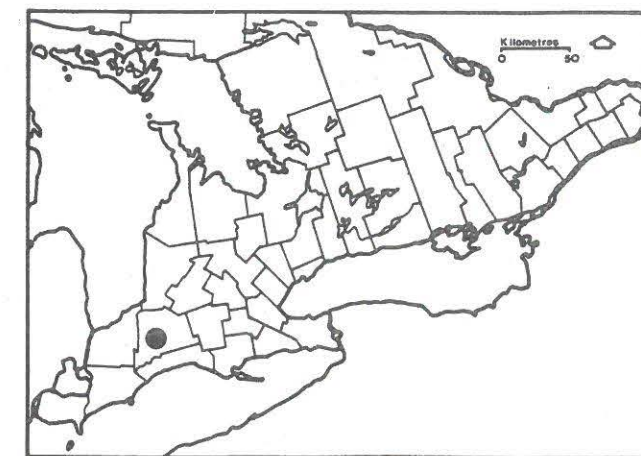


Figure 1. Location of Camp Kee-Mo-Kee in Middlesex County, Ontario.

Vegetation

Camp Kee-Mo-Kee has dry to dry-mesic sand plain upland forests of red oak - white oak - red maple - black cherry - eastern white pine. These have occasional openings which support a dense ground cover of forest species as well as local prairie-like communities. There is a cabin and activity compound within the forest with a community of both native and invasive species. On the southwestern edge of the camp, an open, dry, prairie-like grassland occurs. The ravine and river valley slopes support a mesic deciduous forest cover of sugar maple - red oak - basswood - yellow birch - black walnut - white ash and a mixedwoods/conifer forest cover of eastern hemlock - yellow birch - basswood - red maple - sugar maple. The valley floodplain supports a variable forest and thicket cover of black willow - red ash - white elm - eastern cottonwood - sycamore - eastern white cedar - red osier - ninebark.

Disturbances to the sand plain sites include only light cutting and local conifer plantations over the past half century. Some evidence of previous fires is present. The cabin compound and access roads were established about 20 years ago.

Flora

Most of the flora of Camp Kee-Mo-Kee has southern or temperate affinity. Ten species are restricted to the Carolinian Floristic Zone (see Table 1). These occur mostly on the dry sand plain or mesic valley slopes. The cooler, shaded environments of the narrower ravines support several species of northern affinity, often right beside species with southern affinities. The open communities of the dry sand plain support several species with prairie affinities, perhaps as remnants of formerly larger communities. Even the roadsides, path edges and cabin compound support several regionally significant and interesting plants.

1. Provincially rare species

The National Museum of Natural Sciences has produced a list and atlas of plant species which are rare in Ontario. Over fifty of these

species occur in Middlesex County and three are identified from the camp property in upland stations (Table 1).

Table 1. Provincially rare species (Argus & Keddy 1984; Argus & White 1982, 1983) on the Camp Kee-Mo-Kee property. Collection numbers, where applicable, follow the annotations.

Galium pilosum Ait. var. pilosum
(downy bedstraw) Both provincially and regionally rare; southern meadow and forest herb occurring sparsely but consistently in the sand plain forest; 13508, 15207.

Muhlenbergia tenuiflora (Willd.) BSP.
(muhly grass) Both provincially and regionally rare; southern grass occurring on disturbed sandy soil in the immediate vicinity of the cabin compound; persisting more than 5 years; 13510, 14026.

Viola palmata L. (wood violet)
Provincially rare and regionally scarce; southern woodland violet occurring along the firebreak road on the western boundary; 35 plants in an area 10 m square; 14269.

2. Regionally rare or scarce species

Middlesex County and surrounding regions have been botanized by several eminent botanists since the past century, including John Macoun, W.E. Sanders, Jim Phipps, Frank Cook and Wm. G. Stewart. A checklist was produced by Hiltz & Macfabe (1978). The county flora is currently being studied more thoroughly by Dave McLeod of London and others. The assignment of regional status which follows thus must be considered preliminary. The assessment was made on the basis of available reports and discussions with those presently investigating the flora of Middlesex County, particularly McLeod and Cook. Regionally rare plants are known from 0-3 stations in the county; regionally scarce species are known from 4-10 stations.

Nineteen species which occur within the camp property are presently considered regionally rare or scarce. Though most of these are native species, a few rarely reported introductions are also included in Table 2.

Table 2. Regionally rare or scarce species on the Camp Kee-Mo-Kee property. Introduced species are indicated by a "+".

Aster umbellatus Mill. (flat-topped aster)
Regionally scarce; northern wetland herb occurring very locally in the river valley floodplain thickets.

Carex eburnea Boott (sedge)
Regionally scarce; widespread woodland sedge occurring very locally in the terrace forests on sandy soils; 14024, 16735.

C. foenea Willd. (sedge)
Regionally scarce; southwestern sedge occurring locally in prairie-like openings of the sand plain forest; 14010.

Chimaphila umbellata (L.) Bartr.
var. cisatlantica Blake (pipsissewa)
Regionally scarce; northern forest herb found locally in the sand plain forest; 13509.

Cirsium muticum Michx. (swamp thistle)
Regionally scarce; northern wetland herb restricted to the valley bottom floodplain thickets; 17107.

Dichanthelium oligosanthes (Schultes) Gould
var. oligosanthes (few-flowered panic grass)
Regionally scarce; southern grass associated with dry forest openings and prairies; 13474, 14015, 15203.

Elymus villosus Muhl. (downy wild-rye)
Regionally scarce; southern grass once found in the cabin compound but not persisting; 13511.

Equisetum scirpoides Michx. (dwarf scouring-rush)
Regionally scarce; one station on the valley terrace with Carex eburnea; 14025.

Hierochloa odorata (L.) Beauv. (indian sweet grass)
Regionally rare; reported by J.Phipps from the road to the cabins on dry sand.

Lilium philadelphicum L. (wood lily)
Regionally scarce; woodland herb occurring locally in the valley terrace forests.

Mitella nuda L. (naked mitrewort)
Regionally scarce; northern forest herb restricted to the ravine bottoms and seeps; 13505, 16731.

(continued...)

(Table 2, continued...)

Monarda didyma L. (oswego tea)
Regionally scarce; southern forest herb present as a small population in the ravine valley just north of the camp boundary; 15215.

Myosoton aquaticum (L.) Moench (water stitchwort)
Regionally scarce; aquatic herb which is relatively frequent in the stream and on the bank of the river valley; 13500, 15219, 17076.

+ Potentilla canescens Besser (downy cinquefoil)
Regionally scarce; introduced herb found on the firebreak road.

Selaginella rupestris (L.) Spring
(spike-moss)
Regionally rare; northern fern ally occurring as a small patch in the open meadow west of the cabin compound; associated with prairie elements; 14275.

Senecio pauperculus Michx. (balsam ragwort)
(inc. var. thompsoniensis (Greenm.) Boivin)
Regionally scarce; southern woodland herb occurring in dry sand plain forest and forest openings; 14009, 15208.

+ Taraxacum erythrospermum Bess.
(red-seeded dandelion)
Regionally scarce; introduced herb occurring locally along the firebreak road on the west boundary; 14266b.

Vaccinium pallidum Ait. (early sweet blueberry)
Regionally scarce; southern woodland shrub occurring very locally in the sand plain forests; 15201.

Viola sagittata Ait. (arrow-leaved violet)
(inc. V. fimbriatula E.J. Smith)
Regionally scarce; southern woodland herb occurring locally in the dry open forests; along the firebreak road both the typical form and the more northern fimbriatula morph are present; (var. sagittata) 13483, 16723; (var. fimbriatula) 14011, 14262, 16724.

