

THE PLANT PRESS

FIELD BOTANY IN ONTARIO

Vol.3

No.3

SEPTEMBER

1985

CONTENTS

NEWS	.	.	.	.	.	.	.	.	.	78
LETTERS	.	.	.	.	.	.	.	.	.	78
IDEAS	Webber, J.M.	Ontario's botanical resources: some opinions on management concerns	.	.	.	.	.	.	.	79
NOTES & REPORTS										
	Darbyshire, S.J.	The goldenrod hybrid <u>Solidago caesia</u> L. X <u>S. flexicaulis</u> L. in Ontario	.	.	.	.	.	.	.	82
	Pringle, J.S.	George Lawson's "The School Fern-flora of Canada": solution of a bibliographical mystery	.	.	.	.	.	.	.	86
	Gregory, D.	The vegetation of Westmeath Candidate Provincial Park	.	.	.	.	.	.	.	87
	Allen, G.M. & Oldham, M.J.	<u>Plantago cordata</u> Lam. (heart-leaved plantain) still survives in Canada	.	.	.	.	.	.	.	94
	Bader, D.	Beechnuts for the botanist	.	.	.	.	.	.	.	97
NEWS OF FIELD BOTANISTS										
	Hounsell, R.W.	Norfolk reflections	.	.	.	.	.	.	.	99
INFORMATION & REQUESTS										
	White, D.J.	Another Ontario record of the moss <u>Pohlia sphagnicola</u>	.	.	.	.	.	.	.	104
	Hodgins, J.	Some native wildflowers and ferns unsuitable for transplanting to mesic, neutral soil gardens	.	.	.	.	.	.	.	104
	Crins, W.J.	The Erindale Campus Herbarium (TRTE)	.	.	.	.	.	.	.	106
	Haber, E.	Plant life exhibits need your help	.	.	.	.	.	.	.	107
ONTARIO PLANTS IN PRINT										
	Varga, S.	<u>The Michigan Botanist</u> references from 1980 - 1984	.	.	.	.	.	.	.	108
	Oldham, M.J.	<u>Natural Areas Journal</u>	.	.	.	.	.	.	.	109
	Reznicek, A.A.	review of <u>Checklist of Plants, Lake Superior Provincial Park</u>	.	.	.	.	.	.	.	110
	Williams, H.	review of <u>A Graphic Guide to Ontario Mosses</u> by Robert Muma	.	.	.	.	.	.	.	110
OBITUARY		Bernard Boivin (1916 - 1985)	.	.	.	.	.	.	.	111
Front page illustration:		<u>Utricularia vulgaris</u> (common bladderwort) by Mary I. Moore								

NEWS

IMPORTANT NOTICE TO OUR READERS

As of this year The Plant Press is published by The Plant Press, Inc., a non-profit, charitable organization. Although no change in the editorial staff has occurred, this has meant the loss of the publication's most generous sponsor, Jocelyn Webber. During the first years of the publication's existence she covered operating deficits from her own pocket. In 1983 she subsidized each subscriber to the tune of \$ 8.70. In 1984 the level of subsidy dropped to \$ 5.00 per subscriber. The shortfall for 1985 is projected to be around \$ 2.00 per subscriber, but Jocelyn is no longer faced with the prospect of having to top up the publication's ailing bank balance. That is now the task of the Board of Directors.

We have wrestled long with the demon of deficit financing. The original subscription fee was based on a 20-page issue, folded and mailed without envelopes. Efforts were directed towards increasing the number of subscribers. Since then printing costs and postal rates have increased along with the size of each issue. Although there are now 400 subscribers, we expect this number to increase relatively slowly in the future. There are not enough subscribers to cover costs at the current subscription fee.

There is one avenue we can and must take and we know you will be with us in this decision: we must raise the level of the subscription fee to more fully reflect the current cost of production. We wish to make The Plant Press as widely affordable as we possibly can and we would be distressed to think that the cost of a subscription had deterred anyone from subscribing. We do not take this step lightly and we hope that any grumbling will be quickly muted by sympathetic understanding. Nothing seems to be going down these days, except the buying power of a dollar.

The Board has agreed to raise the 1986 subscription fee to \$ 15.00 for home subscribers and \$ 22.00 for corporate/institutional subscribers. This should, if you continue to believe in The Plant Press and pull with us, eliminate this year's shortfall and cover most of next year's production expenses. If and when The Plant Press makes any considerable

profits, we will be delighted to announce a reduction in subscription rates, but that day does not appear very near.

We remind you that The Plant Press, Inc. has charitable status and we can and do provide receipts for Income Tax purposes. This year we have had several very generous supporters and it is, in part, thanks to them that the shortfall is as small as it is. It has also been shrinking due to the tireless efforts of our Editor and the Editorial Committee in expanding the circulation of The Plant Press and reducing expenses through numerous economies and improved efficiency of production. To all those who have supported The Plant Press through contributions of time or money, we express our heartfelt thanks. We believe that The Plant Press fills an important role in the cultural and scientific fabric of Ontario and Canadian society. We believe that as we continue to work on behalf of our readers, you will continue to support The Plant Press in 1986 and beyond.

Jeff Kaiser, Secretary/Treasurer,
The Plant Press, Incorporated.

WANTED: ILLUSTRATIONS & PHOTOGRAPHS

Our supply of line drawings and photographs for future issues is getting low. It is often not possible to provide reasonable notice for requests, however the list of weeds indicated on the enclosed 1986 subscription form should provide a source of possible subjects for future issues. Photographs are also welcome, especially glossy, black and white prints.

Drawings should be 1.5 to 2 times larger than they will appear in The Plant Press. Too often details are obscured through further reduction. Black ink or magic marker is preferable to ball point. We would appreciate hearing from an illustrator who would be willing to help us with short notice assignments.

LETTERS

We are pleased to receive encouraging letters from our subscribers in Ontario and beyond - nearly every province and territory in Canada and adjacent states south of the border. Some of our readers live in more remote regions and

we were particularly interested to receive the letters below from the other side of the world.

"Enjoyed Vol. 3(1) of The Plant Press very much. Was glad to actually see it, as we had heard it was forthcoming...

"We have been absorbed by Papua New Guinea; it constantly provides new stimulation. Working in the herbarium at Wau Ecology Institute has enabled me to tackle the flora of an estimated 10,000 species. It is even nice to feel comfortable knowing a few family characteristics. Many plants are and can only be identified to genus. We use Flora Malesiana, an incomplete flora with only 6 volumes of revisions which cover about 25% of the flora...

"The bush is beautiful - vast, wild and so inaccessible that many areas have not been collected in. A new species here and there... happens quite often.

"There are epiphytic rhododendrons, over 2500 species of orchids (in 134 genera), alpine vegetation, 'oaks' (Fagaceae), *Araucaria* spp. and the number of endemics is thought to be about 55%..."

Ellen Woodley, Bulolo, Papua New Guinea

"We are a long way from Ontario, but we still managed to enjoy Vol. 3(1) of The Plant Press, which arrived in our mailbox by some mysterious force. I read Mary Moore's paper on hybrid maples with great interest, and Doug Sadler's explorations at Winisk made me homesick for the Hudson Bay Lowlands..."

Brent Tegler, Bulolo, Papua New Guinea

[Brent and Ellen are currently on a CUSO assignment in Papua New Guinea. The March issue, Vol. 3(1) was mailed on 25 February '85, and somehow Brent and Ellen received their copy more than a week before subscribers in London, Ontario!]

From Canada's far north we received the following:

"...I can understand your surprise at receiving correspondence from N.W.T. I am teaching here, Pine Point is just above the Alberta border on the south shore of Great Slave Lake...I am originally from Guelph, Ontario, and return home every summer to do some botanizing, among other things. The Plant Press helps keep me up on botanical activities back home..."

Ted Shutsa, Box 222, Pine Point,
Northwest Territories, X0E 0W0

IDEAS

ONTARIO'S BOTANICAL RESOURCES: SOME OPINIONS ON MANAGEMENT CONCERNS

Jocelyn M. Webber, Botany Department, Erindale College, University of Toronto, Mississauga, Ontario L5L 1C6

Interest in Ontario's botanical resources appears to be increasing. In the past several years there has been considerable interest in rare vascular plants generated by the National Museum of Canada's rare plant atlas project. The Canadian Botanical Association's Conservation Committee has actively lobbied for preservation of botanically significant areas in Ontario and in other parts of Canada. Two regional offices of the Ontario Ministry of Natural Resources have hired botanists on contract for the past 2 years. Carolinian Canada, a programme sponsored by The Nature Conservancy, World Wildlife Fund, and the Ontario Heritage Foundation, has focussed on dozens of sites with unique vegetation in southern Ontario. The rare woody plant programme at the University of Guelph has promoted propagation of provincially and nationally rare species. Vegetation is becoming recognized as an important feature of the restoration of abandoned pits and quarries. Popular magazines provide an increasing number of articles on wildflower gardening.

Will this increasing interest in botanical resources help to ensure preservation for future generations? I certainly hope so, and I am delighted by the increase in interest. There are, however, a number of topics related to protecting Ontario's botanical resources which I think should be considered. I welcome your comments on the opinions expressed below.

Creating and restoring natural vegetation

Much of the research on creating and restoring natural vegetation has been carried out in the United States in areas where climax vegetation, unlike most of Ontario, is not forest. According to Paul Maycock, who has used quantitative methods to study more than 3,000 plant communities in Ontario, it is probably impossible to artificially recreate natural vegetation (Maycock 1985). Thus conservation of rare plants and their habitats should have priority over efforts to recreate or restore natural vegetation (Maycock 1985).

I agree that we must do all we can to protect examples of significant vegetation in southern Ontario. I think we should reach for our cheque books to ensure purchase of areas like the Petrel Point fen (see Hilts 1985).

Transplanting to "suitable habitat"

Transplanting from one natural area to another with "suitable habitat" is often suggested as a compromise to development. However, the success of such transplants can only be shown after extensive long-term studies, according to Paul Keddy (1983), who emphasized that environmental requirements are highly complex.

There are few documented, long-term studies on the outcomes of transplanting experiments (Morton 1982). I was interested to read one such study by the late Fred Lape (1985), a knowledgeable field botanist and Director of the George Landis Arboretum in Esperence, New York. Fifty years ago he transplanted dozens of species of woodland wildflowers and ferns from the vicinity of his farm to his own woodlot. He was careful to choose "suitable habitat" but 50 years later all that remained were one white trillium (*Trillium grandiflorum*), two thin patches of yellow trout-lily (*Erythronium americanum*) and two clumps of bloodroot (*Sanguinaria canadensis*), the latter being the only species which, after 30 years, began to reproduce (i.e. fulfill Keddy's (1983) criteria for a successful transplant). Lape (1985) reported that much to his initial surprise, all of the other transplanted species were gone after an average of three years.

Reports such as those above lead me to believe that transplanting from one natural area to another is not a satisfactory solution to the problem of conserving rare plants.

Transplanting to gardens

Transplanting to gardens may prove more successful so far as persistence of individual species is concerned. All gardens, unlike natural plant communities, require input of human energy to be maintained. Although horticulturists may very well find ways of propagating rare plants in gardens, I can only ask what happens to gardens when not maintained or when real estate changes hands. I strongly object to the following statement from the 1985

Sheridan Nurseries' catalogue (p. 80): "Many of Canada's wild flowers are becoming rare and must be preserved in cultivation." I think that it is only by protecting natural vegetation that component plants, be they rare or otherwise, can be truly protected.

Propagation of native plants by seed

Most native plants can be readily propagated from seed, although some species require special treatments for germination to occur. While collecting seeds results in considerably less impact on natural areas than transplanting, there are other implications to consider. Should seedlings be re-introduced to natural areas where the particular species was once known to occur, or would this result in an unreasonable amount of habitat disturbance? What if rare plants could be readily propagated in cultivation? Surely it is the rare habitat as well as the rare plants which conservationists are concerned about. The status of rare plants in natural habitats should not be altered no matter how common the species may become in cultivation.

Propagation of naturalized plants by seed

There is an unlimited number of economically and aesthetically appealing artificial plant communities which we can create with seed of common naturalized forbs, or "wildflowers," in open areas. Most of these weedy species were introduced from Europe or other parts of North America and have become abundant in open habitats such as roadsides, fields, and waste areas. Here they compete successfully with other species and have become common. Many have attractive inflorescences and long flowering periods. I think that propagation of common naturalized forbs in place of grass would do much to enhance our gardens, lawns and roadsides in urban areas. Mowing and spraying costs could be reduced, especially where dense turfs of wildflowers slowed the establishment of trees and shrubs, an inevitable problem in most of Ontario where vegetation can revert to forest if left unchecked.

Propagation of naturalized wildflowers is most easily done with seed on bare soil in open sites. By using seed rather than transplanting, genetic diversity will allow those plants best adapted to site conditions to survive. I encourage you to keep accurate records of your

experiments with seeds. Records of experiments which fail are just as important as those which succeed. What species did you collect seed from? Where and when did you collect? How was the seed stored? When was it sown and under what soil/moisture/light conditions? What was the density of seeds sown? How many plants survived one, two, three or more seasons? When did the plants flower? Did they reproduce vegetatively or by seed? Did they spread to adjacent areas?

Unfortunately most components of commercial wildflower seed sold in Ontario are neither native nor naturalized here. So far as I am aware, seeds are taken from plants grown in the United States, where there are more species suitable for propagation. Of 27 species listed in information from the National Wildflower Research Centre (Plant Press 3(1):32-33) half do occur in Ontario, but only yarrow (*Achillea millefolium*), ox-eye daisy (*Leucanthemum vulgare* Lam. = *Chrysanthemum leucanthemum* L.), dame's rocket (*Hesperis matronalis*) and black-eyed susan (*Rudbeckia hirta*) are common, introduced species which have become widely naturalized in southern parts of Ontario. In areas where commercial wildflower seed has been sown in Mississauga, only the species which are already naturalized appear to persist for more than a few years. Does anyone have any other observations?

Which species should be encouraged for commercial wildflower seed for Ontario? Flower colour, dates of flowering, and the ability to form dense communities of self-perpetuating populations are important factors in species selection. Site moisture and substrate are also important factors. A good way to select suitable wildflowers is to collect seed from plants common in the area where they are to be sown. Naturalized species which are suitable for planting in southern Ontario are listed in Table 1. Which of these are suitable for northern Ontario?

Control of naturalized plants which may cause degradation of natural vegetation

Which species should be discouraged in future commercial wildflower seed? Naturalized species which tolerate shade and become dominant in woodlands (e.g. dame's-rocket and celandine (*Chelidonium majus*)) should be avoided as they readily escape and may become dominant

Table 1. Common naturalized forbs in southern Ontario which may be suitable for seed mixtures on dry, open sites in urban areas.

Latin Name	Common Name
<i>Achillea millefolium</i>	yarrow
<i>Anagallis arvensis</i>	scarlet pimpernell
<i>Brassica</i> spp.	rapeseed
<i>Dianthus armeria</i>	deptford pink
<i>Hieracium aurantiacum</i>	orange hawkweed
<i>Leucanthemum vulgare</i>	ox-eye daisy
<i>Linaria vulgaris</i>	common toadflax
<i>Linum perenne</i>	flax
<i>Lotus corniculatus</i>	bird's-foot trefoil
<i>Malva moschata</i>	common mallow
<i>Potentilla recta</i>	cinquefoil
<i>Rudbeckia hirta</i>	black-eyed susan
<i>Saponaria officinalis</i>	bouncingbet
<i>Silene vulgaris</i>	bladder campion
<i>Trifolium campestre</i>	large hop clover
<i>T. hybridum</i>	alsike clover
<i>T. pratense</i>	red clover
<i>Vicia villosa</i>	hairy vetch

Table 2. Plants listed in "The Weed Control Act," Ontario regulation 195/73 dated 1977. (it is an offense to have the species listed on private land.)

