

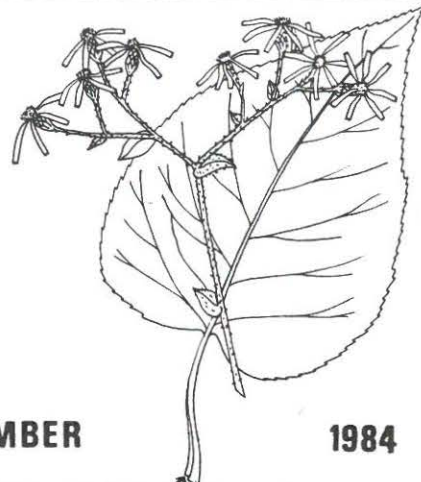
THE PLANT PRESS

FIELD BOTANISTS
OF ONTARIO NEWSLETTER

Vol.2 No.3

SEPTEMBER

1984



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NEWS

The summer of '84 was a busy and exciting one for The Plant Press and its supporters. The number of subscribers has increased to nearly 350 and many new authors have submitted news, ideas and reports to be passed on to others. We are pleased to report the following significant developments of two separate organizations:

- (a) The Editorial Committee of The Plant Press has decided to incorporate as a non-profit corporation. A Board of Directors will then ensure continuity of The Plant Press.
- (b) Formation and organization of the Field Botanists of Ontario is now in progress under the direction of Coordinating Chairman, Bob Hounsell.

We are grateful to Rick Bobbette's efforts to summarize opinions on the draft constitution (March '84 issue) and his distribution of volunteer forms. Due to the demands of contract field work, Rick regrets that at this time he can not continue his pursuit of volunteers to help with (a) The Plant Press or (b) Field Botanists of Ontario. In order to maintain the momentum of enthusiasm, he has passed on information gathered and all responsibilities to Bob Hounsell. Information about Field Botanists of Ontario activities is included as a special supplement in this issue.

We hope our readers will support both of these separate organizations in 1985. We must remind you that our work is entirely supported by subscription fees and membership fees, both of which we would appreciate receiving before 1985. Please note that subscription fees to The Plant Press and membership fees for the Field Botanists of Ontario must be sent to different addresses. Forms for both are included with this issue.

There is a change in subscription fees to The Plant Press for institutional/corporate subscribers (\$18.00 Can. and US) for 1985. The fee for individual/family subscription will remain at the 1984 rate (\$12.00 Can. and US).

The tentative Field Botanists of Ontario membership fee is \$8.00 per member.

Two field trips were arranged for the summer of 1984. The first, to the Bruce Peninsula was a tremendous success and a summary report appears in the next column. A second field trip, to the Ojibway Prairie on 18 August, will occur after this issue goes to press. A report on this field trip will appear in a subsequent issue. ♦

THE BRUCE BOTANY WEEKEND: FIRST GATHERING OF ONTARIO FIELD BOTANISTS IS A SUCCESS

From Ottawa, Toronto, Niagara Falls, Ann Arbor (Michigan), and from dozens of places in between, we set our sights on the Bruce Peninsula. Some of us drove all day to arrive at Red Bay Lodge on the evening of Friday, 8 June 1984. By 8:00 p.m. the lodge buzzed with the conversation of a roomful of field botanists and naturalists. So many of us knew each other only from correspondence. In at least one case, such correspondence had gone on for 20 years! We were all curious to finally match names with faces.

At 9:00 p.m. Jeff Kaiser introduced a slide showing and about 20 people each presented a few slides which illustrated their interests. A keen interest in orchids was shared by many of those who presented slides. By a striking coincidence white forms of a number of orchid species were featured by 4 or 5 of the presenters.

On Saturday after breakfast, we were organized into our respective field groups and headed off in our several directions. Vince Elliott and Joe Johnson, seasoned leaders of naturalist outings on the Bruce, were to lead "general" trips to highlight the natural areas which make the Bruce famous. John Riley, Joyce Reddoch and Allan Reddoch led a trip to investigate the vegetation and peat soil of Sucker Creek fen. Don Cuddy led a trip to the Cabot Head area and Harry Williams offered a moss and liverwort foray. Although Joe and Vince were the most popular leaders based on the size of their following, most of us found it difficult to decide which field trip to go on.