3. Regionally interesting species

In addition to the above species, there are 47 others which, though more frequent in the County, illustrate biogeographic affinities;

are characteristic of distinctive habitats (e.g., upland or riparian forests); or are of interpretive interest for their beauty or potential use.

Table 3. Regionally interesting species of the Camp Kee-Mo-Kee property.

- Aralia racemosa* L. (spikenard)
Artemisia campestris L. (sagewort wormwood)
subsp. *caudata* (Michx.) Hall & Clements
Asclepias exaltata L. (poke milkweed)
A. tuberosa L. (butterfly-weed)
Aster laevis L. (smooth aster)
Bromus kalmii A.Gray (kalm's brome)
B. latiglumis (Shear) Hitchc. (tall brome)
Carex hitchcockiana Dewey (sedge)
C. laevivaginata (Kukenth.) Mack. (sedge)
Ceanothus americanus L. (new jersey tea)
Celtis occidentalis L. (hackberry)
Circaea alpina L.
(dwarf enchanter's nightshade)
Collinsonia canadensis L. (horsebalm)
Conopholis americana (L.) Wallr. (squawroot)
Cornus florida L. (flowering dogwood)
Corylus americana Walt. (american hazelnut)
Cyperus filiculmis Vahl (nut grass)
Dioscorea villosa L. (wild yam)
Dirca palustris L. (leatherwood)
Dryopteris clintoniana (D.C. Eat.) Dowell
(clinton's woodfern)
Euphorbia corollata L. (flowering spurge)
Galium boreale L. (northern bedstraw)
Hamamelis virginiana L. (witch hazel)
Helianthemum canadense (L.) Michx. (rockrose)
Helianthus decapetalus L.
(thin-leaved sunflower)
H. divaricatus L. (woodland sunflower)
H. giganteus L. (giant sunflower)
H. strumosus L. (pale-leaved sunflower)
Juglans nigra L. (black walnut)
Larix laricina (DuRoi) K.Koch (tamarack)
Lespedeza capitata Michx. (bushclover)
L. hirta (L.) Hornem. (hairy bushclover)
Lespedeza intermedia (S. Wats.) Britt.
(wand-like bushclover)
Lilium canadense L. (Canada lily)
var. *umbellatum* (Farw.) Boivin
Oryzopsis racemosa (Sm.) Ricker
(mountain-rice)
Platanus occidentalis L. (sycamore)
Populus deltoides Marsh. (eastern cottonwood)
Pyrola rotundifolia L. (round-leaved pyrola)
Quercus velutina Lam. (black oak)
Rosa carolina L. (carolina rose)
Rubus canadensis L. (smooth blackberry)
R. flagellaris L. (northern dewberry)
(continued...)

- (Table 3, continued...)
Salix exigua Nutt. forma *wheeleri* (Row.) Voss
(velvet-leaf sandbar willow)
Sanicula trifoliata Bickn.
(three-leaved black snakeroot)
Solidago patula Muhl.
(rough-leaved goldenrod)
Sporobolus cryptandrus (Torr.) Gray
(sand dropseed)
Zizia aurea (L.) Koch (golden alexanders)

Documentation: The 184 voucher collections made during this survey, including those cited above, are housed at the Vascular Plant Herbarium of the University of Western Ontario (UWO).

Acknowledgements: This floristic survey was conducted intermittently between August 1982 and May 1986, as a voluntary project for the London Conference of the United Church of Canada. The advice and hospitality of the camp directors and staff are gratefully acknowledged. Aid in establishing the regional significances of the camp flora was obtained from F. S. Cook, D. McLeod, J. B. Phipps, J.C. Semple and W.G. Stewart.

Those wishing to visit the camp should seek permission from The Director, Camp Kee-Mo-Kee, Box 1079, Station B, London, Ont. N6A 5K2, telephone 519-473-2498. Macdonald (1986), available from the author, provides additional data on the floristic features of this area.

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ANNOTATED KEYS TO THE "FERN ALLIES" OF THE KINGSTON REGION

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This paper was designed to be used in workshops at the Queen's University Biological Station. There are no departures from the classification and nomenclature in Britton's (1984) "Checklist of Ontario pteridophytes," and synonyms are given from the other major references commonly used by Ontario naturalists. [Ed. note: A similar paper on ferns of the Kingston region (Pringle 1987) was published in The Blue Bill. The Kingston region is shown in Fig. 1.]

Because such distantly related genera are included under the convenient term "fern allies," the sequence of genera in this paper

is phylogenetic rather than alphabetical, beginning with the "club-moss line" which has been distinct from the other groups of vascular plants since the early Devonian. The more primitive, homosporous genus *Lycopodium* appears first followed by the two heterosporous, ligulate genera, *Selaginella* and *Isoetes*. The paper concludes with the relatively isolated genus *Equisetum* which appears to be more closely related to the ferns than to club-mosses.

Although common names for most ferns are fairly well standardized, either through genuine common usage or through direct translations of Latin names, such is not the case with the "fern allies." Several names are identical for two or more species. For example, in Britton's (1984) checklist "flat-branched ground-pine" is applied to two species so dissimilar that they are sometimes placed in different genera. Those accustomed to replacing scientific names with so-called "common" names are cautioned that,