Latin Name	Common Name
<i>Allium vineale</i>	wild garlic
<i>Ambrosia</i> spp.	ragweed
<i>Asclepias</i> spp.	milkweed
<i>Barbarea</i> spp.	yellow rocket
<i>Carduus</i> spp.	nodding thistle
<i>Centaurea repens</i>	russian knapweed
<i>Cichorium intybus</i>	chickory
<i>Cirsium arvense</i>	canada thistle
<i>C. vulgare</i>	bull thistle
<i>Convolvulus arvensis</i>	field bindweed
<i>Cuscuta</i> spp.	dodder
<i>Daucus carota</i>	wild carrot
<i>Euphorbia cyparissias</i>	cypress spurge
<i>E. esula</i>	leafy spurge
<i>Lathyrus tuberosus</i>	tuberous vetchling
<i>Onopordum acanthium</i>	scotch thistle
<i>Rhamnus cathartica</i>	european buckthorn
<i>Rhus radicans</i>	poison ivy
<i>Salsola pestifer</i>	russian thistle
<i>Sonchus</i> spp.	sow-thistle
<i>Sorghum halapense</i>	johnson grass
<i>Tragopogon</i> spp.	goat's-beard

in the herb layer of deciduous forests, much to the detriment of native forest plants. Other species which prefer moist sites (e.g. purple loosestrife (*Lythrum salicaria*), which causes considerable disruption of wetlands) should be avoided. In my opinion it is irresponsible to sow seed of species which are absent from the local flora, as there is always a risk that such could spread to the detriment of local native plant communities. Other species to avoid are those listed in the weed control act (Table 2) and those poisonous to livestock and/or humans (Mulligan & Munro 1983; 1984).

A preliminary list of introduced plants which may be detrimental to natural vegetation appears on the 1986 subscription form included in this issue. I hope that you will evaluate which of these plants pose the most serious threat to natural areas in Ontario. Your comments on opinions expressed in this paper are welcome!

Acknowledgements: G.W. Argus, P.W. Ball, J.L. Hodgins, J. Kaiser, J.S. Pringle and A.A. Reznicek contributed indirectly to this paper by providing references and discussion. While I am grateful for their input, the opinions expressed may not be theirs!

References

- Hilts, S. 1985. Petrel Point's fen. *Seasons* 25(1):40-43.
- Keddy, P.A. 1983. Transplanting rare plants to protect them: a plant ecologist's perspective. *Canadian Botanical Association Bulletin* 16(2):13-15.
- Lape, F. 1985. On transplanting native plants. *Garden* [a magazine published by the New York Botanical Garden] January/February issue:2-3.
- Maycock, P.F. 1985. Restoration ecology conference [report on the meetings at the University of Wisconsin, 11-12 October 1984]. *Canadian Botanical Association Bulletin* 18(1):5.
- Morton, J.K. 1982. Preservation of endangered species by transplantation. *Canadian Botanical Association Bulletin* 15(3):32.
- Mulligan, G.A. & D.B. Munro. 1983. Vascular plants poisonous to livestock in Canada. Contribution 1983-23E. Agriculture Canada. Ottawa. 33pp. [free]
- &-----, 1984. Wild and cultivated plants poisonous to humans in Canada. Technical Bulletin 1984-15E. Agriculture Canada. Ottawa. 22 pp. [free] ♦

NOTES & REPORTS

THE GOLDENROD HYBRID *Solidago caesia* L. X *S. flexicaulis* L. IN ONTARIO

Stephen J. Darbyshire, 7 Braemar Street,
Ottawa, Ontario K1K 3C3

In their 1984 paper, Semple et al. have indicated that *Solidago caesia* L. (blue-stemmed goldenrod) and *S. flexicaulis* (zig-zag goldenrod) are part of a complex of closely related species occurring in eastern North America. Both of these species occur commonly in deciduous and mixed forests in southern Ontario and southern Quebec, although Fernald (1950) reported the occurrence of the hybrid earlier, he gave no details on its occurrence or biology. *Solidago flexicaulis* generally occurs farther north in Canada than *S. caesia* (Rousseau 1974; Scoggan 1979). Both species frequently occur together (Beaudry & Chabot 1959).

Boivin (1966) first reported the presence of the hybrid between these two species from southwestern Quebec. Both species are reported as hybridizing with other species of *Solidago* (Boivin 1966; Pringle 1983). The recent cytogeographic study by Semple et al. (1984) and some recent collections of the hybrid from eastern Ontario and southwestern Quebec reveal more about the distribution of the hybrid and the cytogeographic races of *S. flexicaulis*.

Solidago caesia is known only as a diploid ($2n=18$) but *S. flexicaulis* is known as both a diploid ($2n=18$) and a tetraploid ($2n=36$) (Beaudry 1969; Semple et al. 1984). Diploid *S. flexicaulis* is reported as occurring east of a north-south line from eastern Ontario to eastern Maryland, with tetraploids occurring in the western part of the range (Semple et al. 1984). In that hybridization between the two species has been detected only within the sympatric range, east of the *S. flexicaulis* diploid-tetraploid boundary, where both species have the same chromosome number, successful production of hybrids would seem to be facilitated by similar ploidy levels in parental populations. The establishment and stabilization of triploid hybrids, while occurring in many plant groups, does not appear to happen naturally in this species pair, although only thorough cytological

investigations will answer this question. Recent collections in eastern Ontario indicate that hybridization may be occurring in many sympatric populations there. This strongly suggests that populations of *S. flexicaulis* in eastern Ontario are of the diploid race.

Hybrids are most easily detected in the field where both parental species are present for

comparison. Although the parental species frequently occur together, hybrids apparently occur uncommonly, and most often in areas of forest disturbance. Once established, hybrids spread vigorously by thin, creeping rhizomes. Well-formed seed is produced by hybrids, but the viability is unknown. Pollen of hybrids has been tested for several populations and found to be 70-75% stainable with aniline blue.

The morphology of the hybrid (Fig. 1) is distinctly intermediate between the parental species (compare the descriptions in Semple & Ringius (1983)) except in the inflorescence, which tends to be more vigorous, with many long axial branches and long pedicels.

The leaves of the hybrid (Fig. 2 b-d) are unlike those of *Solidago caesia* (Fig. 2 a) in that they tend to be dentate rather than serrate, and obovate to oblanceolate rather than lanceolate. The leaves of the hybrid are unlike those of *S. flexicaulis* (Fig. 2 e) in that there is no distinct petiole, with the blades tapered to the base rather than being basally truncate. The lower stem leaves (not the lowermost leaves of the basal rosette, which are usually absent by flowering time) are the most distinctive and should be used in comparisons.

The leaves of *Solidago flexicaulis* are covered with transparent, multicellular hairs. The hairs of the adaxial (upper) surface are usually shorter (0.2-0.5 mm) and more scattered than those on the abaxial (lower) surface (0.5-2.0 mm long). Hairs are concentrated along veins of the abaxial surface but are scattered over the entire surface, and this side of the leaf is distinctly hairy to the naked eye. The leaves of *S. caesia* are essentially glabrous, although sometimes scattered hairs can be seen (with magnification) along the mid-vein on both surfaces and the leaf margins have short (0.3 mm), stiff, antrorsely pointing hairs. The hairs on the leaf margins of *S. flexicaulis* tend to be similar to other multicellular hairs, but are shorter than the abaxial hairs and scattered with shorter, pointed hairs. Leaves of the hybrids generally have at least sparse multicellular hairs along the major veins on the abaxial surface. There is often variation on the leaves of one plant from glabrous to sparsely hairy over both species. The absence of these hairs entirely is quite useful in distinguishing narrow-leaved hybrids from wide-leaved individuals of *S. caesia*.



Figure 1. Hybrid specimen (*Solidago caesia* X *S. flexicaulis*) growing in a greenhouse.

There are also differences in the venation in the two parental species. Major vein branches are readily distinguished on the leaves of *Solidago flexicaulis* (Fig. 2 e), but only the mid-vein is readily distinguished from the general reticulate venation in the leaves of *S. caesia* (Fig. 2a). The leaves of the hybrid have varying numbers of distinct branches (Fig. 2 b, c, and d).

As well as morphological differences, there may well be anatomical and physiological differences that are most noticeable to us as differences in resistance to disease or predation. A group of small flies, *Asteromyia* spp., in association with a fungus, *Macrophoma gallicola* Sacc., produce dark leaf galls on many goldenrods and asters. While *Solidago caesia* is often parasitized by this association, I have

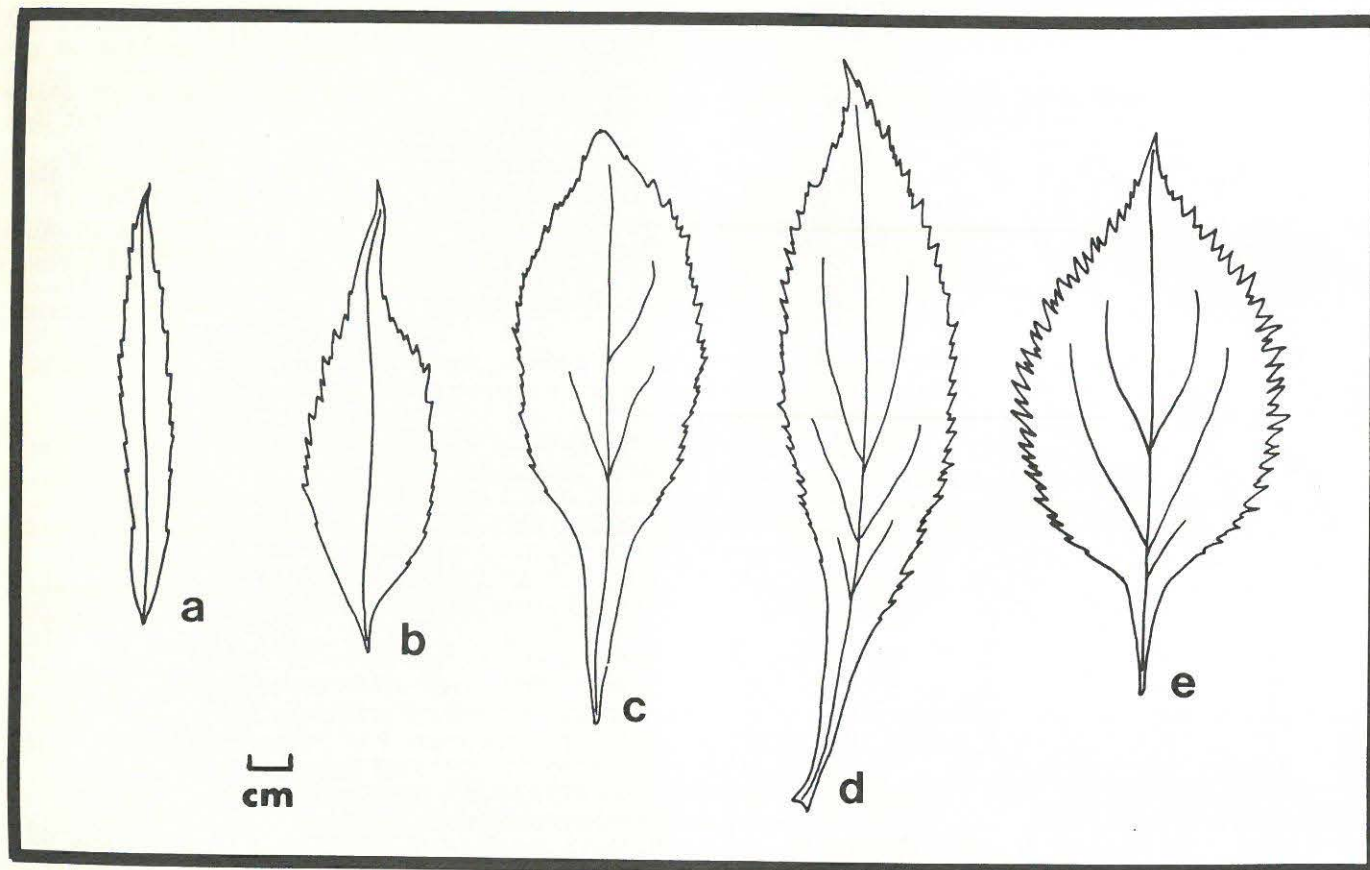


Figure 2. Lower stem leaves of parental species and their hybrid. **a.** *Solidago caesia*. Note the cuneate base with no petiole. Specimen from woods west of Prescott, Ontario, 27 August 1860, B. Billings (DAO). **b.** *S. caesia* X *S. flexicaulis*. Specimen from Grande Ile Larivière, Ontario, 17 August 1961, B. Boivin 15333 (DAO). **c.** *S. caesia* X *S. flexicaulis*. Specimen from Cumberland, Ontario, 15 September 1984, S.J. Darbyshire 2418 (CAN). **d.** *S. caesia* X *S. flexicaulis*. Specimen from Ile Perrot, Quebec (this leaf from plant shown in Fig. 1), 30 September 1984, S.J. Darbyshire 2488 (DAO; CAN). **e.** *S. flexicaulis*. Note the distinct dentition and truncate base of the leaf blade and the distinct petiole. Specimen from German Mills, Ontario, 10 September 1939, F.H. Montgomery (DAO).

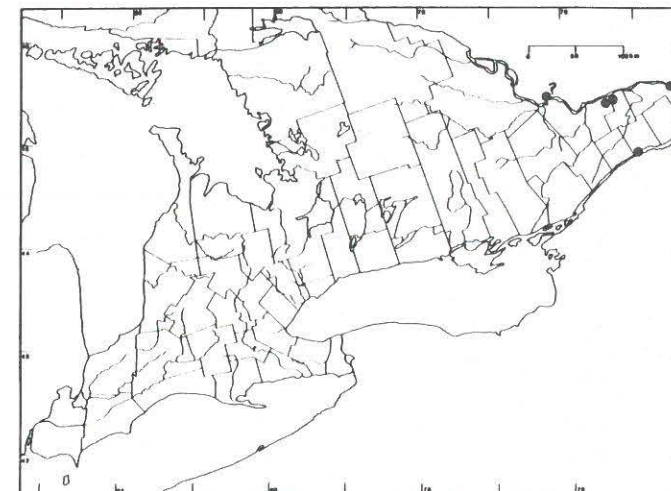


Figure 3. Distribution of the goldenrod hybrid *Solidago caesia* X *S. flexicaulis*.

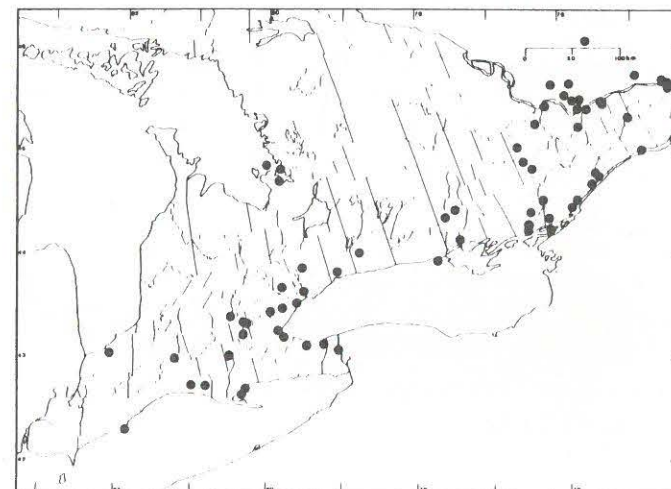


Figure 4. Distribution of *Solidago caesia*.

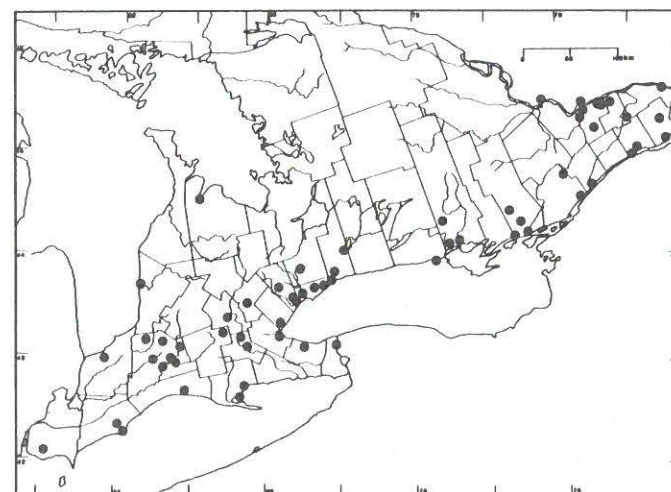


Figure 5. Distribution of *Solidago flexicaulis*.

observed only one attack on *S. flexicaulis*. Hybrid populations are too few to evaluate the extent of predation, but no attacks have been observed. The presence of multicellular hairs on the leaf surfaces may protect leaves from this parasitic association.