Most participants had picked up a copy of a checklist of the spring flora of the Bruce which was compiled from a list supplied by Joe Johnson. Show any keen field botanist a list and he/she will soon be looking for errors and omissions. Needless to say, people kept their eyes peeled.

The temperature was cool and the sun shone brightly in the morning. By late afternoon the sky had clouded over and some very brief showers occurred while we were driving back to the lodge at around 5:00 p.m. Many people commented that they were not affected by hay fever the same way as they were at home; but the black flies made their presence known.

Between supper and the evening talks, people

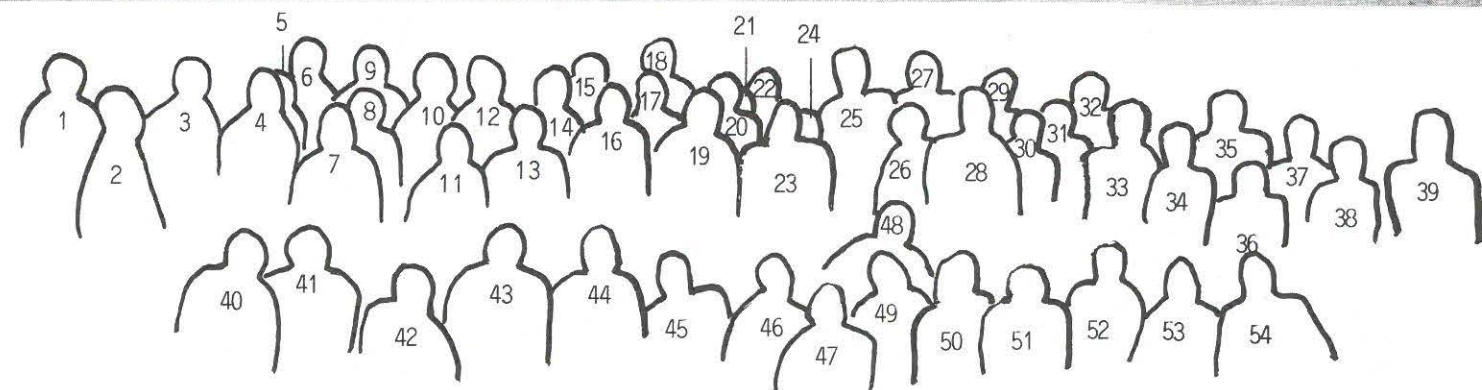


Figure 1. Participants in the Bruce Botany Weekend '84 as they appeared on the morning of 10 June (photograph by Jeff Kaiser).

1. Dorothy Tiedje, 2. Bernard Boivin, 3. Doug Geddes, 4. Lisa Theimer, 5. Catherine McLeod, 6. Vince Elliott, 7. Cosette Boivin, 8. Evelyn Ricker, 9. Jack Sherrin, 10. Dennis Clarke, 11. Emily Hamilton, 12. Allan Reddoch, 13. Joyce Reddoch, 14. Ted Rosen, 15. Wayne Wannick, 16. Donald Kirk, 17. Bob Hounsell, 18. Mike Oldham, 19. Gary Allen, 20. Wilf Botham, 21. Barbara Hoover, 22. Bruce Ford, 23. Al Wormington, 24. Natalie Zalkind, 25. Tim Fischl, 26. Eileene Stewart, 27. Don Cuddy, 28. Bill Stewart, 29. Joe Johnson, 30. Joan Gunn, 31. Donald Gunn, 32. Dave Bradley, 33. Tony Reznicek, 34. Susan Reznicek, 35. Bill Cattley, 36. Marion Cattley, 37. Jean Collins, 38. Helen Hinde, 39. Jeff Kaiser, 40. Jim Jodgins, 41. Jocelyn Webber, 42. Isabel Smaller, 43. Harry Williams, 44. Rick Bobbette, 45. Norma Hounsell, 46. Mireille Delisle, 47. Steve Varga, 48. Clinton Goyette, 49. Dorothy Goyette, 50. Zile Zichmanis, 51. Deb Metsger, 52. Elaine McShane, 53. Hazel Bird, 54. Wayne McShane. Absent from photograph: John Riley, Reed Riley, Kathy Lindsay, Connie Kiteney, Sheila McKay-Kuja, Al Kuja, Emerson Skelton, Eleanor Skelton, John Tiedje, Tom Beechey, Ian Macdonald, Mary Ann McLean, Les Greenop, Isabel Greenop, Kent Glauser, Dorothy Glauser and Tom Hilditch.