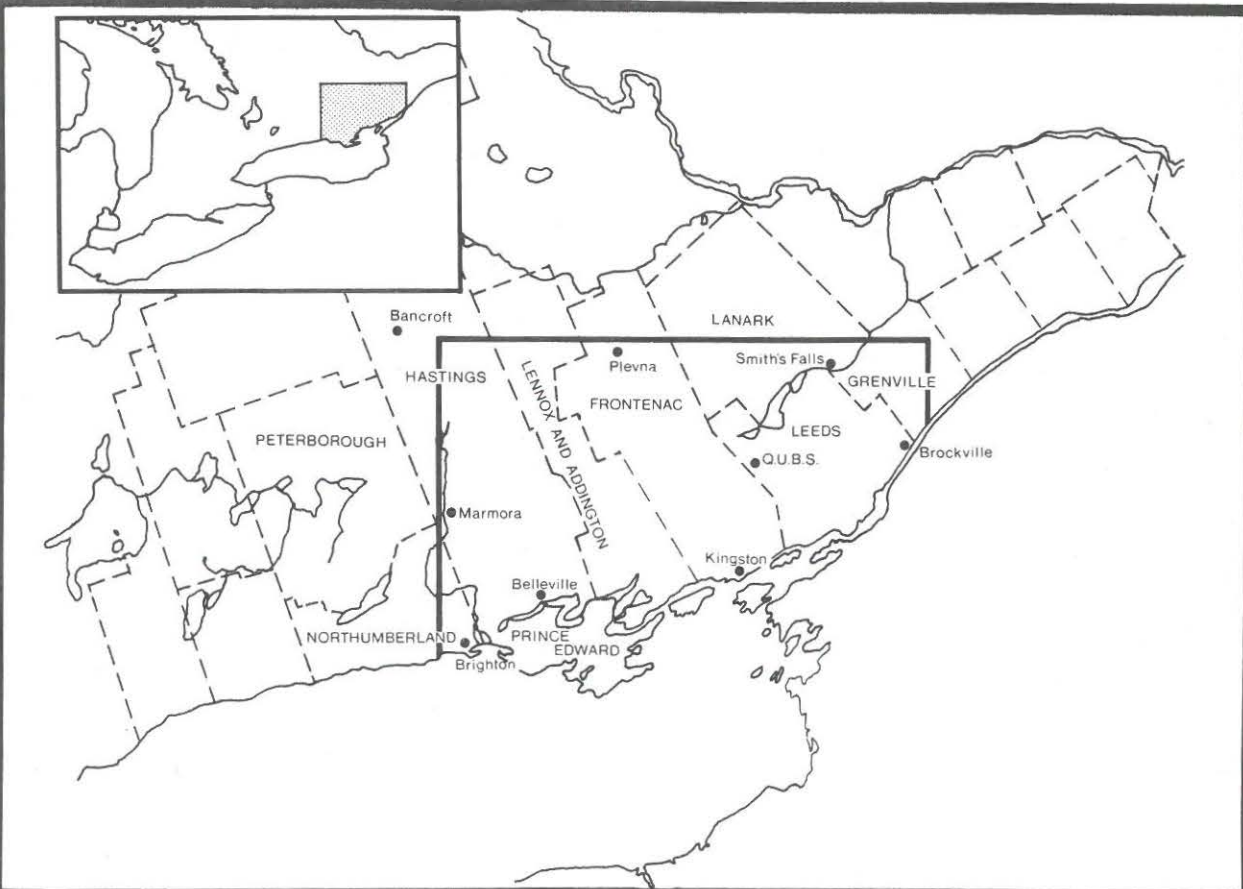


Figure 1. Boundaries of the "Kingston region" in eastern Ontario.

with some of these plants, such names will not suffice for unambiguous communication.

Key to the genera of "fern allies".

1. Stems jointed, with the greatly reduced, basally connate leaves in whorls at the joints; stems above the rhizomes either unbranched or with branches in whorls immediately below the sheathing connate leaf bases.....Equisetum.

1. Stems not jointed; leaves either tufted on a very short stem or variously arranged along the stem, not connate in whorls.....2.

2. Plants aquatic; stems very short; leaves 3 cm long or more, each bearing a sporangium at the base.....Isoetes.

2. Plants terrestrial; stems much longer than the leaves; leaves less than 3 cm long, many of them not sporophylls.....3.

3. Spores all alike, each sporangium containing numerous small spores; plants of most species over 5 cm tall, not moss-like, with leaves over 4 mm long; if moss-like and less than 5 cm tall, then with leaves neither toothed nor bristle-tipped.....Lycopodium.

3. Some or all sporangia containing only 2 or 4 megaspores (others with more numerous microspores may or may not be present); plants moss-like, prostrate or less than 5 cm tall, with leaves to 4 mm long.....Selaginella.

Keys to the species and discussion

Lycopodium (clubmoss)

Lycopodium species are generally restricted to acid soils. Consequently, species that are common to abundant in some parts of Ontario are rare or absent in other parts. In the Kingston region, Lycopodium species, with one exception, are largely confined to small, scattered populations, but extensive stands can be found in granitic regions not too far distant.

In recent years, a number of botanists have recognized the traditional sections or sub-genera of Lycopodium as separate genera, as in the

Flora Europaea. In such treatments, L. annotinum and L. clavatum remain in Lycopodium in the strict sense. L. complanatum, L. digitatum and L. tristachyum are known as Diphasiastrum complanatum (L.) Holub, D. digitatum (A. Br.) Holub and D. tristachyum (Pursh) Holub, respectively. L. inundatum is Lycopodiella inundata (L.) Holub and L. lucidulum is Huperzia lucidula (Michx.) Trevis.

1. Sporangia in the axils of spreading green leaves similar but slightly smaller than other stem leaves; stem elongating beyond the zone of sporangia, producing a series of alternating sterile and fertile zones.....L. lucidulum.

1. Sporangia in dense terminal strobili; sporophylls ascending or appressed, either similar but longer than the vegetative leaves or triangular and much different in appearance.....2.

2. Sporophylls with prolonged linear tips, resembling the vegetative leaves but longer and with expanded bases, remaining green; small plants, the entire length of the horizontal stem up to 10 cm.....L. inundatum.

2. Sporophylls triangular, short-acuminate, unlike the vegetative leaves, generally ochre to brown when the sporangia are mature; larger plants, with the horizontal stem (which may be subterranean) more than 10 cm.....3.

3. Strobili sessile, at the ends of branches with normal vegetative leaves.....4.

3. Strobili on distinct peduncles with sparse, greatly reduced leaves.....6.

4. Leaves 6-ranked, up to 5 mm long; horizontal stem deeply subterranean.....5.

4. Leaves multi-ranked, usually over 5 mm long; horizontal stem in the soil litter, not truly subterranean.....L. annotinum var. annotinum.

5. Leaves of the lower green portion of the erect stem ascending; leaves of the branchlets in 1 upper, 1 lower, and 4 lateral ranks; leaves somewhat boat-shaped, distinctly wider near the middle than at the base.....L. obscurum var. isophyllum.

5. Leaves of the erect stem spreading; leaves of the branchlets in 2 upper, 2 lower, and 2 lateral ranks; leaves linear-lanceolate, not much widened above the base.....L. dendroideum.

6. Strobili usually 2 or 3 per peduncle, if more, then at different heights; leaves in about 10 spiralled rows.....L. clavatum.

6. Strobili usually 4 per peduncle, rarely 3 or 5, in symmetrical groups on equal pedicels; leaves distinctly 4-ranked.....7.

7. Horizontal stem creeping on the surface of the soil or in litter, not subterranean; foliage dark green, not bluish; leaves of branchlets distinctly trimorphic, those in the 2 lateral ranks spreading, forming strongly flattened branchlets, the upper leaves smaller, linear and appressed, lower leaves reduced to small points; branchlets in fan-shaped groups, becoming horizontal.....L. digitatum.

7. Horizontal stem subterranean; foliage usually bluish-green; leaves not markedly trimorphic, the branchlets not strongly flattened; groups of branchlets usually remaining ascending.....L. tristachyum.

1. Lycopodium annotinum L. var. annotinum. (Including var. acrifolium Fern.) Stiff clubmoss. Fairly common, usually in eastern hemlock - white pine - northern hardwoods forests.

2. Lycopodium clavatum L. Common clubmoss. Fairly common, in woods of diverse composition. As noted by Britton (1984) this taxon has "not received the same attention by recent New World specialists as the other species" of Lycopodium. The southern Ontario populations of L. clavatum are generally included in var. clavatum. However, in Europe and the boreal regions of North America, L. clavatum generally has ascending leaves and 2 sessile or sub-sessile strobili terminating each peduncle, whereas the prevalent form in most of North America has widely spreading mature leaves and often 3 or more individually pedicellate strobili. Varietal status may be appropriate for such plants.

Not thus far reported for the Kingston region, but possibly to be expected in pine or birch-hemlock woods, is a related taxon with strongly ascending leaves and a single strobilus, treated by Fernald in Gray's Manual as L. clavatum

var. megastachyon Fern. & Bissell. Recently, most authors have treated those plants in the L. clavatum complex that have a solitary strobilus as one taxon, called var. monostachyon by Britton (1984). However, because it remains distinct where it and L. clavatum s. str. are sympatric, it is being treated as a separate species with increasing frequency. Perhaps after this complex has received further study, the plants with solitary strobili will be grouped as L. lagopus (Laest.) Zinzerl. ex Kuzen, with varietal or subspecific status accorded those with large, long-pedunculate strobili in distinction from those with short peduncles and small strobili.

3. Lycopodium complanatum L. Flat-branched ground-pine. L. complanatum s. str. is tentatively included in the flora of the Kingston region on the basis of a report by Wilce (1965) who thus identified a specimen collected by James Fowler at Plevna in 1902. This specimen, now in the Gray Herbarium, Harvard University, has not been examined in the present study. A supposed replicate of the same collection at Queen's Herbarium was identified by Ruth Hersey as typical L. digitatum (D. M. Britton, pers. comm. 1986) but it is possible that Fowler found both species and the different taxa, which were generally not differentiated in his time, were sent to different herbaria.