Observations on the three entities on Ile Perrot in southwestern Quebec suggested that the hybrid is more susceptible to attack by the fungus *Coleosporium asterum* (Diet.) Syd., which is visible as bright orange, powdery patches on the leaves. This fungus alternates its life cycle on a *Solidago* or *Aster* host with a host in the genus *Pinus*.

The distribution of the hybrid is poorly known (Fig. 3), although the parental species have been better collected (Fig. 4 and 5). These distribution maps were compiled from specimens at CAN and DAO. Further field work and herbarium searches will no doubt increase the dots on these maps.

References

- Beaudry, J.R. 1969. Études sur les *Solidago* L. IX. Une troisième liste de nombres chromosomiques des taxons du genre *Solidago* et de certains genres voisins. *Naturaliste can.* 96:103-122.
- & D.R. Chabot. 1959. Studies on *Solidago* L. IV. The chromosome numbers of certain taxa of the genus *Solidago*. *Can. J. Bot.* 37:209-228.
- Boivin, B. 1966. Énumération des plantes du Canada. IV-Herbicides, 2^e partie: Connatae. *Naturaliste can.* 93:1028.
- Fernald, M.L. 1950. *Gray's Manual of Botany*. 8th edition. American Book Company, New York. 1632 pp.
- Pringle, J.S. 1983. *Solidago caesia* X *S. canadensis* (Compositae): A hybrid goldenrod new to Canada. *Plant Press* 1(4):64-65.
- Rousseau, C. 1974. *Géographie floristique du Québec/Labrador*. Les Presses de l'université Laval, Québec. pp. 798.
- Scoggan, J.H. 1979. *The flora of Canada*. Part 4 - Dicotyledoneae (Loasaceae to Compositae). *Nat. Mus. Nat. Sci. Publ. Bot.* 7(4): 1117-1711.
- Sample, J.C. & G.S. Ringius. 1983. The goldenrods of Ontario: *Solidago* L. and *Euthamia* Nutt. *Univ. Waterloo Biol. Ser.* No. 26. 84 pp.
- , C. Leeder, & G. Morton. 1984. Chromosome numbers of goldenrods, *Euthamia* and *Solidago* (Compositae: Astereae). II. Additional counts with comments on the cytogeography. *Brittonia* 36(3):280-292. ♦

James S. Pringle, Royal Botanical Gardens,
P.O. Box 399, Hamilton, Ontario L8N 3H8

Lawson was Professor of Chemistry and Natural History at Queen's University, Kingston, Ontario, from 1858 to 1863, before he moved to Dalhousie. During this time he founded the Botanical Society of Canada and established Canada's first botanical garden at Kingston. (On Lawson, see Anonymous, Canadian Botanical Association Bulletin 2:9, 11 [1969] and Boivin, Plant Press 2:103-106 [1984]). The portrait above was touched up by the Editor from a xerox of the Lawson Medal provided by Adele Crowder.

Stafleu & Cowan, in their citation of "The Fern Flora of Canada," included "Preliminary publ.: Edinburgh new philos. J. ser. 2. 19:102-116, 273-289. 1864." The 1864 Edinburgh publication, which appeared virtually simultaneously in The Canadian Naturalist and Geologist ser. 2. 1:262-300, was Lawson's "Synopsis of the Canadian ferns and filicoid plants," definitely a distinct work from "The School Fern-Flora of Canada." The "Synopsis" included extensive phytogeographical statistics omitted from the later work, and "The School Fern-Flora" included much material on fern morphology and terminology added for the benefit of students. The descriptions of the species were completely rewritten, and species discovered in Canada during the interim were added. New distribution records that had accumulated over 25 years made possible more thorough and accurate indications of the ranges of the species, but many of the localities and most of the collectors' names were omitted. ♦

Dan Gregory, Michael Michalski Associates,
222 Dixon Road, Suite 105, Weston, Ontario
M9P 3S5

1. Region in this article refers to the Site Region system of Angus Hills (1959) which, for OMNR, provides a practical basis for determining vegetation and site representation and life science significance in the provincial park system. Westmeath is included in Site Region 5E, also commonly referred to as the Georgian Bay Section of the Northern Deciduous-Evergreen Forest Region.

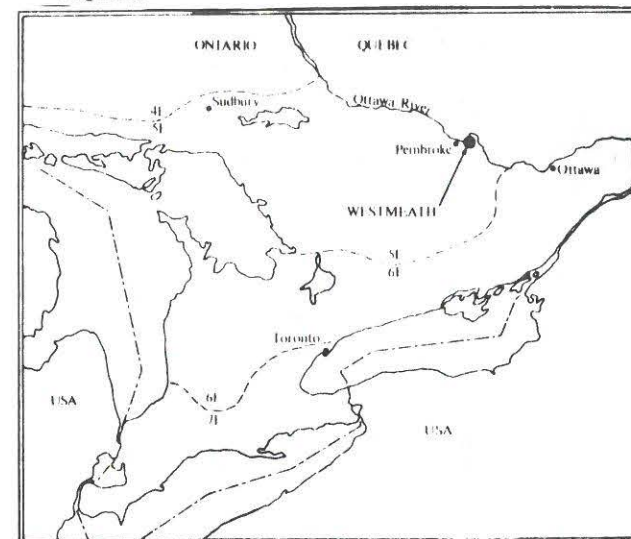


Figure 1. Location of Westmeath Candidate Provincial Park in eastern Ontario. For reference purposes, OMNR Site Region boundaries are also shown.

- (a) determining the composition of constituent plant communities and their distributions with respect to physical site characteristics; and,
- (b) identifying significant plant communities and plant species, not only in a purely botanical sense, but also in the context of plants and associations currently represented in existing parks in the region.

In order to meet these objectives, plant community boundaries were initially delineated by aerial photographic interpretation, primarily on the basis of physiognomy and site characteristics. Subsequently these were confirmed during the field inventory. With a few exceptions, each community thus identified was sampled quantitatively using the point-quarter method (Curtis 1959) for tree and tree regeneration strata, and a series of 1 m² quadrats for forest understoreys and minor communities (e.g. thickets, marshes, meadows, etc.). Relevant physical site features (soil texture, site moisture, etc.) were also recorded for each plant community. The accumulated data from this exercise provided an objective basis for assessing the diversity of the vegetation cover, identifying community types according to the precise order of species dominance, and comparing the quality of the vegetation with that of other parks in the region.

Prior to describing the vegetation cover (Fig. 2), I would first like to outline in broad terms the physical character of Westmeath



Figure 2. The vegetation of Westmeath Candidate Provincial Park. (Component plant communities are listed in the legend on the following page.)

LEGEND:

DRY BEACH COMMUNITIES

1. *Artemisia campestris*

DRY THICKET

2. *Rhus typhina* - *Pinus resinosa*

FOREST COMMUNITIES

3. red pine¹⁶³ - white pine⁶³ - red oak²⁷ - trembling aspen²¹
4. largetooth aspen¹⁰² - trembling aspen⁶⁹ - red oak⁵⁴ - red pine⁴⁸
5. red oak¹²³ - red maple⁵⁰ - trembling aspen⁴⁹ - largetooth aspen³⁰ - red pine³⁰
6. red oak¹²³ - trembling aspen⁸⁴ - white birch⁴⁴
7. red maple¹¹⁴ - white birch⁹⁴ - trembling aspen⁵³ - white spruce²²
8. trembling aspen¹¹⁷ - bur oak¹¹⁰ - silver maple⁶³
9. balsam fir⁹² - sugar maple⁶⁷ - yellow birch³⁴ - red maple³³ - hemlock³¹
10. trembling aspen¹⁰⁸ - red maple⁷⁴ - balsam poplar³¹ - largetooth aspen²⁹
11. black ash¹¹⁷ - white cedar⁴⁹ - yellow birch³⁹ - white spruce²⁴ - balsam fir²¹
12. black ash¹⁶⁴ - silver maple⁴⁴ - bur oak³⁶
13. silver maple¹⁶⁸ - green ash⁷¹ - black ash²⁵ - bur oak²³
14. silver maple¹⁷⁸ - green ash¹⁰⁶ - bur oak¹⁶
15. silver maple²⁹⁶
16. trembling aspen - balsam fir - white birch *
17. balsam fir *
18. sugar maple - red maple - basswood - trembling aspen - yellow birch *
19. silver maple - green ash - basswood - bur oak *
20. decadent elm - ash swamp *

WET THICKETS

21. *Myrica gale* - *Spiraea latifolia* - *Salix* spp.
22. *Salix* spp. - *Myrica gale* - *Spiraea latifolia* *
23. *Alnus rugosa* *
24. *Spiraea latifolia* - *Ilex verticillata* - *Vaccinium macrocarpon* - *Fraxinus pennsylvanica*

WET MEADOWS

25. *Leersia oryzoides* - *Scirpus cyperinus*
26. *Spartina pectinata* - *Vaccinium macrocarpon*

WET BEACH COMMUNITIES

27. *Spartina pectinata*
28. *Scirpus americana* - *Potentilla anserina* - *Spartina pectinata*

MARSH COMMUNITIES

29. *Eleocharis palustris*
30. *Scirpus americana* - *Eleocharis palustris*
31. *Scirpus cyperinus* - *Acorus calamus* - *Potentilla palustris* - *Polygonum coccineum* *
32. *Acorus calamus* - *Potentilla palustris* - *Polygonum coccineum*
33. *Dulichium arundinaceum* - *Scirpus cyperinus* - *Acorus calamus*
34. *Scirpus validus* - *Potentilla palustris* - *Polygonum coccineum*
35. *Scirpus validus* *
36. *Scirpus fluviatilis*
37. *Sagittaria latifolia* - *Pontederia cordata*
38. *Zizania palustris*

SUBMERGED AND FLOATING AQUATIC COMMUNITIES

39. *Ceratophyllum demersum* - *Nuphar microphyllum*
40. *Potamogeton richardsonii* - *Potamogeton zosteriformis* - *Vallisneria spiralis* - *Nuphar microphyllum*

DISTURBED SITES

41. Old field *
42. Pine Plantation

* Field Observation Only

in order to convey some impression of the diversity of habitats available to plants.

The most prominent feature of the park is a long, wide sand spit extending into the Ottawa River (Fig. 2). The western side of this spit is dominated by an extensive littoral zone consisting of actively shifting sand bars. This entire zone is very shallow, being less than 1 metre deep for as much as 200 to 300 m offshore. In late summer, the sandy bottom in near-shore areas is often exposed. A narrow (10 to 30 m) continuous beach of loose, dry, windblown sand flanks the littoral zone along most of the western shoreline. Inland, this beach rises into a moderately developed system of low, parallel, rapidly-drained dunes; the foredune is active while interior dunes are stable. A few, local, poorly-drained troughs are scattered immediately behind the foredune. On the eastern side, the spit shelters and almost completely encloses a large, shallow bay (Bellows Bay) in which the bottom substrate consists entirely of deep muck, typically greater than 1.5 m in depth.

A broad level area of poorly drained lacustrine sand with scattered pockets of deep organic soil forms the central interior of the park on the mainland, while local terraces of moderately to poorly drained alluvial sand, silt, and clay, and a prominent scarp dominate the southern portion (Barnett 1980).

Vegetation

A total of 42 distinct plant community types were identified at Westmeath; the precise stand boundaries of each are shown on Figure 2. Communities are named according to the order of species dominance, which is based mainly on the results of quantitative sampling; however, a few types were assessed subjectively and these are identified accordingly in the legend. Regarding the legend, communities are arranged on the basis of broad physiognomic groups (e.g. forests, thickets, meadows, etc.) and specific responses to site moisture conditions, beginning with dry upland communities and finishing with aquatic associations. This arrangement also serves as a logical basis for the brief community descriptions which are presented below.

1. Dry Beach Communities

The dry beach extends continuously along the western shore of the sand spit for approximately 2 km (Fig. 3). While predominantly bare, a rich assortment of plants indicative of dry,



Figure 3. Shoreline and beach communities extend along the western shore of the sand spit. This vegetation has developed in response to site moisture conditions and erosion.

open sandy sites inhabit this area. Among the more interesting of these are:

<u>Artemisia campestris</u>	(sagewort wormwood)
<u>Polygonella articulata</u>	(jointweed)
<u>Prunus pumila</u>	(sand cherry)
<u>Elymus canadensis</u>	(wild rye)
<u>Cyperus filiculmis</u>	(galingale)
<u>Hudsonia tomentosa</u>	(beach-heath)
<u>Sporobolus cryptandrus</u>	(sand-dro-seed)
<u>Andropogon scoparius</u>	(little bluestem)

Bulbostylis capillaris (bulbostylis), a nationally and provincially rare sedge (Ball et al. 1982) occurs sporadically along the beach. Sorghastrum nutans (Indian grass) and Stipa spartea (porcupine grass) are also reported for the dry beach at Westmeath (Stephen Darbyshire, personal communication).

2. Dry Thicket Community

Only one upland thicket was identified in the park, that being a small area dominated by Rhus typhina (staghorn sumac). This stand is situated on the top of an old, established beach ridge and contains many of the same plants as the dry beach (i.e. Polygonella, Cyperus, and Sporobolus). The ground cover

here, however, is continuous and is composed mainly of the following:

<u>Danthonia spicata</u>	(poverty grass)
<u>Fragaria virginiana</u>	(strawberry)
<u>Poa compressa</u>	(Canada blue grass)
<u>Asclepias syriaca</u>	(common milkweed)
<u>Lechia intermedia</u>	(pinweed)
<u>Cladonia</u> spp.	(lichens)

A few specimens of Juglans cinerea (butternut) are located near the fringe of this stand.

3. Forest Communities

Most of the upland portion of the spit is covered with a uniform stand dominated by red pine with white pine, red oak, and trembling aspen as subdominants. The understorey here consists mainly of species which are typical of dry woodlands, such as:

<u>Vaccinium angustifolium</u>	(blueberry)
<u>Pteridium aquilinum</u>	(bracken)
<u>Gaultheria procumbens</u>	(wintergreen)
<u>Melampyrum lineare</u>	(cow-wheat)
<u>Comandra richardsonii</u>	(bastard toad-flax)
<u>Lycopodium tristachyum</u>	(ground cedar)

Gaylussacia baccata (huckleberry), a relatively

uncommon shrub in this region (Soper & Heimbürger 1982) is also present here in abundance.

The low-lying, central interior of the park is inundated during the spring freshet. Here, the predominant vegetation cover consists of lowland forest stands dominated by silver maple, green ash, black ash, and bur oak. A distinctive aspect of these stands is a dense, continuous understorey of either Onoclea sensibilis (sensitive fern) or Ilex verticillata (black alder), with a variety of sedges (Carex crinita, C. intumescens, and C. gracillima) also being abundant. Species such as Zanthoxylum americanum (prickly ash), Carpinus carolinensis (blue beech), and Leersia virginica (white grass) enhance the somewhat southern atmosphere of these lowland forests.

The alluvial terraces and the scarp in the southern portion of the park support a variety of forest types which are more typical of the region. These include stands dominated by sugar maple with red maple and basswood, balsam fir with sugar maple and yellow birch, and trembling aspen with balsam fir and white birch. A host of plants which are common to mesic forests dominate the understoreys of these stands, including:

<u>Acer spicatum</u>	(mountain maple)
<u>Lonicera canadensis</u>	(fly-honeysuckle)
<u>Trientalis borealis</u>	(starflower)
<u>Lycopodium obscurum</u>	(ground-pine)
<u>L. annotinum</u>	(stiff club-moss)
<u>L. lucidulum</u>	(shining club-moss)
<u>L. clavatum</u>	(running club-moss)
<u>Clintonia borealis</u>	(bluebead-lily)
<u>Aralia nudicaulis</u>	(sarsaparilla)
<u>Streptopus roseus</u>	(twisted stalk)
<u>Cornus canadensis</u>	(bunchberry)

4. Wet Thicket Communities

A number of examples of lowland thickets were observed in wet sites throughout the park. These communities form the successional intermediate stage between wet lowland forests and wet meadows and marshes and commonly occur as narrow fringes at forest edges. However, they occasionally form more extensive stands in broad depressions and dune troughs. At Westmeath, the dominant species in these stands are:

<u>Myrica gale</u>	(sweet gale)
<u>Spiraea latifolia</u>	(meadow sweet)
<u>Alnus rugosa</u>	(speckled alder)
<u>Salix</u> spp.	(willows)

Associated understorey species of the wet thicket communities include the following:

<u>Potentilla palustris</u>	(marsh five-finger)
<u>Acorus calamus</u>	(sweet flag)
<u>Calamagrostis canadensis</u>	(canada blue joint)
<u>Vaccinium macrocarpon</u>	(cranberry)
<u>Ilex verticillata</u>	(black alder)

Of particular interest are plants occurring in dune troughs thickets, such as Spartina pectinata (cord grass), Cornus obliqua (silky dogwood), and Fimbristylis autumnalis (a sedge), all of which are relatively uncommon in this region.