socialized in the lodge. Several had brought copies of their publications. Many were interested in Bernard Boivin's display on his various research projects in progress at Université Laval: a book on the sedges of eastern Canada, which will be published in the future; a survey of Canadian plant collections in foreign herbaria; publications on the flora of Canada; and a compilation of the names of botanists and collectors of Canadian plants. We were very pleased that Dr. Boivin came as our special guest. He and his wife Cosette came all the way from Quebec City to attend this event.

With all the excitement we forgot to give informal summaries on the findings of the field trips. We learned that two of the groups came upon massasauga rattlesnakes, an exciting and increasingly rare species. On Don Cuddy's trip Dr. Boivin was standing above a coiled snake discussing its identity when it suddenly began its characteristic rattling and ended all speculation.

Vince Elliott's group spent most of Saturday from Oliphant south. Walker's Woods and Burford Lake were just two of the popular orchid stops. Showy orchis (*Orchis spectabilis*), heart-leaved twayblade (*Listera cordata*), striped coralroot (*Corallorhiza striata*), stemless lady's-slipper (*Cypripedium acaule*), yellow lady's-slipper (*C. calceolus*), and Hooker's orchid (*Platanthera hookeri*) were some of the many orchids seen in flower. The yellow form of Indian paint-brush (*Castilleja coccinea* forma *lutescens*) and the white form of gaywings (*Polygala paucifolia* forma *alba*) were also seen along with many Bruce specialties such as butterwort (*Pinguicula vulgaris*).

Joe Johnson's group spent time in the northern parts of the Bruce where his group was shown some of his favourite haunts. Many of the plants seen on Vince's trip were also seen by those with Joe. Some of the more interesting finds were stemless rubberweed (*Hymenoxys acaulis* var. *glabra*) and ram's-head lady's-slipper (*Cypripedium arietinum*) near Dyer Bay. Wall rue (*Asplenium ruta-muraria*) and nodding trillium (*Trillium cernuum*) were pointed out at Crane River. Walking fern (*Camptosorus rhizophyllus*) was another fern of interest.

The Sucker Creek crew logged close to 3.5 km of fairly rugged terrain. In addition to exploring a fen which has been botanized by few, they also found a Marsh Hawk nest.

Harry Williams' followers were delighted to be shown more than 30 species of mosses and about 10 liverworts.

New pairs of eyes often discover plants which have been previously overlooked by others. This was certainly the case on the Bruce Botany Weekend. On alvars near Dyer Bay, Dr. Boivin found many specimens of a small rose (less than 30 cm high), which he was familiar with due to his research on the flora of the prairie provinces. This shrub is a western species, *Rosa alcea*. In addition to being new to the flora of the Bruce Peninsula, it is also new for Ontario.

The evening talks by Vince Elliott, Bernard Boivin and Tony Reznicek were introduced by Joe Johnson, John Riley and Rick Bobbette, respectively.

Vince Elliott entertained us with slides of interesting areas on the Bruce. He briefly discussed a number of examples of the colourful local history.

Tony Reznicek talked about the glacial history of the Bruce and how this influenced the flora and vegetation. Many of us were interested to hear that the Bruce was under water until about 5,000 years ago and that the habitats which support many provincially rare plants and vegetation have been invaded by plants in comparatively recent times.

Bernard Boivin spoke on Ontario Botanists. This colourful history began with Champlain and focused on the 21 members of the Canadian Botanists' Correspondence Association, a group of Ontario botanists which disappeared soon after publication of an advertisement in 1890. The text of Dr. Boivin's address will be included in a subsequent issue of *The Plant Press*.