Beschel et al. (1970) listed this species on the basis of a collection from Bell's Swamp. The prolonged leaf tips on this specimen indicate that it comprises the erect stems of a juvenile plant. Neither the branching pattern of several years' growth nor the diagnostic mature foliage are represented. The horizontal stem was not collected, though it likely would have been had it run along the surface of the soil. The lower portions of the erect stems appear to have been subterranean which would not be characteristic of L. complanatum. This specimen is redetermined as a juvenile/shade form of either L. tristachyum or of L. X habereri House, pro sp. (L. digitatum X L. tristachyum).

4. Lycopodium dendroideum Michx. (L. obscurum L. var. dendroideum [Michx.] D.C. Eaton.) Round-branched ground-pine. Fairly common. Until the revision of this group by Hickey (1977) this taxon was often confused with or not distinguished from L. obscurum (var. isophyllum).

5. *Lycopodium digitatum* A. Br. (*L. complanatum* L. var. *flabelliforme* Fern.; *L. flabelliforme* [Fern.] Blanchard) Crowfoot Clubmoss. Very common; not restricted to such strongly acid soils as the other *Lycopodium* species; the most common species in the Kingston region.

6. *Lycopodium inundatum* L. Bog clubmoss. Rare in southern Ontario below the Algonquin highlands, although fairly common elsewhere. It grows in bogs and other acid, wet, peaty sites. Long ago reported by John Macoun from Hastings County but otherwise unknown in the Kingston region until its recent discovery at Hebert Bog, near the Lake Opinicon Road. This population is small and will be vulnerable if the bog receives heavy use as a study area. Several taxa formerly treated as varieties of *L. inundatum* are now regarded as distinct species. The plants in the Kingston region are *L. inundatum* in the strict sense.

7. *Lycopodium lucidulum* Michx. var. *lucidulum*. Shining clubmoss. Common, in rich coniferous, mixedwoods, or deciduous forests.

8. *Lycopodium obscurum* L. var. *isophyllum* Hickey. (*L. obscurum* var. *obscurum*, in part, in recent manuals.) Equal-leaved ground-pine. Occasional or perhaps common. Until recently this taxon was confused with the apparently more common *L. dendroideum*. Determination of the relative frequency of these two taxa in the Kingston region will require examination of local populations following Hickey's (1977) monograph. This variety is intermediate in aspect between *L. dendroideum* and *L. obscurum* var. *obscurum*. No specimens from the Kingston region represent the latter taxon, which differs in having the upper and lower leaves significantly smaller than the lateral ones. It is apparently more eastern in its distribution, as it was not reported in Minnesota by Tryon (1980). It should be looked for in the Kingston region. The only general guide to ferns and fern-allies which incorporates the results of Hickey's research and well illustrates the differences in leaf shape is Tryon's 1980 work.

9. *Lycopodium tristachyum* Pursh. Ground-cedar. Fairly common, usually in gravelly soil, often in drier and sunnier sites than other *Lycopodium* species.

Selaginella (spikemoss)

1. Plants forming tufts, the erect portion much branched, with sterile and fertile secondary branches; vegetative leaves linear, with prolonged bristle-tips; sporophylls in 4 ranks, forming sharply 4-angled zones in the fertile portions of the branches.....*S. rupestris*.

1. Plants forming mats, either with no erect branches or with only the fertile branches erect and these usually simple; vegetative leaves either ovate or without bristle-tips; fertile portions of branches not 4-angled.....2.

2. Leaves pale yellowish-green; plants prostrate or nearly so throughout; vegetative leaves ovate, not toothed or ciliate.....*S. eclipses*.

2. Leaves dark brownish-green; fertile branches erect; vegetative leaves lanceolate, with prominent slender teeth and/or cilia.....*S. selaginoides*.

1. *Selaginella eclipses* Buck. (*S. apoda* [L.] Spring, sometimes spelled *apus*, of earlier works.) Northern meadow spikemoss. This species has only recently been segregated from *S. apoda* (Buck 1977) and its elevation to specific rank has been questioned. Evidence that hybrids between *S. apoda* s. str. and *S. eclipses* are sterile supports its segregation (Webster & Mehrhoff 1984). Its usual habitats are fens and wet prairies. Records from the Kingston region are few and include Sandbanks Provincial Park, Spring Lake and Gould Lake.

2. *Selaginella rupestris* (L.) Spring. Rock spikemoss. Occasional in the Kingston region, on non-calcareous outcrops, especially sandstone. It is present on several promontories around Lake Opinicon and on the outcrops near the interpretive centre at Frontenac Provincial Park. In Ontario, *S. rupestris* is represented by an apogamous race that produces only 2 megaspores per megasporangium and no microsporangia (Tryon 1971).

3. *Selaginella selaginoides* (L.) Link. Northern spikemoss. Though not otherwise known from the Lake Ontario basin, this species is included on the basis of an 1871 collection by John Macoun now at Queen's University. The label states a "cedar swamp, Belleville," identified by Macoun as *S. apus*, corrected to *S. selaginoides* by J.H. Soper in 1950. These specimens remained among those of *S. eclipses* until their rediscovery by A.E. Garwood in the 1970's. This oversight, rather than skepticism, accounts for the absence of this record from the checklist by Beschel et al. (1970) and several publications which map the distribution of this species. These plants originally occupied the bottom part of a herbarium sheet with other specimens on the sheet from around Owen Sound and Buffalo which were collected by other persons, each having its own label (A.E. Garwood, in litt. 1986, including photocopies of the pertinent herbarium sheets). Thus, it appears unlikely that Macoun collections of *S. eclipses* and *S. selaginoides* became mixed. A cedar swamp near the Lake Ontario shore seems possibly to have provided suitable habitat for an outlying southern population of *S. selaginoides*. This record is, therefore, judged to be a correct one.

Isoetes (quillwort)

Note that ridges, representing the junctures of a spore with the other spores in a tetrad before separation, are present on the megaspores of all species in this genus. In using keys to *Isoetes* species, these large ridges, 3 radiating from one common point to another and encircling the spore, should not be confused with the diagnostic surface features between these ridges. These features may be spines, small unconnected ridges, a honeycomb pattern, etc. The treatment of *Isoetes* in northeastern North America by Kott & Britton (1983) is followed.

1. Surface of megaspores with numerous distinct spines.....*I. echinospora*.

1. Surface of megaspores with short, irregular, often branched ridges.....*I. riparia*.

1. *Isoetes echinospora* Dur. (Including var. *braunii* Engelm. and var. *muricata* [Dur.] Engelm.; *I. muricata* Dur.) Spiny-spored quillwort. Occasional or perhaps fairly common in clear, shallow water, on a gravelly or cobbly substrate or in crevices in submerged non-calcareous outcrops; easily overlooked or confused with sterile forms of various flowering plants. Large populations are present in areas of Lake Opinicon and in Otter Lake.

2. *Isoetes riparia* Engelm. ex A. Br. (Including var. *canadensis* Engelm.) Shore quillwort. Rare in Ontario; found in the Crowe River at Marmora by John Macoun in 1867 but otherwise unknown from the Kingston region. A specimen from Cow Island Channel, Lake Opinicon, has been reidentified as *I. echinospora* in this study.