5. Wet Meadow Communities

Two small representative wet meadows were noted in moist depressions. The first is situated on silty alluvium at the southern end of Bellows Bay and is dominated by the following:

<u>Leersia oryzoides</u>	(rice cut-grass)
<u>Calamagrostis canadensis</u>	(canada blue joint)
<u>Scirpus cyperinus</u>	(wool-grass)

Asclepias incarnata (swamp milkweed) and Acorus calamus (sweet flag) are conspicuous, but less abundant plants.

The second wet meadow community is situated in a shallow dune trough and is dominated by Spartina pectinata (cord grass) with a continuous carpet of Vaccinium macrocarpon (cranberry) in the understorey, and Spiraea latifolia (meadow sweet) and Calamagrostis canadensis (canada blue joint) as subdominants.

6. Wet Beach Communities

The immediate shoreline and near shore littoral zone of the Ottawa River supports a continuous series of wet beach and marsh communities which essentially extend the entire length of the sand spit (Fig. 3). These communities grade into one another and, consequently, share many species in common.

At the southern and northern ends of the shoreline, the substrate consists of coarse sand throughout. Here, wet beach communities are species-rich and are dominated by Spartina pectinata (cord grass). A variety of common lakeshore species which occur here as subdominants include the following:

<u>Hypericum ellipticum</u>	(st. john's-wort)
<u>H. boreale</u>	(st. john's-wort)

<u>Eleocharis palustris</u>	(spike-rush)
<u>Iris versicolor</u>	(blue flag)
<u>Scirpus cyperinus</u>	(wool-grass)
<u>Lythrum salicaria</u>	(purple loosestrife)
<u>Scirpus americana</u>	(three-sided bulrush)
<u>Mimulus ringens</u>	(monkey-flower)
<u>Veronica scutellata</u>	(marsh speedwell)
<u>Gratiola aurea</u>	(golden pert)
<u>Triadenum fraseri</u>	(marsh st. john's-wort)

Towards the northern end of the spit, limestone cobbles are encountered along the beach, and this area supports a distinct wet beach community dominated by the following:

<u>Scirpus americana</u>	(three-sided bulrush)
<u>Potentilla anserina</u>	(silverweed)
<u>Solidago graminifolia</u>	(grass-leaved goldenrod)
<u>Xanthium strumarium</u>	(cocklebur)
<u>Spartina pectinata</u>	(cord grass)
<u>Juncus alpinus</u>	(rush)
<u>J. pelocarpus</u>	(rush)
<u>J. nodosus</u>	(rush)

This community also represents the only observed station for Helenium autumnale (common sneeze-weed).

7. Marsh Communities

Marsh communities at Westmeath occur in 2 distinct environments: (a) in the deeper littoral zone of the Ottawa River exposed to pronounced wind and wave action and situated on coarse sand; and, (b) in the more protected shallows of Bellows Bay and adjacent inland depressions where bottom substrates consist entirely of organic muck. Plant community compositions reflect these distinctions.

Scirpus validus (bulrush) is the exclusive dominant in the deepest zones of the river while Scirpus americana (three-sided bulrush) and Eleocharis palustris (spike-rush) form stands in shallower portions. Because of the low gradient of the river bottom immediately offshore, there is a strong admixture of wet beach species (Juncus spp. and Hypericum spp.) in the latter community types.

In Bellows Bay, conversely, there is a richer diversity of stand types. At the southern end of the Bay there is a conspicuous series of communities reflecting increasing water depths. These commence with various combinations of the following:

<u>Scirpus cyperinus</u>	(wool-grass)
<u>Acorus calamus</u>	(sweet flag)
<u>Potentilla palustris</u>	(marsh five-finger)
<u>Polygonum coccineum</u>	(water smartweed)

In areas of increasing water depth, bands of the following occur:

<u>Scirpus validus</u>	(bulrush)
<u>Polygonum coccineum</u>	(water smartweed)
<u>Potentilla palustris</u>	(marsh five-finger)
<u>Scirpus fluviatilis</u>	(bulrush)
<u>Sagittaria latifolia</u>	(arrowhead)
<u>Pontederia cordata</u>	(pickerelweed)

The central and northern parts of the bay, however, support an extensive stand of Zizania palustris (wild rice) which covers about 60 ha and is one of the largest plant communities in the park.

8. Aquatic Communities

The only plant communities occurring in open water are located in the deeper zones of Bellows Bay and are dominated exclusively by floating and submerged aquatic species. The small area of open water in the southern portion of the bay is relatively shallow (0.5 to 1.0 m during late summer) and supports a dense, submerged bed of Ceratophyllum demersum (coontail), with a number of other aquatics uniformly distributed throughout. These aquatic plants include the following:

<u>Nuphar microphyllum</u>	(pond lily)
<u>N. variegatum</u>	(yellow pond lily)
<u>Nymphaea odorata</u>	(water lily)
<u>Polygonum amphibium</u>	(water smartweed)
<u>Potamogeton natans</u>	(pondweed)

Open water in the central portion of Bellows Bay is deeper (1.0 to 2m+). Here, the aquatic communities are restricted to a narrow fringe at the edge of the Zizania palustris (wild rice) stand. The dominant species are Potamogeton zosteriformis (pondweed), P. richardsonii (pondweed), Vallisneria spiralis (tapegrass), and Ceratophyllum demersum (coontail) with occasional floating aquatics such as Nuphar microphyllum (pond lily).

9. Disturbed Sites

Only a small proportion of the park supports plant communities which are a direct result of human disturbance. These are restricted in distribution to the extreme southern section above the scarp face, and to one small area in the central part of the spit. The communities consist of a plantation of red pine and scots pine and a few old fields dominated by a variety of common species such as:

<u>Solidago canadensis</u>	(canada goldenrod)
<u>Poa compressa</u>	(canada blue grass)

<u>Phleum pratense</u>	(timothy)
<u>Melilotus alba</u>	(white sweet clover)
<u>Vicia cracca</u>	(vetch)
<u>Asclepias syriaca</u>	(common milkweed)
<u>Fragaria virginiana</u>	(strawberry)
<u>Poa pratensis</u>	(kentucky blue grass)
<u>Tragopogon pratensis</u>	(goat's beard)
<u>Rumex acetosella</u>	(sheep sorrel)
<u>Potentilla recta</u>	(cinquefoil)

Botanical Significance

As indicated above, much of the botanical interest in Westmeath has centred on the plant communities directly associated with the shoreline of the sand spit. Many of the species recorded from this site are particularly interesting from a phytogeographical perspective. While grasses such as Spartina pectinata (cord grass), Sporobolus cryptandrus (sand drop-seed), Andropogon scoparius (little blue-stem), and Eragrostis pectinacea (love grass) are known from a number of localities in southern Ontario (especially shorelines of the Great Lakes), except for sites along the Ottawa River and Georgian Bay, they are largely absent from central Ontario (Dore & McNeill 1980). This is also true of other herbs which occur on the beach including the following:

<u>Polygonella articulata</u>	(jointweed)
<u>Cyperus filiculmis</u>	(galingale)
<u>Hudsonia tomentosa</u>	(beach-heath)
<u>Bulbostylis capillaris</u>	(bulbostylis)

Marie-Victorin (1964) noted that, for many such plants, this general pattern in Ontario is likely related to the distribution of post-glacial water bodies, namely Lakes Algonquin and Iroquois and the Champlain Sea, which were inter-connected at various times (Chapman & Putnam 1984) and which probably provided suitable shoreline habitats and migration routes to more northern zones. Today, such shoreline plants persist in similar environments along the Ottawa River, the Mattawa River and/or Georgian Bay. The presence of a large aggregation of these plants, occurring as dominants and subdominants of extensive wet and dry beach communities, is certainly a striking aspect of the vegetation, and, understandably, has been the focus of attention here.

Included in the total list of 306² species recorded at Westmeath are plants representing

2 As each community was investigated on only one occasion during late summer, and as a few communities were not sampled in detail (including old fields and plantations), this total should be regarded as a conservative estimate.

a variety of floristic affinities. For example, trees typical of the Northern Deciduous-Evergreen Forest Region occur throughout the park and include red pine, white pine, eastern hemlock, sugar maple, and yellow birch. Trees more strongly associated with the Boreal Forest Region, such as white spruce, balsam fir, and jack pine, are also prominent in some stands. Common to both forest regions are typical understorey species such as the following:

<u>Diervilla lonicera</u>	(bush-honeysuckle)
<u>Maianthemum canadense</u>	(false lily-of-the-valley)
<u>Cornus canadensis</u>	(bunchberry)
<u>Clintonia borealis</u>	(bluebead lily)
<u>Chimaphila umbellata</u>	(pipsissewa)
<u>Linnaea borealis</u>	(twinflower)
<u>Acer spicatum</u>	(mountain maple)
<u>Vaccinium angustifolium</u>	(blueberry)
<u>Corylus cornuta</u>	(beaked hazel)
<u>Lycopodium</u> spp.	(club-mosses)

Conversely, silver maple, Cornus obliqua (gray dogwood), and Fimbristylis autumnalis (a sedge) are more commonly associated with vegetation to the south. The presence of a relatively wide diversity of floristic elements contributes further to the significance of and interest in the vegetation of the park.

There is, however, another level of significance here which relates to OMNR perspectives on the vegetation, that of life science representation targets. In a brief comparative analysis of plant communities occurring at Westmeath with those recorded for all other parks and park proposals in the region, it was noted that eight plant community types at Westmeath were not represented elsewhere. (This is not to say that the types do not exist anywhere else, but simply that they have not yet been recorded on life science inventory check sheets). These types were:

- the dry beach community dominated by Artemisia campestris (sagewort wormwood)
- a mesic trembling aspen - bur oak - silver maple stand
- the wet lowland Spiraea latifolia - Ilex verticillata - Vaccinium macrocarpon thicket
- the wet Spartina pectinata - Vaccinium macrocarpon meadow
- the Scirpus americana - Potentilla anserina - Spartina pectinata meadow
- the Scirpus americana - Eleocharis palustris marsh
- the Zizania palustris marsh

In addition, forests dominated by silver maple and the marsh community dominated by Acorus

calamus (sweet flag) were noted to be only marginally represented elsewhere. As a result, while some communities might not normally be considered as especially rare or uncommon in the region (e.g. *Scirpus americana* - *Eleocharis palustris* marsh communities), they nevertheless present opportunities to meet life science representation targets within the provincial park system. Equally important, however, is the fact that these communities are constituents of a large, integrated system of undisturbed stands and habitats rather than scattered and isolated fragments; consequently, the potential for maintaining the quality and diversity of this outstanding natural area is high.

Note: The entire site at Westmeath was recently acquired by OMNR (it was formerly privately owned) with the ultimate designation to be a Natural Environment Park, which stresses protection of significant natural environments as one of its objectives.

References

- Ball, P.W., D.J. White et al. 1982. Cyperaceae in G.W. Argus & D.J. White, eds. Atlas of the rare vascular plants of Ontario. National Museum of Natural Sciences. Ottawa.
- Barnett, P.J. 1980. Quarternary Geology of the Fort Coulonge Area - Renfrew County. Ont. Geo. Surv. Prel. Map P 2367. OMNR Geol. Series.
- Chapman, L.J. & D.F. Putnam. 1984. The Physiography of Southern Ontario. 3rd ed. OMNR, Geol. Surv. Special Publ. map + 270 pp.
- Curtis, J.T. 1959. The Vegetation of Wisconsin. University of Wisconsin Press. 657 pp.
- Dore, W.G. & J. McNeill. 1980. Grasses of Ontario. Agriculture Canada, Ottawa. 566 pp.
- Hills, G.A. 1959. A ready reference to the description of the land of Ontario and its productivity. Ont. Dept. of Lands and Forests, Div. of Research.
- Hough, Stansbury + Michalski. 1983. Life science inventory and analysis of Westmeath Candidate Provincial Park. Prepared for OMNR, Algonquin Region. maps + 149 pp.
- Marie-Victorin, Frere. 1964. Flore Laurentienne. University of Montreal Press, Montreal, Quebec. 925 pp.
- Simpson, H. 1980. A brief life science overview of the Westmeath property. OMNR, Algonquin Region. maps + 25 pp.
- Soper, J.H. & M.L. Heimburger. 1982. Shrubs of Ontario. Royal Ontario Museum, Toronto. 495 pp.
- Spek, C.M. 1977. A brief earth science overview of the Westmeath property. OMNR, Algonquin Region. ♦

Plantago cordata Lam. (HEART-LEAVED PLANTAIN) STILL SURVIVES IN CANADA

Gary M. Allen, Ontario Ministry of Natural Resources, Chatham District, Box 1168, Chatham, Ontario N7M 5L8 and Michael J. Oldham, Essex Region Conservation Authority, 360 Fairview Avenue West, Essex, Ontario N8M 1Y6

Plantago cordata Lam. (heart-leaved plantain), illustrated in Figure 1, is one of 9 species of the genus reported for Ontario (Bassett 1973). This species is restricted to eastern North America and is rare throughout its range. It is considered endangered or probably extirpated in the states of Illinois, Indiana, Michigan, New York, Ohio and Wisconsin (Brownell 1983).

Until recently the occurrence of this species in Ontario and Canada was uncertain. Brownell (1983) recommended that it be considered an endangered species in Canada. Her justification was that despite intensive searching, the species had not been seen in Canada since 1967, the last known population occurring near Thedford, in Lambton County, Ontario (Fig. 2). *Plantago cordata* does not occur in other provinces, as the sole Quebec record of 1880 is based on a misidentified specimen of *P. eriopoda* (A.A. Reznicek, personal communication).

In the summer of 1984 we continued the search for *Plantago cordata* and, on the advice of A.A. Reznicek, enlisted the assistance of Bill Henry and Rachel Shawkence of the Potawatomi Indian Community at Kettle Point, Ontario. Mr. Henry, an authority on the plant's medicinal uses, had shown it to E.G. Voss, W.H. Wagner, and M.F. Tessene in 1967. On 12 July 1984 the known site at Thedford was thoroughly searched, but *P. cordata* was not found. We believe that clearing of the woods and extensive trampling and grazing by cattle are the causes of its disappearance at this location.