After breakfast on Sunday morning, Vince and Joe picked up where they had left off the day before and led two mini-tours to the southern Bruce, after which people continued on their way home. Others stayed for workshops arranged by Steve Varga. Tony Reznicek instructed a group of 14 on sedge identification. Illustrations, handouts, and specimens were used during this indoor session. Harry Williams led another group keen to learn about mosses and liverworts.

Just before everyone began to drift off in different directions, Jeff Kaiser arranged the group for a photograph (Fig. 1). Look at those happy people! We are grateful to Harry Williams' efforts and the enthusiasm and cooperation of everyone who participated. The Bruce Botany Weekend of '84 has set a tremendous precedent for future field trips. Thank you! ♦

LETTERS

Professional botanists appreciate that it is possible to spend 50% of their time getting the last 20% of information necessary for an article to be accurate. No individual should be discouraged from contributing to *The Plant Press* because they are "corrected" by later feedback. The goal of improved communication among field botanists can only be met by the process of those who have access to specific details of knowledge (i.e. new or overlooked plant records and publications) adding to the reports and ideas of others.

Vaccinium stamineum (DEERBERRY) IN THE NIAGARA FALLS AREA

At the Federation of Ontario Naturalists (FON) conference in Kitchener in May 1984, Gus Yaki hastily wrote a note about several additional Niagara records for *Vaccinium stamineum* (deerberry) with reference to Bruce Ford's article (*The Plant Press* 2(2):40-42). So there we were in a dilemma. Gus Yaki is a competent field botanist, deerberry is a relatively easy-to-identify shrub, yet there were no known specimens (which prohibits those records from inclusion in "Shrubs of Ontario" (Soper & Heimbürger 1982) and the Ontario rare plant atlas (published by the National Museum)). To complicate matters, Gus was off on a busy schedule with his company *Nature Travel Service* and could not be reached.

Rather than risk over-collection of this rare species in Ontario, we forwarded the note from Gus Yaki to Richard Zander and Patricia Eckel of the *Niagara Frontier Botanical Society*. They organized a number of outings to the localities described by Gus Yaki. Highlights of this correspondence are reported below.

"...3. Along the Bruce Trail on the Niagara Escarpment I found a clump of deerberry in a dry, oak-dominated area in about 1969. I believe I noted this discovery in an article in *Bruce Trail News*, published at the time of their annual meeting at Niagara Falls in 1970. This station was still extant in early autumn of 1982 when a section of the shrub was collected for propagation for the Rare Woody Plant Program at Guelph. Dr. John Ambrose's assistant, Mr. Koch, collected the specimen. The location is

about 150-200 m west of Kaler (?) Road, on the Bruce Trail, just south of the railway line."

Gustave J. Yaki,
127A Princess St.,
Kingston, Ontario K7L 1A8

"...After a number of forays by our group [*Niagara Frontier Botanical Society*] we are pleased to report that Shaun Hardy and Claire DeBus found two medium shrubs, 4' and 3' high near Mewburn Rd., which must be Gus Yaki's site #3..."

Patricia Eckel,
Niagara Frontier Botanical Society,
Buffalo Museum of Science,
Buffalo, New York 14211

Two voucher specimens have been sent to appropriate Canadian herbaria, but what about Gus Yaki's other localities? Anyone interested in searching for these is urged to contact *The Plant Press* or the *Niagara Frontier Botanical Society*.

ON COMMON NAMES

"Why not an official, legal or what-you-will common name for every plant, similar to the recognized name assigned to birds by the American Ornithological Union? That would make it very easy for amateurs to talk and write about the more common plants. There are many non-professional botanists who would welcome a set of standardized common names. They are not only afraid of, but antagonistic towards Latin names. For example: what is a mayflower?"

Claude Garton, Lakehead University

"From my point of view, an official list of common names of plants should not be a high priority. In practice, many plants do not have common names, and some of the ones devised can be a bit silly. I think that in the long run it is simpler, and of course more useful, to use Latin binomials."