Isoetes macrospora Dur. s. str. (i.e., excluding *I. hieroglyphica* A.A. Eaton and *I. tuckerianii* A. Br. but possibly not separable from *I. lacustris* L.), big-spored quillwort, has been found at several localities north and northwest of the Kingston region and should be looked for in clear lakes on the Precambrian shield in the northern part of the region.

Equisetum (horsetail)

1. Stems not branched above the base, or with few, irregular branches.....2.

1. All stems, or all sterile stems, regularly bearing branches of nearly uniform length in whorls of 4 or more per node.....5.

2. Stems numerous in tufts, flexuous, generally less than 20 cm tall and less than 0.8 mm (1 mm) in diameter, without a central cavity (but with 3 tiny non-central vallicular cavities); sheaths with 3 persistent teeth.....*E. scirpoides*.

2. Stems either few-several in tufts or not tufted, sometimes decumbent at the base but otherwise straight, not flexuous, the larger ones over 20 cm tall and/or over 1 mm in diameter; sheaths either with more than 3 persistent teeth or with the teeth quickly deciduous.....3.

3. Stems soft, not overwintering; sheaths without a blackish band; sheath teeth 10 or more, persistent, and the central cavity of the stem over three-quarters of the stem diameter.....E. fluviatile.
3. Stems firm and evergreen; sheaths with a blackish band near the summit; either with the sheath teeth 10 or fewer, persistent, and with the central cavity of the stem one-half the stem diameter, or with the teeth quickly deciduous and the stem cavity sometimes larger.....4.
4. Stems in small tufts, usually less than 40 cm tall and less than 3 mm in diameter; sheath teeth persistent.....E. variegatum var. variegatum.
4. Stems not tufted, often taller, mostly over 3 mm in diameter; sheath teeth quickly deciduous.....E. hyemale var. affine.
5. Primary branches bearing whorls of secondary branches.....E. sylvaticum.
5. Primary branches not further branched....6.
6. Aquatic or riparian; branched stems usually with prolonged unbranched tips, often also with unbranched or sparsely branched stems; central cavity of main stems over three-quarters of the stem diameter; sheath teeth on main stems usually 12 or more; strobili borne on green stems similar to the sterile ones.....E. fluviatile.
6. Not aquatic, although sometimes in damp sites; all sterile stems much branched, generally to within 5 cm of the tip; central cavity of the main stems proportionately smaller; sheath teeth on main stems usually 10 or fewer; strobili terminating distinctly differentiated, pale brown, pinkish, or pale green fertile stems (these sometimes tardily producing green branches).....7.
7. Fertile stems appearing in spring and soon dying back, not producing green branches; sheath teeth dark brown throughout; first segment of branches of sterile stems as long as or longer than the sheath (including teeth) of the main stem above them (the small sheath at the base of each branch is not the first segment).....E. arvense.

7. Fertile stems persistent, producing green branches; sheath teeth with prominent white margins; first segment of branches shorter than the sheath of the main stem above them.....E. pratense.

1. Equisetum arvense L. (Including var. boreale [Bong.] Ledeb.) Field horsetail. Abundant in a wide range of habitats, this species is highly variable and was formerly divided into two or more varieties and several forms that are now generally regarded as responses to environmental conditions. Plants in sunny sites have relatively dense, short, ascending branches, whereas those in shady sites have more widely spaced, longer, widely spreading, slenderer branches, thus resembling E. pratense. Normally the stems are erect but on slopes with shifting sand, such as road fill, the stems may be decumbent. Fertile stems are most numerous in moist, sunny or moderately shaded sites; infrequent or absent in dry sites and heavy shade.

2. Equisetum fluviatile L. Water horsetail. Fairly common, in shallow water and on muddy shores. This species is abundant in several coves of Upper Rock Lake and other small water bodies in the Lake Opinicon area. The stems are variable in the amount of branching and according to Mickel, the earliest stems tend to be unbranched, the later ones branched. The amount of branching also seems to be inversely correlated with water depth.

Specimens identified as E. palustre L., marsh horsetail, from the Kingston region have been redetermined as E. fluviatile in the present study. True E. palustre may well occur in the region, but has yet to be documented. It differs from E. fluviatile in the proportionately smaller central stem cavity and fewer sheath teeth.

3. Equisetum hyemale var. affine (Engelm.) A.A. Eaton. (Including var. robustum [A.Br.] A.A. Eaton; also including var. elatum [Engelm.] C.V. Morton, sensu most recent usage, not as to type.) Common scouring-rush. Very common, mostly in deciduous woods.

4. Equisetum pratense Ehrh. Meadow horsetail. Uncommon in the Kingston region. Known from the vicinities of Narrows, McIlhenny's Creek,

and Lyn Creek, all in southern mainland Leeds County, and on Grenadier Island; perhaps overlooked elsewhere. This species is even more slender than the shade form of E. arvense and the branch tips droop.

5. Equisetum scirpoides Michx. Dwarf scouring-rush. Occasional in moist woods.

6. Equisetum sylvaticum L. (Including var. multiramosum [Fern.] Wherry and var. pauciramosum Milde.) Woodland horsetail. Occasional in most of the Kingston region, becoming increasingly common northward; in wet, mossy coniferous or mixedwoods forests.

7. Equisetum variegatum Schleich. var. variegatum. Variegated scouring-rush. Occasional, regularly occurring in the damp sand of interdunal depressions along Lake Ontario, as at Sandbanks Provincial Park; also in other damp, sandy sites such as abandoned gravel pits.

Hybrid horsetails: Several hybrids are known between species of the two sub-genera of horsetails, Equisetum (horsetails) and Hippochaete (scouring-rushes), but not between taxa in the different sub-genera. The hybrids generally produce abortive spores. E. X ferrissii Clute, pro sp. (E. hyemale X E. laevigatum), has been found among the dunes at Weller's Bay, Prince Edward County. One of the parental species, E. laevigatum A.Br. (E. kansanum Schaffn.), smooth scouring-rush, is not known to occur so far east as the Kingston region, but rhizome fragments of this frequent hybrid are evidently spread by lake currents (Hauke 1963); populations in the Lake Ontario basin are generally confined to the shores.

Equisetum littorale Kuhl., pro sp. (E. arvense X E. fluviatile), shore horsetail, was collected in interdunal locations in present-day Sandbanks Provincial Park in 1910. More recent specimens originally so identified have been redetermined as E. fluviatile in the present study, but additional populations of this and other Equisetum hybrids may remain to be discovered in the Kingston region.

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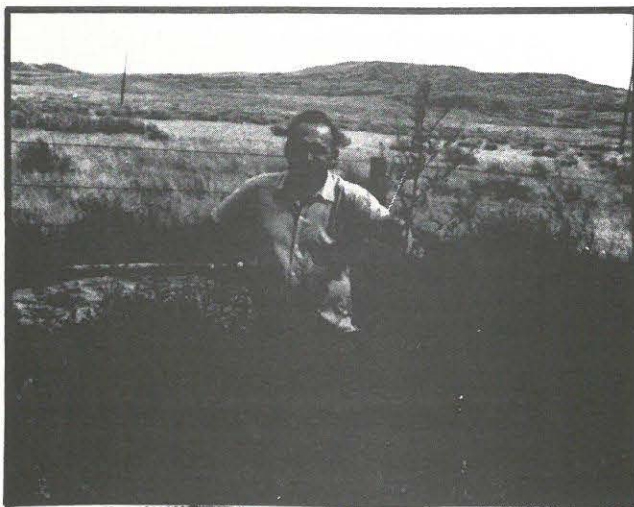
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TWO RECENT RETIREMENTS AT THE BIOSYSTEMATICS RESEARCH CENTRE