Later that day, Mr. Henry suggested that we search a site in Bosanquet Township, Lambton County. After several hours of searching, a population of about 250 plants was found. This "new" population had been shown to Mr. Henry by his father, but he had not been back to the site "for many years." Interest in the medicinal use of native plants by local Indians is declining and *Plantago cordata* is no longer harvested. No mention of this Bosanquet Township population was included in the report

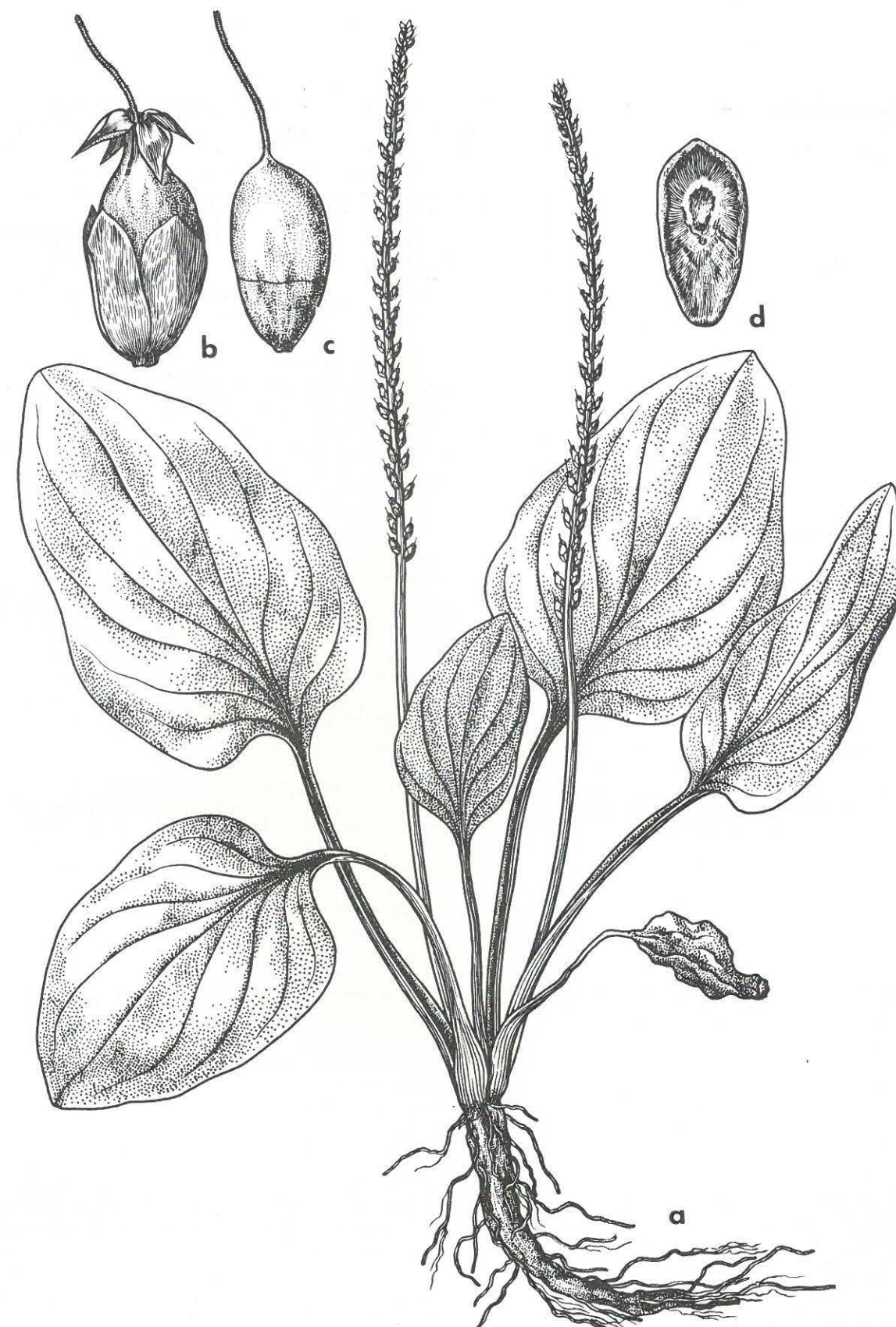


Figure 1. *Plantago cordata* Lam. (a) habit, X 1/2; (b) capsule with sepals and corolla lobes attached, X 8; (c) capsule, X 8; (d) seed, X 10. (Illustrations by Ilgvars Steins; reproduced from *The Plantains of Canada* courtesy of Agriculture Canada.)

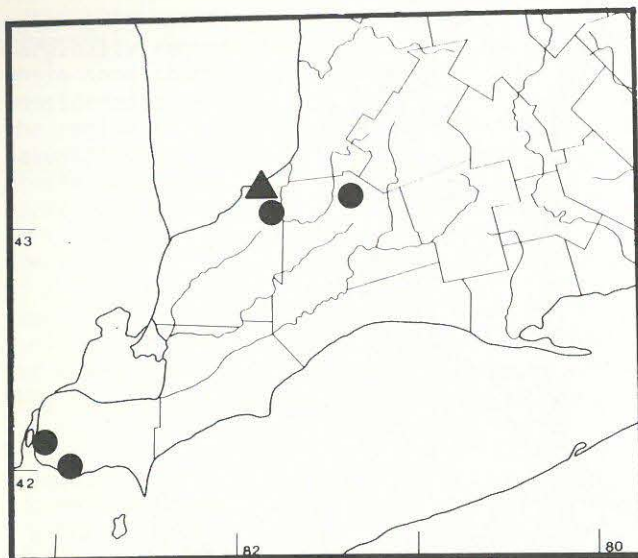


Figure 2. The Canadian distribution of *Plantago cordata* in extreme southwestern Ontario. The symbol "●" indicates known historic sites; "▲" indicates the extant population.

of Brownell (1983); information about this locality was likely guarded due to the medicinal value of the plants. It should be noted, however, that Tessene (1969) would probably never have found the population at Thedford in 1967 if it had not been for Mr. Henry.

Subsequent searching at the Bosanquet site resulted in the discovery of 2 additional sub-populations. The total population was determined to consist of about 300 plants. Detailed descriptions of the vegetation associated with each sub-population are included in our report (Allen & Oldham 1984). All sub-populations occurred in depressions in wet deciduous forest dominated by silver maple, basswood, red and bur oak, green and black ash, red maple and shagbark hickory. Canopy cover was greater than 90%. Soil was a clay loam with a pH of 7.2, low phosphorus content (average of 3 samples was 6 ppm), with potassium content of 3 samples varying between medium (108 ppm) to very high levels (181 ppm). There was no standing water at any of the sites when discovered in mid-July 1984, but it is likely that plants of *Plantago cordata* are partially immersed in water in the spring.

A complete list of 70 associated vascular plant species was compiled and is available from the

second author. The most common direct associates (i.e. occurring in the moist depressions with *Plantago cordata*) were: *Glyceria striata* (fowl manna grass), *Carex grayi* (a sedge), *Ranunculus septentrionalis* (swamp buttercup), *Impatiens capensis* (jewelweed), *Euonymus obovatus* (running strawberry bush), and *Rhus radicans* (poison ivy). All of the plants listed above, with the exception of *P. cordata*, are well-represented in deciduous swamps and wet forests in southern Ontario.

All 3 sub-populations of *Plantago cordata* appeared to consist of healthy plants and all sub-populations included individuals with multiple flowering spikes. In late October 1984, nearly all of the plants of *P. cordata* had 2, 3, or 4 new leaves unfolding from their bases; these leaves were 2-7 cm in length. Mature leaves averaged 18 cm in length.

Some evidence of herbivore (invertebrate) damage was found on many plants, as described by Stromberg et al. (1981). Damage took the form of holes in the leaves, with a few leaves severed at the petiole. Although intensive human activity occurs nearby, there appeared to be no immediate threat to the Bosanquet Township population; the landowners have been notified of the significance and location of this plant.

The moist deciduous woods where *Plantago cordata* was rediscovered in Bosanquet Township appeared very similar to many woodlots in southern Ontario, and the authors could not discern any distinctive features which might account for the presence of a plant as rare as *P. cordata*. Tessene (1969) found that the physiognomy and composition of the major communities in which the plantain is found are quite diverse. Stromberg et al. (1983) suggest that relatively large woodlots buffered from surrounding agricultural and industrial activity, and streams with good water quality may be essential to the survival of *P. cordata*. We encourage field botanists in southern Ontario to be on the lookout for this species in moist, undisturbed woodlots and along clear streams. *Plantago cordata* is best distinguished from other plantains by the fact that the major leaf veins are not parallel to the margin, but appear to arise from the midrib. In addition, *P. cordata* has a massive, fleshy root system, quite unlike other members of the genus.

Plantago cordata is now officially recognized as "endangered" in Canada by COSEWIC and is presently being considered for protection under

Ontario's Endangered Species Act. Further research on this population is planned for 1985, as well as a search for this species in other suitable areas nearby. Detailed maps of the *P. cordata* site and areas recommended for further inventory have been provided to the chairman of the COSEWIC plant sub-committee for retention in the files.

Documentation: Specimens from Bosanquet Township, Lambton County, Ontario (1984) have been deposited in the National Herbarium (CAN) and the University of Michigan (MICH).

Acknowledgements: The authors thank Bill Henry and Rachel Shawkence, without whom proof of the presence of *Plantago cordata* in Canada would probably still be lacking; Anton A. Reznicek, for advice on searching for *P. cordata*; Mireille Delisle Oldham and Natalie Zalkind for assistance in quantifying and describing the Bosanquet Township population; J. Paul Prevett (OMNR, Southwestern Region), without whose urging the search would never have been undertaken; Jocelyn Webber for helpful comments on the manuscript; and I.J. Bassett and G.A. Mulligan of Agriculture Canada for permission to reproduce the illustration of *P. cordata*. We also thank the landowners for permission to carry out the necessary fieldwork.

References

- Allen, G.M. & M.J. Oldham. 1984. *Plantago cordata* [in Bosanquet Township]: a report to the COSEWIC plant sub-committee. Unpublished report. 7 pp.
- Bassett, I.J. 1973. The plantains of Canada. Monograph No. 7. Agriculture Canada. Ottawa. 47 pp.
- Brownell, V.R. 1983. Status report on heart-leaved plantain (*Plantago cordata*) in Canada. Unpublished report to the Committee on the Status of Endangered Wildlife in Canada. Ottawa. 41 pp.
- Stromberg, J., M. Kunowski & F. Stearns. 1981. *Plantago cordata* Lam. in southeastern Wisconsin: ecology, reproduction, and development of a management plan. Progress Report. Department of Botany, University of Wisconsin, Milwaukee. 20 pp.
- , ----- & ----- 1983. Preservation and introduction of heart-shaped plantain (Wisconsin). Restoration & Management Notes 1(4):29.
- Tessene, M.F. 1969. Systematic and ecological studies on *Plantago cordata*. Mich. Bot. 8:72-194. ♦

BEECHNUTS FOR THE BOTANIST

Dallas Bader, R.R. 1, Maynooth, Ontario
K0L 2S0

The poorest of botanists, facing another winter of beans and potatoes, may naturally turn to the woods for sustenance. The following information from Fowells (1965) provides inspiration:

"Beechnuts require one growing season to mature and they ripen between September and November. Two or three nuts may be found within a single bur.

"Seed fall begins after the first heavy frost has caused the burs to open, and usually is completed within a few weeks...

"Beech ordinarily begins to produce seed when about 40 years old and by the age of 60 years may produce large quantities. Good beech seed crops are produced at 2-3 year intervals.

"Beech seeds averaging about 1600 to the pound, are relatively heavy."

American beech (*Fagus grandifolia*) is abundant here in northern Hastings County. Associated with sugar maple and yellow birch, it is the dominant tree on over 25 hectares near my house.

Nut fall begins the last week of September and is complete by mid-October. I wait until most of the nuts have fallen before gathering, and I do not gather under the first tree I see. Trees vary greatly in the size and quantity of nuts they bear: some produce lots of nuts which are too small to bother with. Others produce large nuts, but in small quantity. There is even considerable variation in the shape and size of nuts from different trees (Fig. 1).

When I locate some trees with lots of good-sized nuts, I use a dead branch to rake away the leaves which will have accumulated by mid-October. The ground under the leaves should be covered with hundreds of nuts per square metre, and it will be possible to gather at least one nut per second, 60 per minute, and 3600 per hour - or one kilogram per hour. Sometimes I find small piles of nuts, which are probably gathered by mice, and I can then scoop them up by the handful! After an hour or two under one tree, the pickings get slim and I move on to another tree.

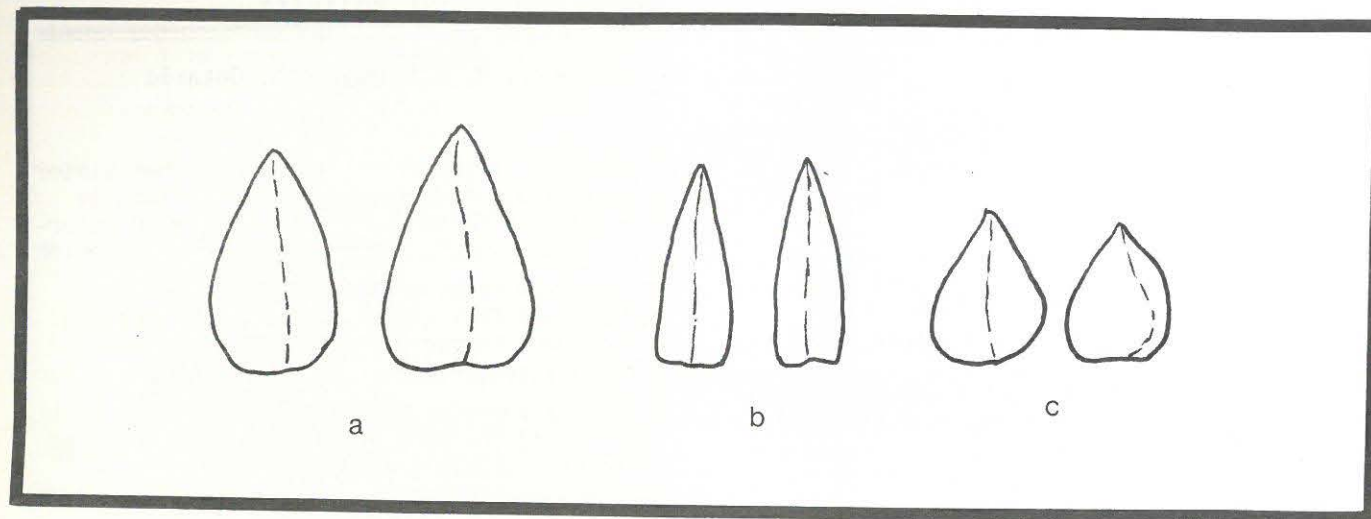


Figure 1. Variation in the shape of beechnuts. a. usual shape. b. long and thin. c. short and fat. Two beechnuts are present in each fruit; each beechnut is three-sided. Diagrams are about twice natural size; drawn by Jocelyn Webber from material supplied by the author.

By far the heaviest crop of beechnuts I have seen occurred in 1978. Nearly every tree bore heavily. I gathered 30 kilograms that year, but in 1979 there were no nuts at all. There have been light to moderate crops from 1980 to 1984.

I put the nuts I have gathered in a cardboard box in a warm attic and let them dry for a week or two, stirring every day. The nuts are dark brown when fresh, but they turn light brown when dry. Once dry they will keep all winter.

The nuts must be roasted before they are eaten. (Some authors warn that raw beechnuts may be slightly poisonous to some people.) I would roast them in an oven if I had an oven, but I use a frying pan and toast them for a few minutes over a woodstove. Some of the nuts explode like chestnuts, so it is best to keep a lid on the pan! The roasted beechnuts are eaten like sunflower seeds: by cracking the shells with the teeth. They taste like a cross between peanuts and chestnuts. According to a United States Department of Agriculture table in Smith (1953), beechnuts contain 21.8% protein, compared to 6.4% for chestnuts and 30% for peanuts.

I was interested to read Yarnell's (1984) account of beechnuts at the McIntyre Site in southern Ontario which has been dated to 3700 radiocarbon years before present:

"Beech (*Fagus grandifolia* Ehrh.) probably was a relatively abundant tree in the vicinity of the McIntyre Site, but beechnut shell was recovered from only two features and in very small quantity. This is consistent with the rarity of its archaeological recovery from other sites. Apparently, it was not much exploited anywhere, probably because of low return relative to the effort required for collection and processing. The nuts are small, difficult to open, and quickly consumed by other animals; and their production is highly variable."

Future archaeologists will find abundant beech-nut shells in my kitchen midden, and they may ponder the economic decline which forced the inhabitants to subsist on beechnuts!

References

- Fowells, H.A. 1965. Sylvics of forest trees of the United States. U.S.D.A. Handbook No. 271.
- Smith, J.R. 1953. Tree crops, a permanent agriculture. Devin-Adair Company, New York.
- Yarnell, R.A. 1984. The McIntyre Site: Late archaic plant remains from southern Ontario. In Johnston, R.B., Ed. The McIntyre Site: Archaeology, Subsistence and Environment. Archaeological Survey of Canada, Paper No. 126. National Museums of Man, Mercury Series. ♦

NEWS OF FIELD BOTANISTS

NORFOLK REFLECTIONS

Robert W. Hounsell, 105 Moccasin Drive,
Waterloo, Ontario N2L 4C3

The first annual meeting of the Field Botanists of Ontario was held at Simcoe, Regional Municipality of Haldimand-Norfolk, on 10 - 12 May 1985 under ideal conditions for spring field-trips. More than 50 enthusiastic botanists (Fig. 1) attended the meetings and outings - almost 50% of our membership. We were treated to excellent talks and slide-shows on Friday and Saturday evenings and great field trips on Saturday and Sunday.