Dianne Fahselt,
The University of Western Ontario

We attempt to provide both common and scientific names for all plants mentioned in The Plant Press. In the past we have consistently used lower case letters for common names. Some authors (e.g. Em Whiting and Paul Catling in this issue) prefer capitals for the first letters of common names. This issue has some articles with capital letters and others with lower case. We should be consistent. What would readers prefer to see? J.W.

WITH THANKS

"Last year an appeal was made to subscribers of The Plant Press for help in collecting live seed of wild rice (*Zizania* spp.) towards studies on the genus. The seed has been stored over the winter and processing of the germinated seedlings for leaf protein electrophoresis has begun under the direction of Dr. S. Warwick. The data from this work will take some time to accumulate and interpret, but it is hoped that it will reveal relationships of taxa over a wide range in eastern North America.

"At this time I would like to thank The Plant Press and readers for generously assisting me to gather samples that there was not time to collect myself. Almost all of the collections have grown very well, giving us numerous samples, and hopefully significant data. It is not anticipated that more samples will be required this season. As an expression of our thanks, all contributors will receive a reprint of any articles resulting from this study."

Susan Aiken,
Biosystematics Research Institute, Ottawa

COMMENT ON THE PLANT PRESS

"We find that The Plant Press provides improved access to the botanical community. We suspect that its increase in subscribers is an indication of its relevance and importance to field botany and related disciplines in Ontario. By paying attention to little known and often neglected aspects of field botany, it appears to be rapidly establishing a niche."

Luce Charron,
Chief, Natural Resource Conservation,
Parks Canada, Cornwall

IDEAS

NON-NATIVE SPECIES: WHEN ARE THEY PART OF THE FLORA AND WHEN NOT

by A.A. Reznicek, University of Michigan
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Ann Arbor, Michigan 48109

One of the apparently simple questions facing botanists doing floristic work is how to decide whether to include or exclude non-native species that they find in the field. Like many simple questions, the answer is neither simple nor universally agreed upon. This question is not so simple as it seems; I assume here that one knows that one is dealing with non-native plants.

It might seem absurd that the occurrence of a colony or even a single individual of a tiny, obscure weed such as *Linum catharticum* (fairy-flax) or *Erophila verna* (= *Draba verna*) (whitlow-grass) is worthy of inclusion in a flora, while great stands of exotic conifers used in reforestation plantings or even the hundreds of blue spruce persisting around abandoned homesteads are not. Yet in this particular case, there is little disagreement among botanists about what to do. Look at any flora and you will find *Erophila verna* (as *Draba verna*) included if it occurs. Rarely, if ever, will you find the much more conspicuous exotic *Picea*, *Larix* or *Pinus* species included. Obviously, botanists do apply some criteria in a more or less uniform way. Otherwise, the number of species reported in a flora could be tremendously increased by zealots scouring compost heaps, botanical gardens, etc. Also, the number and kind of non-native species included in floras by different botanists would be quite different. This is not normally the case.

Part of the uniformity noted above is no doubt due to the reluctance of many botanists to report in their floras exotic species, especially of cultivated plants, that are not in contemporary manuals. However, I believe that there are good criteria that people can apply. The key below is an attempt to crystallize these concepts in a concise and easy-to-use format. This key was not derived a priori from consideration of ecological or phytogeographical theory; rather, it represents a condensation of practical experience collecting plants. Although I did not check literature extensively, I am unaware of a previous formulation of these guidelines in a key format. If anybody has seen one, please let me know.

KEY TO WHETHER TO INCLUDE OR EXCLUDE NON-NATIVE SPECIES IN FLORAS

- | | |
|---|---------|
| 1. Species not cultivated in region | include |
| 1. Species cultivated for formerly cultivated in region | |
| 2. Annual or biennial | |
| 3. Found only in gardens or with dumped refuse | exclude |
| 3. Found away from sites of present cultivation and refuse dumping, occurrence derived from dispersal or accidental introduction | include |
| 2. Perennial | |
| 4. Found persisting at sites where planted or where evidently dumped with garden refuse | |
| 5. Not reproducing or reproducing very sparingly and only around planted specimens (or specimens growing where dumped); not spreading | exclude |
| 5. Reproducing and spreading, either by seed or vegetative means well beyond actual area of former planting, typically forming dense stands | include |
| 4. Found away from sites where planted | include |

The separation in couplet 1 is a fundamental one in dealing with non-native species. Non-cultivated, non-native species in the flora are termed "adventive" and cultivated plants that are members of the flora are termed "introduced". This is a worthwhile distinction that is usually easy to apply.