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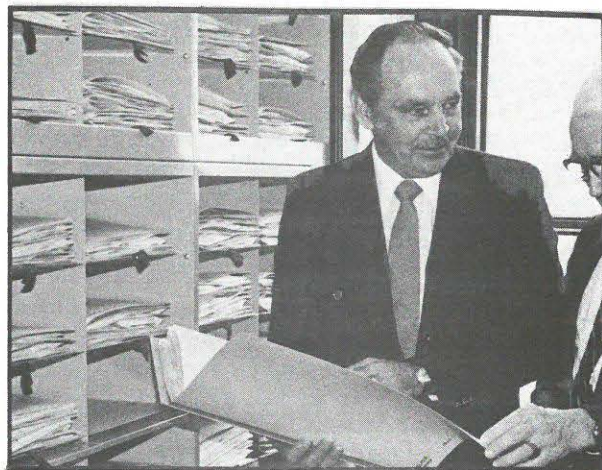
Two retirements from research positions at the Biosystematics Research Centre (BRC), Agriculture Canada, occurred in 1986. Mr. I. J. Bassett left in the summer. Struggling against multiple sclerosis in the later years of his career, John continued his botanical research activities until his recent retirement. His best known publications are The plantains of Canada (1973) and The genus Atriplex in Canada with C. Crompton, P.M. Taschereau & J. McNeill (1983). Both publications are available from Agriculture Canada.



John Bassett with *Atriplex*, 1 Sept. 1970, 32 km south of Medicine Hat, Alberta.

After many years as Director of BRC, Mr. G.A. Mulligan announced his intention of taking early retirement in the autumn of 1986. He is completing his "tour of duty" as Acting Director-General of the Research Branch, Agriculture Canada. His application for affiliation as an Associate Researcher at BRC has been approved and, upon retirement, he will be able to devote more time to his botanical studies.

More biographic information on both Mr. Bassett and Mr. Mulligan may be found in "Systematics in Agriculture Canada at Ottawa, 1886-1986" available without charge from: The Director, Biosystematics Research Centre, Central Experimental Farm, Ottawa, Ontario K1A 0C6.



Gerald Mulligan in the herbarium of the Biosystematics Research Centre. ●

A PLANT HUNTER'S STORY

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Hunting plants can be very exciting. Here is the story of the finding of a new orchid for Ontario. It begins in 1959 when I was working as a Park Naturalist for the Department of Lands and Forests in Sibley Provincial Park, which is a peninsula projecting into Lake Superior.

We kept a three day rotation of responsibilities. One day I looked after the museum and another day I took a party out on one of the nature trails or up to the top of the Sleeping Giant by way of a crevasse on the east side. On the third day, we looked for specimens to identify or add to the park herbarium. I was working on the botany and geology angles and, although Claude Garton had done a good job botanizing the peninsula, I found a few new ones. I made models of the Sleeping Giant and Animike formations from the actual rocks and gave talks on the geology of the area to clubs or led local groups of young people on nature hikes. In the evenings we would often lug our generator to the shore and give talks and show movies to the tourists. I also wrote the descriptions of the geology of the area that were displayed along the roadsides and in the park. One week I worked the Lakehead Fair where I looked after the beavers and the reptiles and explained the geology models.

I found *Oxytropis splendens* at the top of the mountain and Braun's holly fern in a dark crevasse under the waterfall coming down from Fairy Lake. I spent a lot of time looking for *Malaxis paludosa* at Surprise Lake and around Warner Bay where Garton had collected numerous specimens for various herbaria. At this time the making of herbaria was the thing to do. Professors would come in with gangs of students and each student would take several specimens of anything rare or interesting and they would trade them around like baseball cards and would get credit for their botany course.

My big discovery came when I was poking around in a dark little bay where the trees were very thick and the peat moss was soft and deep. I found several plants of what looked like *Orchis rotundifolia* but the ones I found, instead of having white and red-spotted petals, had red lips with a white line running down through it and a white fringe around it. I was very excited about it because none of my orchid

books had anything like this. I took a specimen and flopped it down on Bill Climey's table and said, "Look, Bill, there is no such thing." I made drawings of it and promptly wrote to Jim Soper about it and he told me to write to Garay at Harvard and send him a specimen. Garay wrote back and said that it was *Orchis rotundifolia* var. *lineata* and that it had been found once before in Elkwater Lake Park in Alberta. It was a new orchid for Ontario! I got in touch with Jim Soper again and he helped me write an article for *Rhodora* (Elliott, V. 1960. A new locality for *Orchis rotundifolia* var. *lineata*. *Rhodora*, 62:174).

I drew some pictures of this flower and wrote an article for the F.O.N. magazine. A nasty letter came back from the magazine asking me who I thought I was kidding and saying if I had found a new orchid the article was too important for them to publish. But someone at the magazine had more faith in me and telephoned Jim Soper about the matter. Jim confirmed my discovery and then it was confirmed by Garay from Harvard. So they published my article, "A new orchid for Ontario," and a short while later, my report in *Rhodora* appeared.

And that is not the end of the story. In the winter of 1959, the F.O.N. had an annual meeting in Toronto. Harold Andrews, a photographer who organized many of our botanical expeditions which included Bartman, Montgomery, Soper, Sharpe, and sometimes Fox or Landon, was giving a talk on the Orchids of Ontario. In the middle of the lecture, a slide of *Orchis rotundifolia* var. *lineata* was thrown on the screen. Immediately three people in the audience stood up and waved their hands in the air shouting, "That's our orchid! That's our orchid!" It seems that Ott Devitt had found a station for var. *lineata* in Frontenac County about the time that I found it in Sibley.

This story should end happily here but it didn't. Not quite. Fred Case, in "Orchids of the Western Great Lakes Region," tells about my discovery on the Sibley Peninsula near Port Arthur and references my article in *Rhodora*. However, Leur in *The native orchids of the United States and Canada* says that it was found in Thunder Bay County in 1966, six years after I had written it up for *Rhodora*! He credited E.G. Voss with the discovery, though Leur certainly knew about my article in *Rhodora*.

It can be very frustrating for the amateur who makes a significant discovery and tries to get the "powers-that-be" to give him some credit! ●

FUNDS NEEDED TO BUY OLIPHANT FEN, BRUCE COUNTY

Malcolm Kirk, 46 Napier St. W., Thornbury, Ontario NOH 2P0

Oliphant Fen may be the best example of its wetland-type in the province and I presently hold an option to buy the property on which it sits. The property will be purchased through the Ontario Heritage Foundation which will match private funds dollar for dollar. Cheques should be made payable to the Ontario Heritage Foundation with the stipulation that the money goes to the Oliphant Fen Trust Fund. You can note that on the back of the cheque.

For more information on the fen or the involvement of the Heritage Foundation, address inquiries to Thornbury Natural Heritage League, % Mr. B. Howard, Ontario Heritage Foundation, 77 Bloor St. W., 2nd floor, Toronto, M7A 2R9.

THOMAS PRESTON HART (died 1934)

information on his activities as a naturalist requested by Eleanor Gardhouse, 156 Oxford St., Woodstock, Ontario, N4S 6A9

I am researching the life of my grandfather, Thomas Preston Hart, a naturalist and amateur plant collector who died in 1934. For its time, his fern collection was supposed to be the best in southern Ontario. I have just donated his collection to the University of Waterloo.

Anyone with knowledge of T.P. Hart should contact me by writing to the above address.

LANARK COUNTY CHECKLIST OF PLANTS

David J. White, R.R. 3, Lanark, Ontario K0G 1K0

I am presently working on an annotated checklist of the vascular plants of Lanark County. I would be interested in receiving records of possible rare species and/or locations of unusual habitats. If anyone would like more information about the project and ways to contribute, contact me at the above address.