The weekend got off to a good start on Friday evening when Kevin Kavanaugh presented an illustrated talk on *Liriodendron tulipifera* (tulip-tree). Kevin has been studying the tulip-tree in Ontario as well as in the south-eastern United States. He spoke of the ecological requirements of this beautiful tree, which *Native Trees of Canada* refers to as being "too scarce to be of much importance."

Larry Lamb, assisted by Don Kirk, showed slides of many of the species which we were liable to encounter on our field trips, especially those restricted in Canada to the Carolinian Zone. Our botanical appetites suitably whetted, we went to bed to dream of plant "lifers."

Four day-long Saturday field trips were led by Craig Campbell, Don Kirk, Larry Lamb and Kevin Kavanaugh with Ian Macdonald. Craig came prepared with drawings of *Viola triloba* (three-lobed violet), so that those on his field trip to Spooky Hollow would know when to shout "Eureka" (Fig. 2). Three separate populations of this blue violet were discovered by Dennis Clarke, Don Kirk and Larry Lamb.

Another *Viola* species also provided memorable highlights of the weekend. In dry, open areas of Turkey Point Provincial Park were many luxuriant clumps of *Viola pedata* (bird-foot violet), including some which were strikingly bicoloured. Other members of this plant community were *Ranunculus fascicularis* (early buttercup), *Artemisia caudata* (tall wormwood), *Arabis lyrata* (lyre-leaved rock cress), *Draba reptans* (Carolina whitlow-grass) and *Lechea intermedia* (pinweed). A lot of film was expended on the violets.

In a boggy, wooded area near the Turkey Point beach we found a curious mixture of plants. Of the three species we were looking for, the first to be encountered was *Rhus vernix* (poison sumac). It was plentiful at the edge of the woods and in the adjoining, more open and drier area. While this Carolinian species is not rare in extreme southern Ontario, especially in the area from southern Waterloo Region to Long Point, it is otherwise known in Ontario from only a few stations around Georgian Bay and eastern Ontario. *Vaccinium corymbosum* (high-bush blueberry), a species of fairly similar distribution to poison sumac, was also found in the bog.

Picea mariana (black spruce) was scattered through the bog. This tree is a faithful member of the boreal forest from easternmost Newfoundland to Alaska. It can be found in a number of locations in southern Ontario, but Turkey Point is an interesting outlier station. Except in mountainous areas of the eastern United States, black spruce does not get much farther south than this bog on the Lake Erie shoreline.

The third species was harder to find and needed the arrival of Don Kirk's group to put us on the right track. Don led us into the bog, between the poison sumac, willows and birches, to show us *Myrica pensylvanica* (bayberry). Some leaves and waxy fruits of the previous year were still present. Here is a shrub with an extremely interesting distribution. It is a species of the Atlantic coastal plain: common in Prince

Edward Island and Nova Scotia, appears in a few locations in eastern New Brunswick, but is not known from there to southern Maine. From Maine it extends down the coast to North Carolina.

The distribution described above is not unique to bayberry. Roland & Smith (1969) list more than 30 species, including *Ilex glabra* (winterberry) and *Sabatia kennedyana* (plymouth gentian), as part of the coastal plain element in the Nova Scotia flora. These species are thought to owe their broken distribution to rising seas which followed the melting of the most recent glaciers. The higher seas covered land which had connected Nova Scotia and southern New England. The distribution of bayberry is particularly interesting as it follows a tongue-like extension through Pennsylvania to northeastern Ohio and across Lake Erie to Turkey Point (Keddy 1984). What pathway was it following if, as it appears, it moved westward from the Atlantic coast?

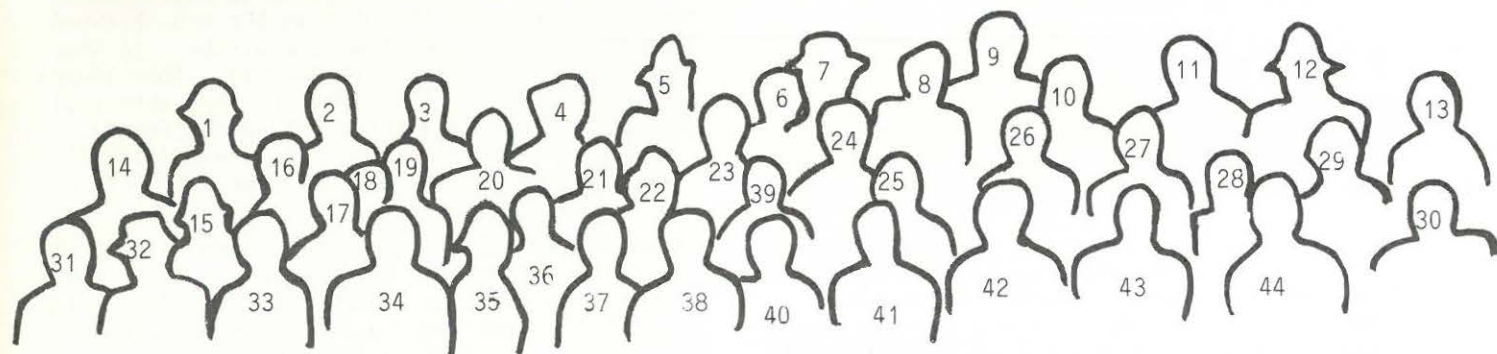


Figure 1. Participants in the Carolinian Weekend '85 as they appeared on the morning of 11 May (photograph by Jeff Kaiser).

1. Alec Ritchie, 2. Wayne McShane, 3. Joe Johnson, 4. Jocelyn Webber, 5. Dick Ussher, 6. Mollie Ussher, 7. Ian Macdonald, 8. Peter Beckett, 9. Dave Bradley, 10. Jim Dougan, 11. Tom Atkinson, 12. Roger Jones, 13. Kevin Kavanaugh, 14. Ted Mosquin, 15. Susan Ritchie, 16. Elaine McShane, 17. Larry Lamb, 18. Joanne Hazel, 19. Doug Geddes, 20. Ted Rosen, 21. Harry Williams, 22. Bob Hounsell, 23. Dennis Clarke, 24. Craig Campbell, 25. Les Greenop, 26. John Tiedje, 27. Taras Kowalczyk, 28. Sandy Symmes, 29. Pam Mitchell, 30. Elizabeth Milchem, 31. Norma Hounsell, 32. Brigitte Beckett, 33. Judy Hernandez, 34. Don Kirk, 35. Pat Halladay, 36. Edith Kamermans, 37. Mary Anne McLean, 38. Charlotte Turnbull, 39. Mary Spurrell, 40. Isobel Greenop, 41. Lisa Needham, 42. Dorothy Tiedje, 43. Mac Kirk, 44. Ken Baldwin. Absent from photograph: Isobel Smaller, Tove Rasmussen, Paul Maycock, Dianne Fahselt, Steve Varga, Jim Hodgins, Zile Zichmanis, Lise Anglin, Paul Mosquin and Jeff Kaiser.

At the Turkey Point bog we saw Carolinian, boreal and coastal plain species. Here is part of the fascination of field botany: finding, identifying, and admiring a given plant is enjoyable in itself, but the pleasure does not end there. Once the known stations have been mapped, one can ponder over the geographical, geological, climatological, and biological variables which interacted to produce what we see as the "present range." For a species which may have existed for millions of years, the present range is but a "stop-action" shot; it does not tell us where the plant has occurred or where it may occur in the future.

When I first read Marie-Victorin's (1938) description of marching armies of plants, re-entering their homelands after deglaciation, I thought it amusing but far-fetched. Now, I realize that if a particular species' changing distributions could be run on high speed, then Marie-Victorin's poetic description might seem more like good expository prose.

On Saturday night we listened avidly to Paul Maycock's account of the Carolinian forest in Ontario (Fig. 3). The variations in composition which occur on sites with different moisture conditions were described with slides showing many of the component species. We were told that some of the best, even one-of-a-kind, stands are disappearing. The Carolinian Canada project is making headway in attracting government and private interest in providing protection. However, Paul Maycock concluded his talk



Figure 2. Field botanists admire a clump of *Viola triloba*. (Photo by Jocelyn Webber with the camera and film of Mac Kirk.)



Figure 3. Professor Paul Maycock gives a talk on Carolinian forests in southern Ontario and the urgent need to preserve them. (Photo by Jeff Kaiser.)

by challenging us to find out more and to get personally involved in helping to preserve this part of our botanical heritage.

Following Paul Maycock's address, a short but pleasant business meeting was held. The progress of the FBO was reported and discussion about possible future projects took place.

Those who did not have the opportunity to see all of the tree species for which old Norfolk County is famous got a chance on Sunday when three more field trips spread out through the countryside. It was a memorable experience to stand in a rich hardwood forest and, at a glance, to see tulip-tree, *Nyssa sylvatica* (black gum), *Sassafras albidum* (sassafras) and *Magnolia acuminata* (cucumber-tree). At such times one hopes fervently that the work and pleas of conservationists like Paul Maycock will not go unheeded.

References

- Keddy, C.J. 1984. *Myrica pensylvanica* Loisel. 1 page in G.W. Argus & C.J. Keddy, eds. Atlas of the rare vascular plants of Ontario. National Museum of Natural Sciences, Ottawa.
- Marie-Victorin, Fr. 1938. Phytogeographical problems of eastern Canada. *Am. Midl. Nat.* 19:489-558.
- Roland, A.E. & E.C. Smith. 1969. The Flora of Nova Scotia. The Nova Scotia Museum, Halifax. ♦

FRANK BROWN: SELF-TAUGHT BOTANIST FROM HALTON REGION

To any budding field botanist, Frank Brown advises the following: "There is no end to learning. Enjoy the out-of-doors. If you are fortunate enough to meet someone knowledgeable, learn from them. It is best to learn about field botany from the field." Frank has practised this philosophy for nearly 80 years.

While growing up in the rural area of Hornby, an early interest in botany was encouraged by his mother, who passed on a love of wildflowers, and a neighbour who knew about trees. A farmer and a carpenter by occupation, Frank actively pursued an interest in botany. This interest was especially important in later years. A self-taught botanist, Frank began with the Peterson "Field Guides" and now uses "Britton & Brown's Illustrated Flora" and "Gray's Manual." He has become especially knowledgeable about the plants of the Lime-house vicinity in Halton Region, where he farmed.

In 1963 Frank and his wife Pearl moved to Georgetown and joined the newly-formed Halton Field Naturalists' Club. At the same time, they joined the Federation of Ontario Naturalists (FON). Beginning in 1970, Frank and Pearl were the FON trip co-ordinators and outfitters for 5 years. Starting in spring, their days consisted of early morning risings, hours of pleasurable botanizing, late evenings, planning and buying the food, overseeing lunches and dinners on the campsite, cleaning and storing canoes between trips, having a few days for themselves, then setting off on another trip. In 1976 they were awarded life memberships in the FON for outstanding service. At the 1985 FON annual meeting, tribute was paid to the Browns for their contribution as co-ordinators of those early trips.

Participation in the activities of naturalists' groups presented many opportunities to share experiences with others interested in field botany. Frank particularly credits the late Jim Simon, Dr. Peter Peach, Gus Yaki, Vince Elliott, Joe Johnson, and Dr. Donald Gunn, as those who contributed to his knowledge. He describes the botany groups which he was involved with as having no generation gaps as they were filled with people eager to learn and willing to share knowledge. Many people were fortunate to learn from Frank. "When I joined the Halton Field Naturalists", he accepted me right away, even though I was a



Frank and Pearl Brown at their 50th anniversary celebration in November 1984 (photo courtesy of The Acton Free Press).

greenhorn. He inspired me to be interested," says club president, Doug Geddes.

Frank doesn't get out botanizing much these days. He is currently reading "Newcombe's Guide to Wildflowers," while Pearl sits nearby creating rughookings. Hanging on the wall is a veteran canoe paddle which was presented to Frank after a canoe trip in 1973. "It's a bit overdone," says Frank modestly. In fact it speaks eloquently for the esteem felt by his fellow canoeists. Over the penned signatures of the participants the inscription reads: "Frank Brown, master canoeist, outdoorsman and all 'round good companion." ♦

Elaine McShane

ELLIOTT HESLOP: WOODY PLANT ENTHUSIAST FROM MISSISSAUGA

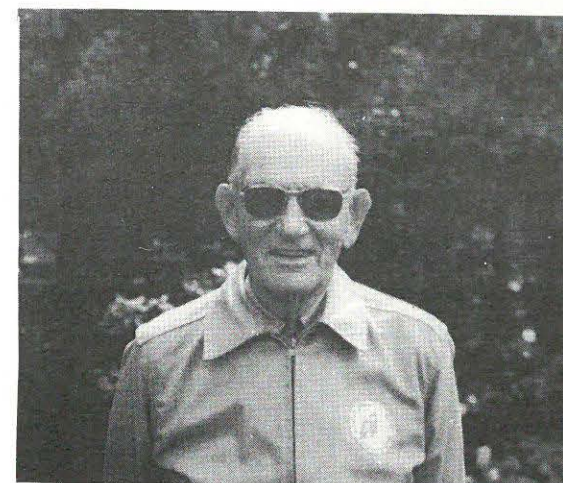
Elliott's interest in plants dates from childhood in England where he participated in a correspondence course for children. Participants in each District received a booklet which included a list of plants for the area. The idea was to record the location and date of

each species found in flower, with 2 marks for the earliest record of flowering and 1 mark for other entries.

After coming to Canada Elliott became a chemical engineer and worked mainly in northern Ontario at Sturgeon Falls and Port Arthur (Thunder Bay) with the firm now known as Abitibi-Price. In 1965 he moved to Lorne Park (in Mississauga) and retired as Associate Director of Research in 1970.

In each of the centres where he lived, Elliott and his wife Dorothy became involved with local naturalist clubs. He became increasingly knowledgeable about trees and shrubs. His many talks to groups of naturalists, both adults and children, were illustrated with quality photographs and illustrations to show distinguishing features. In the field he always carries a penknife to demonstrate features of twigs.

In 1973-74 Elliott became involved with the Rattray Marsh Preservation Committee in Mississauga. Although he is quick to point out that many other individuals have been active on this committee, Elliott Heslop's contributions have certainly been outstanding. He has led dozens of nature walks through Rattray Marsh, has participated in the annual clean-up nearly every year, and has built boardwalks and a bridge to help keep hikers to the trails. In the summer of 1977 he spent nearly every day at Rattray supervising several students who



Elliott Heslop in his garden in Mississauga (photo by Jeff Kaiser).

were making a biological inventory and management plan as part of the Experience '77 programme. In recognition of this work he was presented with a Community Involvement Award in 1977-78 from the Association of Professional Engineers of Ontario Mississauga Chapter.

Although his garden and involvement with other community groups continue to keep him very busy, Elliott continues to visit Rattray Marsh frequently. After years of referring to Petrides' "Field Guide to Shrubs," he now finds the descriptions and distribution maps in Soper & Heimburger's *Shrubs of Ontario* to be particularly interesting and he especially enjoys finding shrubs and trees in previously unknown localities. ♦

Jocelyn Webber

CONTRACT BOTANISTS HIRED BY THE ONTARIO MINISTRY OF NATURAL RESOURCES

In Southwestern Region the contract botanists for 1985, the districts they are working in, and some of their main studies are as follows:

- Gary Allen - Chatham District
 - Walpole Island Inventory
 - *Liatris spicata*, *Liparis liliifolia*
- Don Kirk - Simcoe District
 - Delhi-Big Creek ANSI
 - small white ladies' slipper inventory
 - karner blue butterfly work
- Joe Johnson - Owen Sound District
 - Oliphant Fen wetland surveys
- Jane Bowles - Wingham District
 - Drew Bog and Swamp wetland surveys
- Dave McLeod - Aylmer District
 - Dorchester Swamp
 - whorled pogonia

J.P. Prevett, Regional Ecologist, Southwestern Region

This summer we have had two botanists working on natural areas inventory work in Central Region. Joyce Gould has been doing work on Halton Forest North, Lowville/Bronte Creek Valley, Spottiswood Lakes, Silver Creek Valley, Crawford Lake-Milton Outlier Valley, and Mount Nemo Escarpment. Jeff Kaiser has been working primarily on the following sites: Niagara Section Escarpment, Jordan Valley, Fonthill Sandhill Valley, Millvalley Hills Forests, Moore Lake and Dummer Swamp.