As formulated here, the key requires the inclusion of non-cultivated species even if they are apparently once-collected waifs. This may appear unreasonable if the total population of a plant in Ontario is one depauperate individual, but most of our alien weeds would have been waifs when first collected. Who can say now what waifs will be common in a century and what ones will never be found again? In the absence of reliable means of predicting the spread of an alien plant, it is better to include waifs. Should a waif spread, we will have records of its first appearance. Some subdivision of the first choice of couplet 1 might be needed if there were active ballast dumps, waste dumps for imported wool, etc. in Ontario. All sorts of non-cultivated aliens that could never become established would spring up there.

Establishment outside of cultivation is a fundamental criterion for inclusion of cultivated species as members of a flora. Species that are commonly established over a wide area are called "naturalized", a term also used in the same sense with non-cultivated species. The criterion of establishment includes reproduction and spread, as well as occurrence outside of cultivation. However, the situation can be complicated by life form. In the key, annuals and biennials are treated separately from perennials for this reason.

While the choices offered for annuals in the key may seem to be adequately covered by similar choices under the perennial lead, there are a couple of basic differences. Firstly, many annuals worth including and generally included in floras do not form self-maintaining populations outside of cultivation. Examples include corn, wheat, rye and barley, traditionally included in floras. Species with a similar claim to inclusion include squash, beans, sunflowers, tomatoes and many others. These plants are found along roadsides and railways where seeds were accidentally dispersed during transport, waste areas where seeds were brought

by birds or small mammals, and even beaches where seeds were washed up on shore. Inclusion of these species is reasonable, because even though they do not form self-maintaining populations, they are continually re-introduced outside of cultivated ground and thus botanists will meet with them regularly. Secondly, some annuals will reproduce and spread locally in cultivated soil. Plants like petunias, snapdragons, marigolds and cleomes will come up spontaneously from "self-sown" seeds in flowerbeds. To me, this is of little consequence and I would not consider that these species occur outside cultivation. The concept of accidental or "natural" dispersal to a site away from where the plant is cultivated is paramount here. If botanists began searching through people's gardens to rip out and press "self-sown" plants or plants that occurred to the sides of cultivated rows, we would quickly become unpopular.

With perennial cultivated plants, where a single individual can, under ideal conditions, persist indefinitely where planted, the criterion for deciding that the species is established outside of cultivation must be reproduction and spread. Mere persistence at a site where the species was planted is not enough, since it does not meet the criterion of having reached the site accidentally or "naturally". This too, is not so simple as it seems. Even if seedlings of a cultivated plant are very unfit for survival "in the wild", the fact that underneath a parent plant thousands or even hundreds of thousands of seeds may be deposited means that you occasionally find seedlings. Does this then mean that the species is established outside of cultivation? I think not. Otherwise, one could scour botanical gardens, arboreta and landscape plantings looking for seedlings underneath adult plants and come up with a long list of meaningless "additions" to the local flora. On the other hand, some people might require that the seedlings themselves seed in order to be considered established. I would not go so far for simple inclusion in the flora. Sterile clones of self-incompatible or dioecious species may dominate considerable areas by vegetative spread and also, some tree seedlings may take a very long time to reach reproductive age, even if established.