LA CLOCHE FLORA: SPECIMEN RECORDS REQUESTED

I.D. Macdonald, #105 - 19th Street N.W.,
Calgary, Alberta T2N 2H8

The La Cloche Mountains may be familiar to most of us as splendidly shining quartzite hills which occur in Killarney Provincial Park. However, these ridges also extend westward for a further 35 km along the North Channel to the mouth of the Spanish River, reach southwestward into Georgian Bay as a string of islands, and onto Manitoulin Island itself as isolated outliers. In all, they are present in three districts, Manitoulin, Sudbury and Algoma, and over a dozen townships.

The quartzite ridges and their immediately adjacent hardrock and limestone support a vascular plant flora of over 850 species, several of which are provincially rare or represent notable range extensions.

I have been examining this flora over the past 13 years, off and on, and shall be having a final push to 'fill in the blanks' this year.

I would be interested to hear from people who have made any collections, have verifiable sightings or photos of plants, or know the whereabouts of other people's collections or studies from the La Cloche area, including islands in the Bay of Islands and the Birch Island area, and from that portion of Manitoulin District which lies on the mainland, east of Killarney Provincial Park.

Those respondents sending appropriate information to the above address will be sent a current checklist of the La Cloche area. ●

TAXACOM, AN ELECTRONIC BULLETIN BOARD SYSTEM

Richard H. Zander, Buffalo Museum of Science,
Humboldt Parkway, Buffalo, NY, USA 14211
Patricia M. Eckel, Buffalo Museum of Science,
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The Clinton Herbarium (BUF) offers collection-oriented botanists an opportunity to communicate informally, sharing data-intensive textual

information and computer programs in an online, symposium-style environment. TAXACOM is optimized for IBM-PC standard, MS-DOS software operating on an IBM-PC or compatible microcomputer. It is intended as an alternative to the monolithic databank, and contributions concerning New York State and Ontario floristics are especially encouraged.

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To contribute text files or programs: Register as a TAXACOM user. After validation you will be assigned an access level. Alternatively, contact R. Zander by voice (716-896-5200) or send us a 5.25 inch diskette (any format, including Apple, but MS or IBM DOS preferred). The journal FLORA ONLINE is restricted to data-intensive, original works (suitable for computer searching with a word processor or text data manager), or computer programs presenting new scientific information (at least in associated data files) or dealing with important botanical topics. We will consider for general posting on TAXACOM any file (unrestricted by copyright or license) of possible interest to the systematics community. ●

CANADIAN JOURNAL OF BOTANY CORRECTIONS AND ADDITIONS FROM 1983-1985,

compiled by P.A. Keddy, Biology Department,
University of Ottawa, Ottawa, Ontario K1N 6N5

"...from 1980 to 1985 I completed, with... several co-workers, a series of studies.... Five of these were published in the Canadian Journal of Botany. In The Plant Press 4(2) ...only one paper is listed, and it has an incorrect description. Compiling references is a thankless job, I know, but on the other hand, authors (and co-authors) like to maintain the illusion that their work will acutally be used..."

Paul Keddy, University of Ottawa]

[Ed. note: Our apologies to all concerned. Corrections appear below. J.W.]

Nicholson, A. & P.A. Keddy. 1983. The depth profile of a shoreline seed bank in Matchedash Lake, Ontario. 61: 3293-3296. (Shoreline species of coastal plain habitats have a majority of seeds buried under less than 2 cm of soil, a condition which is different from most wetlands.)

U. Poslusny, M.J. Sharp & P.A. Keddy. 1984. Vegetative propagation in *Rhexia virginica* (Melastomataceae): Some morphological and ecological considerations. 62: 2118-2121. (Adult plants of *R. virginica*, a provincially rare species, die each year; populations persist only from newly-produced tuberous root swellings.)

Keddy, P.A. 1985. Wave disturbance on lakeshores and the within-lake distribution of Ontario's Atlantic coastal plain flora. 63: 656-660. (Shorelines disturbed by waves support more Atlantic coastal plain species than sheltered bays. In lakes where water levels don't fluctuate widely, exposed shores may allow these species to persist.)

Wilson, S.D., P.A. Keddy & D.L. Randall. 1985. The distribution of *Xyris difformis* along a gradient of exposure to waves: An experimental study. 63:1226-1230. (*X. difformis*, a provincially rare species, germinates preferentially and grows most rapidly on sandy shorelines created by exposure to waves.)

Sharp, M.J. & P.A. Keddy. 1985. Biomass accumulation by *Rhexia virginica* and *Triadenum fraseri* along two Takeshore gradients: A field experiment. 63: 1806-1810. (Both species grow best in organic soils in the absence of shrubs in spite of having different local and geographical distributions.) ●

SYSTEMATIC BOTANY REFERENCES FROM 1984 - 1986

compiled by Timothy Dickinson, Department of Botany, Royal Ontario Museum, 100 Queen's Park, Toronto, Ontario M5S 2C6.

Chinappa, C.C. & J.K. Morton 1984. Studies on the *Stellaria longipes* Complex (Caryophyllaceae): Biosystematics. 9:60-73. (This circumpolar species is highly polyploid; a Moosonee population is diploid.)

Bayer, R.J. 1984. Chromosome numbers and taxonomic notes for North American species of *Antennaria* (Asteraceae: Inuleae). 9:74-83. (6x Ontario *A. neodioica* Bayer & Stebb. s.l. and *A. parlinii* Bayer & Stebb. s.l.)

Dickinson, T.A. & J.B. Phipps 1985. Studies in *Crataegus* L. (Rosaceae: Maloideae). XIII. Degree and pattern of phenotypic variation in *Crataegus* sect. *Crus-galli* in Ontario. 10: 322-337. (Includes key to Ontario forms of *C. sect. Crus-galli* that updates the one in Phipps and Muniyamma [Can. J. Bot. 58:1621-1699]. Phipps has nomenclatural changes that include identifying *C. tenax* Ashe as the correct name for what has been called *C. fontanesiana* [Spach] Steud. until now [i.e. the 20-stamen form of *C. crus-galli* s.l.].)

Les, D.H. 1985. The taxonomic significance of plumule morphology in *Ceratophyllum* (Ceratophyllaceae). 10:338-346. (Two plumule morphs occur in Ontario: the common 2+2 in northwestern Ontario, and the 3+4 in the east.)

Averett, J.E. & D.E. Boufford 1985. The flavonoids and flavonoid systematics of *Circaea* (Circaeae, Onagraceae). 10:363-373.

Ammirati, J.F. 1986. Review of American Arctic lichens. I. The Macrolichens. 11: 55. ("Lichens are documented primarily from the tundra of Alaska and Canada, but those...at the northern edge of the boreal forest are included as well." US \$55.00, clothbound, from Columbia University Press.)