J.T. Griffin, Regional Parks and Recreational Areas Coordinator, Central Region

Tom Atkinson
75 Ternhill Cres., Don Mills, Ontario
M3C 2E4

Tom is interested in all plants of Ontario, especially trees. He is interested in propagation of native plants.

Randall Bayer
Biology Department, University of Windsor,
401 Sunset Avenue, Windsor, Ontario
N9B 3P4

Dr. Bayer is interested in vascular plant taxonomy and plant geography. He may be reached at the University of Windsor by calling 519-253-4232 ext. 2699.

Jerry Chmielewski
Department of Biology, University of Waterloo, Waterloo, Ontario N2L 3G1
Jerry's interests include genecology, the reproductive effort of plants, resource allocation, and cytogeography.

Russ Dennison
140 Roosevelt Ave., Sault Ste. Marie, Ontario P6C 5M8

Russ is interested in wild flowering plants of lower northern Ontario as well as ornithology and youth camps.

Bruce Duncan
Box 512, Caledonia, Ontario NOA 1A0
Bruce is interested in all aspects of botany; he is especially interested in the plants of the Regional Municipality of Haldimand-Norfolk.

Richard M. Saunders
9 McMaster Ave., Toronto, Ontario M4V 1A8
Dr. Saunders enjoys photographing plants. [With Mary Ferguson he co-authored the well known book "Canadian Wildflowers."]

INFORMATION & REQUESTS

ANOTHER ONTARIO RECORD OF THE MOSS *Pohlia sphagnicola* (B. & S.) Lindb. & Arne

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

I was interested to read Steve Taylor's paper (Plant Press 3(2):49-50) on the addition of this moss to the known flora of Ontario. During the summer of 1984 I was involved in field work in a number of bogs and fens in the Cochrane area. At one of these sites I collected a small moss which was later identified by John Sparling (Environmental Applications Group) and confirmed by Bob Ireland (National Museum of Natural Sciences) as *Pohlia sphagnicola*.

Documentation: Ontario: Cochrane District, Haggart Tp., 3 km west of Smooth Rock Falls. Peatland No. 42H-209. Growing on hummocks of *Sphagnum fuscum* in open low shrub bog. Surface water pH 4.2, depth-to-water 26 cm. 26 August 1984. D.J. White 1427, CANM.

I would agree with Taylor that due to its small size and poorly accessible habitat, this moss is likely more common than the present records indicate.

Field work was supported by the Ministry of Natural Resources, Ontario Geological Survey, under the Peatland Inventory Project, 1984. ♦

SOME NATIVE WILDFLOWERS AND FERNS UNSUITABLE FOR TRANSPLANTING TO MESIC, NEUTRAL SOIL GARDENS

Jim Hodgins, 90 Wolfrey Ave., Toronto,
Ontario M4K 1K8

[With the increasing popularity of wildflower gardening, it may be useful to keep track of native species which transplant poorly, or not at all, in order to discourage transplanting these species. The plants listed in Table 1 are a preliminary list. It would be useful if field botanists submitted similar information for other plants which do not usually survive transplanting to gardens. JW]

Table 1. Some native wildflowers and ferns unsuitable for transplanting to mesic, neutral soil gardens.

Scientific Name	Common Name	Why Unsuitable
<i>Calypso bulbosa</i>	calypso orchid (eastern form)	requires conifer duff or moss as substrate; never grows in mineral soils; will not grow in gardens and is probably mycorrhizal (Case 1964, pp. 29, 101)
<i>Camptosorus rhizophyllus</i>	walking fern	requires damp, limestone rocks as substrate with soil pH 7.0-8.0 (Nyman & Marchand 1975)
<i>Castilleja coccinea</i>	indian paint brush	semi-parasitic on roots of other plant species (Malcom 1966)
<i>Chimaphila umbellata</i>	pipsissewa	requires oak or conifer duff with sandy soil pH 4.0-5.0; transplants poorly (Foster 1982)
<i>Clintonia borealis</i>	blue-bead lily	has very specific growing requirements including pH 4.5-5.5; (Crockett & Allen 1977, p. 98)
<i>Cypripedium acaule</i>	pink moccasin flower	requires leaf mold in soil of 4.0-5.0; delicate roots easily damaged; probably mycorrhizal (Case 1964, p. 26; Foster 1977)
<i>Cypripedium reginae</i>	showy lady's-slipper	requires very specific growing conditions; soil pH of 7.0-7.5; species is mycorrhizal (Kirk 1984)
<i>Drosera</i> spp.	sundews	require sphagnum bog conditions with soil in the range of pH 4.0-5.0 (Crockett & Allen 1977)
<i>Epigaea repens</i>	trailing arbutus	requires pine needle or oak leaf soil at pH 4.5; very difficult to transplant; can be grown from seeds or green cuttings rooted in sand and sphagnum (Free 1957, pp. 108-111)
<i>Lupinus perennis</i>	wild lupine	deep tap root makes successful transplant impossible, easily grown from seed (Sperka 1984, pp. 131-132)
<i>Lycopodium</i> spp.	club-mosses	transplants poorly, reasons unknown (Cobb 1963, p. 218)
<i>Pedicularis canadensis</i>	wood betony, lousewort	known to be semi-parasitic on roots of 80 species of plants (Piehl 1963)
<i>Phyllitis scolopendrium</i>	hart's-tongue fern	requires damp limestone rocks as substrate and pH of 7.0-8.0; rare in North America (Futyma 1980)
<i>Polygala paucifolia</i>	gaywings, fringed polygala	probably mycorrhizal; requires very acidic soil; transplants poorly (Foster 1982, p. 317)

References

- Case, F.W. 1964. Orchids of the Western Great Lakes Region. Cranbrook Inst. of Science. Bloomfield Hills, Michigan.
Cobb, B. 1963. A Field Guide to the Ferns. Houghton-Mifflin, Boston.
Crockett, J. & O. Allen. 1977. Wildflower Gardening. Time-Life Books. Alexandria, Va.
Foster, H.L. 1977. Pink moccasin. Bulletin of the American Rock Garden Society 35:163-166.
----- 1982. Rock Gardening. Timber Press. Portland, Oregon.
Free, M. 1957. Plant propagation in pictures. American Garden Guild and Doubleday. Garden City, New York.

- Futyma, R. 1980. The distribution and ecology of *Phyllitis scolopendrium* in Michigan. American Fern Journal 70:81-87.
Kirk, M. 1984. A rare plant transplanting project which failed. Plant Press 2(1):4.
Malcolm, W. 1966. Root parasitism of *Castilleja coccinea*. Ecology 47:179-186.
Nyman, L.P. & D.A. Marchand. 1975. Trek to survival - the walking fern. Ontario Naturalist. March issue 9-13.
Piehl, M. 1963. Mode of attachment, haustorium structure, and hosts of *Pedicularis canadensis*. American Journal of Botany 50:978-985.
Sperka, M. 1984. Growing wildflowers. Charles Scribner's Sons. New York. ♦

THE ERINDALE CAMPUS HERBARIUM (TRTE)

William J. Crins, Department of Biology,
Erindale Campus, University of Toronto,
Mississauga, Ontario L5L 1C6

The herbarium at the Erindale Campus of the University of Toronto was established in 1969, when Professor A.F. Coventry (Fig. 1) donated approximately 3,000 specimens. A zoologist by training, Coventry actively pursued an interest in all aspects of natural history throughout his career. Upon retirement from the University of Toronto he became especially interested in field botany, and he conducted an inventory of the Credit Valley Conservation Authority lands now included in the Regional Municipalities of Halton and Peel. Coventry also collected vascular plants elsewhere in southern Ontario, including Muskoka District and the Regional Municipality of Durham. His collections formed the nucleus around which, in a provincial context, an active and important herbarium has developed.

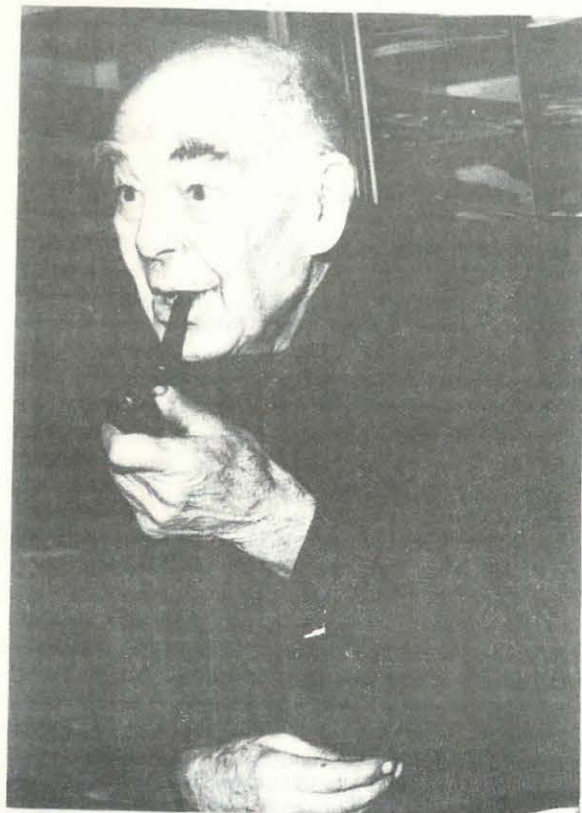


Figure 1. Alan Freeth Coventry (1888-1973), affectionately known as "Covers," as he appeared during a visit to the Erindale Campus herbarium in 1971 (photo by S. Jaunzens).

At present, the Erindale Campus herbarium contains approximately 40,000 specimens. The rate of growth which this collection has experienced is shown in Figure 2. The great majority of these collections are not duplicated elsewhere, which means that for mapping purposes, etc., this herbarium should definitely be consulted. The main purpose of this note is to inform readers of the nature of the holdings in TRTE (its official acronym).

Taxonomic research at Erindale has focussed on Cyperaceae (especially *Carex*), and for this reason, the collection is especially rich in sedges and other graminoids. Dr. Peter Ball, the curator of TRTE, specializes in sedges and oaks, and also has considerable expertise in other groups such as mustards. His past and present students, including Tony Reznicek, Jocelyn Webber, and myself, have all done taxonomic research on *Carex*. In addition, we have all been involved in floristic projects. As a result, TRTE has extremely good representation from several counties, regional municipalities and districts in southern Ontario. The Regional Municipalities of Halton and Peel are especially well represented. This is due in no small part to other active field workers who have contributed substantially to the data base by properly and thoroughly documenting their studies. Of particular note are the studies of the Halton Region Conservation Authority (HRCA). David Bezdek, our technician and specimen preparator, has also collected numerous specimens in these regions and elsewhere.

Over the past five years or so, TRTE has received large donations of specimens from other parts of Ontario, Canada, and the world. Notable among these are the collections of Don Sutherland from Leeds County, Mike Oldham's specimens from Essex County, and the Hamilton-Wentworth and Wellington County collections of HRCA staff, under the guidance of Brenda Brobst. There are also substantial collections from many other parts of the province, including the Rainy River and Favourable Lake areas of western Ontario, the Bruce Peninsula, Regional Municipality of Durham, Regional Municipality of Haldimand-Norfolk, Huron County, Lambton County, Middlesex County, Muskoka District, Parry Sound District, Simcoe County, and York Region.

Although the holdings of TRTE are dominated by southern Ontario material, reference collections from most of the Canadian provinces and territories, and from several American states are also included. Collections from Ellesmere Island and other islands in the high arctic are substantial. To add to the international flavour

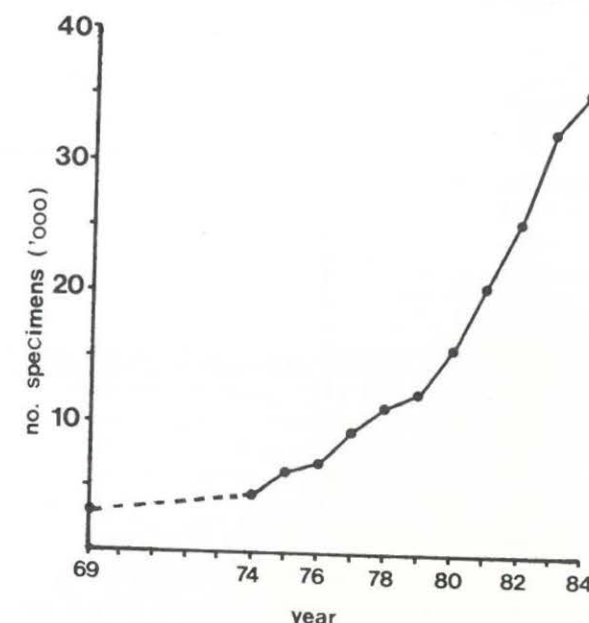


Fig. 2: Cumulative accessions at the Erindale Campus herbarium (TRTE).

of this herbarium, there are approximately 700 specimens from Nigeria, and several hundred specimens each from Sierra Leone, Western Australia, and New Zealand.

The Erindale Campus herbarium is open during normal business hours throughout the year. However, because taxonomy classes are held here, and because we are often out in the field, anyone wishing to examine specimens should first contact the Curator, Dr. Peter Ball, or the Technician, David Bezdek, to arrange a suitable time. The telephone number is (416) 828-5379. ♦

PLANT LIFE EXHIBITS NEED YOUR HELP

by Erich Haber, Botany Division, National
Museum of Natural Sciences, Ottawa, Ontario
K1A 0M8

Museum exhibits are generally planned around artifacts and specimens that have been acquired as part of the activities associated with the various disciplines represented at an institution. Some of them are collected in connection with research projects of the curators, others may represent fortuitous collections of specific scientific or historical value

obtained through donation or purchased at opportune times, and still others are acquired as part of a museum's on-going search for representative materials to complete certain collections.

During the renovation programme that began in 1969 with the closing of the Victoria Memorial Museum Building, the National Museum of Natural Sciences relied heavily on its existing store of fossils, minerals, birds and mammal specimens. Specimens previously unused could be incorporated into the new or refurbished exhibits, and fresh specimens of the more common birds and mammals could be obtained readily for mounting. Others such as herpetiles could be cast in modern acrylics, and minute animals could be modelled larger-than-life to create interest and to elucidate the details of form and diversity that are the basis for their taxonomic recognition.

In the early plans for the new hall of Plant Life, the main three-dimensional elements that were to be incorporated were numerous models of vascular plants as well as preserved specimens of lichens that readily lent themselves to exhibit use. With the massive renovations underway, it became increasingly evident that there were insufficient numbers of skilled craftspeople available at the museum and in the country that could produce the numerous models originally planned for inclusion in Plant Life within a reasonable time frame and cost. When the costs for materials and services jumped dramatically during the early to mid seventies, the original plans made in the late sixties became exorbitantly expensive to realize.

A redesign of the entire architecture of the hall followed to a simpler structure in which large numbers of living plants would be used as an integral part of certain exhibits as well as for decorative purposes. Non-living plant materials and by-products of various kinds were also used as part of the exhibits dealing with the biology of the various groups represented: bacteria, algae, fungi, lichens, bryophytes and vascular plants.

Much of the exhibited material was obtained locally and included disease tumors on roots, fruiting bodies of slime moulds and fungi, cones of representative Canadian conifers, and native and exotic wood samples from local hardwood suppliers. Others were obtained from more distant sources: huge cycad cones from Australia and South Africa, cones and a wood slice of an ancient bristlecone pine from California, and a section from a western red cedar trunk from British Columbia. These and others were combined with texts, original artwork, photo-

graphs, models, animated graphics, films, slide programmes and dioramas to complete the exhibits that were planned for inclusion in the opening of the hall in the spring of 1981.

At the time of the official opening, the hall did not contain all of the exhibits that had originally been planned for inclusion. The main exhibit area that remained incomplete, in addition to a number of dioramas, was one dealing with plants and man. Within this broad topic, exhibits on staple foods, important medicinal, narcotic and poisonous plants, plant fibres, herbs and spices, and the use of plant motifs in the arts and crafts were possible candidates for inclusion.

It is in this connection in particular that I am writing this article. I not only want to draw your attention to the existence of an exhibition hall on plants that is within reasonable driving range for a large number of naturalists in southern Ontario, but also to solicit your help. In the coming years when the National Museum of Man moves to its new building, the National Museum of Natural Sciences will expand into the west half of the Victoria Memorial Museum Building. As part of this expansion and in conjunction with our need to complete the existing hall of Plant Life, we could use various plant materials and artifacts for exhibit purposes.

If you have in your possession now or come upon some interesting or unusual plant curios, plant parts or derivatives that could be used to complete some of our remaining exhibits and that you would be willing to donate to the museum, I would very much like to hear from you. These could be man-made objects from plant fibres or plant parts, fruits and seeds of medicinal, poisonous, or narcotic plants, unusual handcrafted household wares and items or objects of art that depict plant motifs as part of the overall design or ornamentation. Plant curios could be unusual growth forms or patterns in wood, disease-induced growths, unusual fruiting bodies, and other kinds of objects that could be of interest to museum visitors and are suitable for exhibit purposes. If you have some particularly striking object that is of commercial value and potentially of interest as an exhibit objects it may be possible that some arrangements, monetary or otherwise, could be made to procure it. Appropriate documentation of the object as to its source, when collected or obtained, and what plant part or material it represents or is made of should be available for each. Your help in locating suitable items would be greatly appreciated. Any correspondence regarding this subject should be addressed to me at the museum. ♦

ONTARIO PLANTS IN PRINT

THE MICHIGAN BOTANIST REFERENCES FROM 1980 - 1984

compiled by Steve Varga, 5900 Yonge St., #618,
Willowdale, Ontario M2M 3T8

- Reznicek, A.A. 1980. Halophytes along a Michigan roadside with comments on the occurrence of halophytes in Michigan. 19(1): 23-30. [Distributions and geographic origins of 12 rare halophytes in Michigan are discussed; maps for *Muhlenbergia asperifolia* and *Spartina patens* include Ontario.]
- Rabaler, R.K. 1981. *Gypsophila muralis*. Is it naturalized in Michigan? 20(1):21-26. [Distribution of this introduced member of the Caryophyllaceae is discussed with reference to stations in Ontario.]
- Marquis, R.J. & E.G. Voss. 1981. Distributions of some western North American plants disjunct in the Great Lakes region. 20(2): 53-82. [Habitats, criteria used to determine whether a species is of western affinity, and reasons for disjunct western species in the Great Lakes region are discussed; distribution maps are provided for 20 species.]
- Catling, P.M. & S.M. McKay. 1981. A review of the occurrence of halophytes in the eastern Great Lakes region. 20(4):167-179. [Includes literature review on halophytes for Michigan, Ohio, Pennsylvania, and Ontario.]
- Warner, B.G. 1982. New moss records from Manitoulin Island, Ontario. 21(1):45-46. [Records from the Greenbush Swamp, Manitoulin Island, are noted.]
- Pringle, J.S. 1982. The distribution of *Solidago ohioensis*. 21(2):51-57. [Distribution of this goldenrod is related to past glacial history; species with similar distributions are noted.]
- Reznicek, A.A. & D. Henson. 1982. *Carex heleonastes*, new to Michigan and the contiguous United States. 21(4):169-170. [Distribution of this species in North America is discussed.]
- Crum, H. 1983. *Grimmia hermannii*, new to Canada. 22(1):10. [Based on specimens from Rainy River District.]
- Gill, L.S. 1983. A note on the cytotaxonomy of the genus *Salvia* in Canada. 22(2):73-75. [Chromosome numbers, reproductive biology, and distribution of the genus are documented.]
- Keddy, C.J. & P.A. Keddy. 1984. Reproductive

biology and habitat of *Cirsium pitcheri*. [Various aspects of floral biology, seed production and dispersal, and herbivore damage are discussed; based on an autecological study in Pukaskwa National Park.]

The Michigan Botanist is published four times per year (January, March, May and October) by the Michigan Botanical Club, c/o Herbarium, North University Bldg., University of Michigan, Ann Arbor, Michigan 48109. Subscriptions: \$ 10.00 (US funds) per year. Most back issues are available and may be purchased from the Business Manager. ♦

NATURAL AREAS JOURNAL

reviewed by Michael J. Oldham, Essex Region
Conservation Authority, 360 Fairview Avenue
West, Essex, Ontario N8M 1Y6

This relatively new journal is a quarterly publication which started in 1981. It is published by The Natural Areas Association, a non-profit organization actively involved in the identification, preservation, protection, and management of natural areas and elements of natural diversity. Papers included in *Natural Areas Journal* are well-written and edited, and the journal is attractively produced. There are several papers to interest field botanists, for example: "A literature review of management practices for multiflora rose (*Rosa multiflora*)," "The tallgrass prairie orchids *Platanthera leucophaea* (Nutt.) Lindl. and *Cypripedium candidum* Muhl. ex Willd.: and implications toward management," "Japanese honeysuckle (*Lonicera japonica*): a literature review of management practices," and "Exotic shrubs - a potential problem in natural area management in Illinois." For the field botanist actively involved in natural area protection, research, or management, the journal has much more to offer. Titles of interest to this audience include: "Research goals for natural areas," "A compendium of ecological and natural subdivisions of the United States," "Minimum viable populations - a review," "Island biogeography and preserve design: preserving the vascular plants of Great Smokey Mountains National Park," "The minimum size for nature preserves: evidence from southeastern Wisconsin forests," and "Landowner

contact - a new profession for natural area preservation."

Although *Natural Areas Journal* has a definite slant towards the eastern and mid-western United States, there is some Canadian content: "The Canadian approach to natural areas protection" and "A landowner contact pilot project in Ontario." The above examples of titles come only from volumes 3 and 4, since I have yet to see volumes 1 and 2.

In the January 1984 issue a membership directory was included. The organization has members from all 50 states and several foreign countries, and yet not a single Canadian university library is included, and there are fewer than 10 Canadian members. *Natural Areas Journal* certainly deserves a much wider Canadian readership than this, in my opinion. I strongly recommend it to Ministry of Natural Resources district and regional offices, conservation authorities, universities, consulting firms, and individuals interested in natural areas protection and management. As well as original papers, this publication includes regional reports, announcements of upcoming conferences and workshops, summaries of legislative activities, accounts of rare and endangered species, book reviews, and announcements of new publications.

In a time of rising subscription costs, at \$ 10.00 US a year, *Natural Areas Journal* is a bargain. Volume 3 contained over 200 pages of text. Membership applications may be sent to The Natural Areas Association, 320 South Third Street, Rockford, Illinois 61108, U.S.A. ♦

NOTICE OF PUBLICATION

Vascular Plants and Vertebrates of Luther Marsh, Ontario. Allan P. Sandilands. 1984. Ontario Field Biologist Special Publication No. 2. 134 pp., \$ 6.50, available from the author, P.O. Box 147, Plattsville, Ontario N0J 1S0

This publication provides a comprehensive inventory of the biota of this extensive and interesting wetland on the Dufferin-Wellington County line. The history of establishment of the area, physical features, habitat maps and descriptions, and annotated lists of a variety of groups of organisms, including vascular plants, are contained within this book. 601 species of vascular plants have been recorded in the area. The list contains the results of field work, as well as herbarium records. ♦

Checklist of Plants, Lake Superior Provincial Park. 1985. Ontario Ministry of Natural Resources, Lake Superior Provincial Park, P.O. Box 1160, Wawa, Ontario POS 1K0. 24 pp., \$ 0.50 (postpaid).

reviewed by Anton A. Reznicek, Assistant Curator, University of Michigan Herbarium, North University Building, Ann Arbor, Michigan 48109

The Lake Superior shore is well known to be of great interest botanically, and finally we have a checklist for Lake Superior Provincial Park. It is basically a simple listing, but the occurrence of plants in each of 5 general "community" types (Great Lakes - St. Lawrence forest, boreal forest, disturbed areas, Lake Superior coastline, and wetlands) is noted by a "+" in a column underneath the letter code for each community. Flowering dates are also given and the wetland community type is divided by the letters A and B into acidic and basic wetlands. Common names are given for all species - even for species without accepted common names where cumbersome translations of the scientific names are used.

Any list is a beginning and to be praised. However, this list suffers in that no hint is given as to the data on which it is based, other than "collections and field surveys of park naturalists and other researchers since 1961." For the sedge family (Cyperaceae), of 66 reported species, 20, or nearly 1/3, have the superscript indicating "further documentation required." Even for the presumably better known ferns, about 10% of the entries are evidently in need for further documentation. Nowhere is it explained what this means. Are these reports based on specimens that have not been verified? Are they incidental sightings? Are they species whose occurrence in the park is expected, but which have not yet been found? Certainly, even some reports apparently not in need of further documentation would be spectacular if true, e.g. *Filipendula rubra*. Others in need of documentation seem extremely unlikely, e.g. *Picea rubens*, *Agrostis tenuis*, *Carex lurida*, *Cirsium discolor*, and *Solidago missouriensis*.

Nomenclature is said to follow Gleason and Cronquist's "Manual" except where recent publications are more appropriate, but evidently Dore & McNeill's "Grasses of Ontario" was not appropriate enough, as it was not followed. In fact, I can find no consistency at all in sources used. One additional annoyance is the relatively large number of spelling and typo-

graphical errors that plague the list. In spite of all these problems, the list is certainly a good start and anyone interested in the flora of the Lake Superior region should get a copy.

I am not criticising the publication of preliminary checklists, but I do have two major points to make about this list. One, that there is much botanical work needing to be done in the park; and two, that the Ministry of Natural Resources clearly needs to hire qualified botanists with recognized credentials in floristic surveys to do important work such as researching this checklist. ♦

A Graphic Guide to Ontario Mosses by Robert Muma. 1985. Published by the Toronto Field Naturalists. Available from the author at 625 Rushton Road, Toronto, Ontario M6C 2Y8. 24 pp. \$ 2.00 (\$ 2.50 postpaid).

reviewed by Harry Williams, Millbrook, Ontario LOA 1G0

This little booklet of 24 pages is a good introduction to moss terminology and identification. The heart of the work is a series of 10 plates of drawings illustrating the diagnostic features of groups of genera. There are also 3 pages of illustrations of sporophyte characteristics and a list of moss habitats and the genera likely to be found in each. After placing a specimen in one of the groups illustrated, use of one of the standard works listed in the bibliography should in most cases enable one to pick out the genus at hand and possibly establish the species as well. As far as I am aware, the use of pictorial keys direct to genus groups is unique to this work, and it is highly recommended for beginners with an interest in mosses. Over 100 genera of the Ontario moss flora are covered, including most of those likely to be met by a beginner. The booklet is complete with directions for collecting and the preparation of specimens; an index is provided.

The only errors I noted are minor: on p. 17, *Orthotrichum* and *Uloa* of Group A should be on p. 16 with the *acrocarps*, *Orthotrichum* in A and B, *Uloa* in B. In the index, *Antitrichia* has suffered a change of gender and appears as *Antitrichum*. ♦



BERNARD BOIVIN 1916 - 1985

On 9 May 1985 Canada lost one of its most productive botanists, Bernard Boivin. Born and raised in Montreal, he developed an interest in botany through his undergraduate education at the University of Montreal and the influence of Quebec botanists, especially Frère Marie-Victorin. He obtained a doctorate under Fernald at Harvard University in 1943. Although most of his career was at the Biosystematics Research Institute of Agriculture Canada in Ottawa, Dr. Boivin spent a number of years as a researcher at the Gray Herbarium of Harvard University, the National Museums of Canada, and the University of Toronto. For several years he was a researcher and lecturer at Laval University, where he continued to work until shortly before his death.

A self-described herbarium botanist, Bernard Boivin literally worked day and night on his many projects. He was the author of more than 150 publications; the best known include "Enumeration of the Plants of Canada," "Flora of the Prairie Provinces," and "Survey of Canadian Herbaria." He had completed a number of as-yet-unpublished manuscripts, the most recent on *Carex* of eastern Canada. Bernard Boivin published more names of plants, many of them new combinations, than any other Canadian botanist. Students of systematics will miss Dr. Boivin's lively discussions about aspects of taxonomy and nomenclature. Even when he might disagree on these matters, he was always good-humoured and interested in their work.

Bernard Boivin believed that learning about plants is an important part of a good education for all Canadians. Realizing the value of adequate herbarium material for research, he encouraged anyone interested in plants to collect specimens. Many amateur botanists in Ontario, and the rest of Canada, were inspired by Dr. Boivin's encouragement and as a result they have made significant contributions to our knowledge of field botany. Dr. Boivin maintained extensive files for his "Index of Canadian Plant Collectors." In addition to corresponding with hundreds of individuals whose names appear on herbarium labels, he accumulated copious biographical information from newspapers and other documents. All of this material, which will be of great value to historians, is to be kept at the Hunt Institute for Botanical Documentation in Pittsburgh, Pennsylvania.

Deepest sympathy is extended to Bernard Boivin's family and many friends, especially his wife, Cosette, and his children, Lilian, Hélène, and Jacques.

EDITOR

Jocelyn Webber 3120 Kirwin Ave., #408, Mississauga,
Ontario L5A 3R2

EDITORIAL COMMITTEE

Wilfred Botham R.R. 1, Cottam, Ontario NOR 1B0
 Wm. E. Cattley R.R. 2, Orillia, Ontario L3V 6H2
 Stephen Darbyshire 7 Braemar Street, Ottawa, Ontario
K1K 3K3
 (Ontario Plants in Print) Bruce Ford 24 Zircon Ct., Willowdale, Ontario
M2H 2A1
 (News of Field Botanists) Elaine McShane 15 Kingsview Blvd., Brampton,
Ontario L6Y 1C5
 Richard Sims Great Lakes Forest Research Centre,
P.O. Box 490, Sault Ste. Marie,
Ontario P6A 5M7
 Bruce Thacker 374 Van Norman Street, Thunder Bay,
Ontario P7A 4C3

ARCHIVES

Wm. G. Stewart 6 Yarwood St., St. Thomas, Ontario
N5P 2Y3

BUSINESS MANAGER

Jeff Kaiser

OBJECTIVES OF THE PLANT PRESS

To provide a medium for communication among Ontario field botanists by:

1. distributing information on the activities of Ontario field botanists;
2. reporting on projects and research in progress;
3. distributing information on plant distributions, identification keys, field equipment and methods;
4. monitoring publications about plants in Ontario with reviews where appropriate;
5. encouraging publication by field botanists, both in The Plant Press and other publications.

OPINIONS EXPRESSED IN THIS PUBLICATION ARE NOT NECESSARILY
THOSE OF THE EDITORIAL COMMITTEE OR THE BOARD OF DIRECTORS

SUBMISSIONS

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. Although our system is not so rigorous as that of some scientific journals, we request that articles be well written and in the style of this publication. Contributors are encouraged to ask qualified persons to appraise their work before submission to The Plant Press. We request 3 copies of typed, double-spaced manuscripts whenever possible.

Non-subscribers must pay the annual subscription fee for unsolicited submissions which are published. In return they may receive 4 copies of the issue in which their work appears. Submissions in excess of 3 pages may be subject to a page charge.

DEADLINES

A minimum of 3 months is needed to review most submissions. Material for 'Information & Requests' and 'Letters' can usually be inserted up to 6 weeks prior to publication. Deadlines are determined from the first day of the month of issue.

MAPS, PHOTOGRAPHS AND ILLUSTRATIONS

Base maps can be provided for articles for this publication. Black and white photographs are preferred, but figures can be made from colour slides. Those submitting more than one figure per article may be asked to pay for the cost of figure production.

Time permitting, arrangements can be made to provide illustrations. Only drawings in black ink are acceptable for consideration.

ISSN 0826-2258

THE PLANT PRESS

BOX 537

STREETSVILLE POSTAL STN
MISSISSAUGA, ONTARIO
L5M 2C1

Second Class Mail Registration No. 6305
Postage paid at Gateway

1985 SUBSCRIPTIONS

1985 subscriptions are \$ 12.00 (Can. & US funds) for individuals
\$ 18.00 (Can. & US funds) for institutions
back issues (some photocopied) are available for \$ 12.00 per volume

THE PLANT PRESS is published by The Plant Press, Incorporated, a non-profit organization dedicated to distributing information about field botany in Ontario. Donations in excess of subscription fees are tax-deductible (Ontario registration No. 0691873-21-13).

THE PLANT PRESS Vol. 3 No. 3 (SEPTEMBER 1985)

ABBEY PRINTING