Sokal, R.R., T.J. Crovello & R.S. Unnasch 1986. Geographic variation of vegetative characters of *Populus deltoides*. 11:419-432. (Study in-

includes a limited number of southern Ontario samples; spatial autocorrelation suggested that for the variables studied, "individuals are responding to microclimatic and site [factors] on a scale of 200-300 kilometers.") Warwick, S.I. & S.G. Aiken 1986. Electrophoretic evidence for the recognition of two species in annual wild rice (*Zizania*, Poaceae). 11:464-473. ("The varieties divided into two groups on the basis of four enzymes ... [which] corresponded to the two species, *Z. aquatica* [including vars. *aquatica*, *subbrevis*, and *brevis*] and *Z. palustris* [including vars. *palustris* and *interior*].") Les, D.H. 1986. The evolution of achene morphology in *Ceratophyllum* (Ceratophyllaceae). I. Fruit-spine variation and relationships of *C. demersum*, *C. submersum* and *C. apiculatum*. 11:549-558. (Ontario specimens included in this numerical study of phenotypic variation came from CAN, DAO, LKHD, QK, TRT and WIN.) Randall, J.L. & K.W. Hilu 1986. Biosystematic studies of North American *Trisetum spicatum* (Poaceae). 11:567-578. (10 N. Ontario populations surveyed; vouchers in VPI.) ●

GARDEN (A MAGAZINE OF THE GARDEN SOCIETY OF THE NEW YORK BOTANICAL GARDEN)

reviewed by Judy K. Hernandez, 276 St. Clair Ave. W. #402, Toronto, Ontario M4V 1R9

Garden, an attractive 32-page, bimonthly magazine, has been published by the Garden Society in New York since 1977. The Society is a division of the New York Botanical Garden, an organization comprising 11 botanical institutions in the United States and the University of British Columbia Botanical Garden in Canada.

Though it is titled Garden, the magazine covers far more than gardening topics. It "explores the obvious and the obscure, the how-to and the how-come, the superstition and the science of botany, horticulture, floriculture and the environment."

This stimulating magazine offers excellent articles by botanists and plant specialists actively involved in research around the world. Articles of interest to field botanists include: "On transplanting native plants" (Jan./Feb. 1985), "Tree dieback: The growing case against acid rain" (Mar. / Apr. 1985),

"'Advocacy botany' for the neotropics" (May/June 1985), "Plant protection is back on track" (July/Aug. 1985), and "The nuts and bolts of wild orchid protection" (Mar./Apr. 1986). An article with strictly Canadian content is "Virgin prairie in Winnipeg" (Sept./Oct. 1985).

Garden also has book reviews. The March/April 1986 issue has a review of *A field-manual of the ferns and fern-allies of the United States and Canada*, which is published by the Smithsonian Institution. Each issue also has a guest column devoted to environmental matters or plant conservation.

The content of the magazine is international in scope. Past issues have addressed environmental and botanical concerns in places such as India, China and South America, among others. Many field botanists would also enjoy the Garden articles that don't relate directly to field botany. For instance, the Nov./Dec. 1984 issue has an article on the value of house and garden plants, "The psychological benefits of plants." It is a magazine that all plant lovers would enjoy, irrespective of career specialization or personal special interest.

Members of any of the 12 institutions that constitute the New York Botanical Garden receive Garden as a benefit of membership, but subscriptions are available to non-members, for \$12 U.S. per year. Subscription applications should be sent to the Subscription Dept., Garden Magazine, New York Botanical Garden, Bronx, New York, 10458, U.S.A. ●

PLACES TO BOTANIZE IN THE TORONTO AREA:

Toronto's Backyard: A guide to selected nature walks. Gregory, D. & R. MacKenzie, illus. by M. MacKenzie. Douglas and MacIntyre, Vancouver and Toronto. 1986. 148pp., \$9.95.

Toronto Islands: Plant communities and noteworthy species. Varga, S. *Toronto Field Naturalists*, Toronto. 1987. 22pp., \$2.00.

reviewed by Timothy Dickinson, Botany Dept., Royal Ontario Museum, 100 Queen's Park Cres. Toronto, Ontario M5S 2C6

For a newcomer to Toronto like myself, these publications are a welcome and useful introduction to some of the more or less undisturbed natural areas in the Metro region. Similarly,

any long-time Toronto residents who have only recently begun to explore these areas will also find them valuable. Those who are already familiar with the vegetation of the region will probably also find these books useful, especially Varga's beautifully illustrated introduction to the Toronto Islands.

The Gregory and MacKenzie book includes seven introductory chapters that set the physical, biological and human stage on which nine natural areas are introduced. These seven chapters are generously illustrated to explain the bedrock and surficial geology, Quaternary history, and human history of the region. In passing, the authors introduce ideas that usually are not included in guidebooks, referring to glaciers as "... the only mediums that could possibly have carried such massive rocks [as the erratics along Upper Highland Creek]." They also contribute an element of revisionist history when they describe the economic rationale for European colonization and the extreme bloodshed it entailed.

The seventh chapter of *Toronto's Backyard* is described as a "pre-amble" and it explains considerations that users should have in mind (e.g. footwear and poison-ivy) before setting out on the walks described in the following chapters. Each of these chapters is illustrated with one or more very clear maps, plus photographs or drawings (including turn of the century and earlier ones) of the area. In addition to the maps, M. MacKenzie has also provided 51 illustrations of plant species characteristic of the different walks. These illustrations are reduced to 6 cm square cuts but they retain their clarity of detail and provide an excellent mental image that the reader can take into the field in order to spot the plant itself (hopefully, readers who are novices will make successful adjustments for season and scale).

Chapters eight through sixteen describe nine different natural areas, from Oakville Creek to Highland Creek. Each of these chapters is provided with a very clear map showing access, the suggested route, and points of interest numbered to correspond to their description in the text. The text provides details of the route and describes the flora and other features of interest along the way. Plants are identified by both common name and (parenthetically) scientific name. The text also incorporates notes on the geological, natural and human

history of the landscape. In the chapter on Oakville Creek, I can vouch for the accuracy and pedagogical value of these notes, such as the one on the difference in form between open- and forest-grown trees, exemplified by a very large white oak (p. 59).

Altogether this is an excellent guide to natural areas in and around Toronto. Botanists familiar with the region and its flora might not need such a book themselves, but I think they will find it valuable as an introduction for students, friends and visitors.

If *Toronto's Backyard* is a botanically respectable popular guide to Toronto natural areas, Varga's booklet on the Toronto Islands is a contribution to the botanical literature of the Toronto region that is eminently approachable by an enthusiastic novice. As the introduction points out, one of the most important botanical sites of the Toronto region is "only a ten-minute ferry ride from the heart of downtown."

This booklet is an inexpensive and beautifully illustrated guide. *Toronto Islands* is subtitled "Plant Communities and Noteworthy Species." The former are mapped and then described in six sections. The latter are presented in 35 elegant pen and ink figures, some of them (*Eleocharis erythropoda* and *Carex aquatilis*) rendered with impressive detail. As with the illustrations in *Toronto's Backyard*, no scale is given. However, usually the entire plant is shown so that in conjunction with the text a naive user would likely not go too far wrong. The booklet includes brief historical notes, illustrated by Varga's reproduction of a 1793 map of the islands, and a briefer description of their conservation status. An appendix provides a checklist, sorted by habitat, of "regionally rare plant species," with asterisks indicating regionally and provincially rare taxa. Although the booklet concludes with an admonition to take away only "notes, sketches, photos and happy memories" (as well as one's garbage), I wonder whether the emphasis on rarity in the checklist is wise. Given a warning to pick nothing, is it necessary to point out the rarities so explicitly here in a guide intended at least in part for popular use?

Any criticisms notwithstanding, both books are attractive, botanically worthwhile and reasonably priced. They can be highly recommended for all three reasons. ●

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We are pleased to receive submissions about native or naturalized vascular plants, bryophytes, and lichens in Ontario. All submissions should include original information (i.e., your own observations or experiences). All submissions are informally reviewed by the Editorial Committee. Submissions with content beyond our expertise may be sent to North American specialists. Articles must be written in the style of this publication and authors are encouraged to ask qualified persons to appraise their work before it is submitted.

We request 3 copies of typed, double-spaced manuscripts whenever possible. These should be sent to the Editor's address (above).

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