Vigour and take-over of new territory, I believe, are required for a cultivated perennial

to be considered established. This can mean either single or few individuals occurring far away from plantings, or aggressive spread in the vicinity of plantings (or both). Examples of the former include plantings of *Berberis thunbergii* (Japanese barberry), *Euonymus europaeus* (European spindle-tree) and *E. alatus* (winged spindle-tree) in deep forests, evidently dispersed there by birds. Examples of the latter are numerous and include the rapacious take-over of real estate by *Robinia pseudo-acacia* (black locust) and *Ailanthus altissima* (tree-of-heaven) as well as the local dominance of forest understories by *Vinca minor* (periwinkle) and *Aegopodium podagraria* (goutweed). Remarkable sights occur when unusual species spread. I have seen hundreds of yards of grassy roadside thick with the tall, bronze spires of *Digitalis lanata* (woolly foxglove), and dense, monodominant stands of the beautiful *Filipendula rubra* (queen-of-the-prairie) where it had evidently spread from a small, long-abandoned planting.

In contrast to waifs and many other non-native species in the flora, trees such as European larch or Austrian pine, which are planted on a large scale, are a much more visible element in the landscape and of greater ecological impact. Are they a part of the flora? Not if one applies the criterion that the species must exist outside of cultivation, i.e. where not planted. It is, after all, the flora we are documenting, not the landscape. If we accept some strictly planted species as members of the flora, then where does one draw the line? And will everyone draw the line in the same place?

Of course, even following this key, there are decisions to be made. One must still decide whether a cultivated plant growing in an alleyway or beside a sidewalk was dispersed there accidentally or "naturally", or sprang up from dumped refuse. Freak occurrences also happen. Cultivated plants that normally never spread are occasionally found in forests far from habitation. How do they get there? Perhaps they were planted in the forest long ago by European settlers for nostalgic reasons.

In plant identification keys, you are not obligated to accept the answers you reach in a key. Identification keys do not account for situations such as four-parted trilliums, and similarly there may be circumstances that I have not accounted for with this key. ♦

TRANSPLANTING AS A MITIGATIVE MEASURE: AN EXAMPLE IN SOUTHERN ONTARIO

by Walter Watt, Environmental Affairs Department,
TransCanada PipeLines Limited, P.O. Box 54,
Commerce Court West, Toronto, Ontario M5L 1C2

Given the theoretical and practical limitations described by Keddy (1983), using transplanting programs to justify development which conflicts with populations of rare plants or ecosystems would appear unwise. However, it must be recognized: (1) that pre-development studies may or may not detect rare plant species (i.e. where development schedules and phenologies are not in phase); (2) that within the current legislative and regulatory framework, development judged to be in the public interest may proceed even where it conflicts with preservation of rare plants (despite the best efforts of those responsible for preservation); and (3) that transplanting may be the only option for rare plant populations encountered unexpectedly or otherwise during implementation of a development project.

In 1981, while planning to construct a natural gas pipeline within an existing right-of-way through Bronte Creek Provincial Park, we encountered a stand of the nationally rare (Argus & White 1977) Chinquapin Oak (*Quercus muhlenbergii*). By agreement with the owning authority, clearing of the temporary workspace was restricted to the minimum necessary for safe pipeline installation. However, several of the oaks had to be removed. In August, during clearing, the environmental inspector and construction supervisor arranged for eight (8) half-metre-tall seedlings to be transplanted from the right-of-way workspace, where they were established, to "similar habitat" within the rest of the stand. An unusually wet summer and fall made watering unnecessary and no other maintenance was attempted.

Follow-up inspections (MacLaren Plansearch 1982; 1983) have revealed that seedlings from the remaining portion of the stand have recolonized the restored temporary workspace. Moreover, one of the transplanted seedlings had survived, although its persistence through a reproductive cycle necessarily remains in question.

Too little is known about the habitat requirements or population dynamics of Chinquapin Oak for transplanting alone to be advocated as a means of protecting this species from future development projects. Yet, in the example given, one Chinquapin Oak stand benefitted from the

following: (1) a land-use designation which favoured protection of rare plant species; (2) a detailed pre-construction biological inventory by the owning authority; (3) a thorough environmental assessment by the proponent (including two field-based inventories by professional botanists/plant ecologists); (4) a thorough regulatory hearing process at which the impact on this oak stand was explicitly considered; (5) site-specific design for mitigative measures (e.g. restricted workspace and use of compatible seed mix for post-construction erosion control); (6) on-site environmental inspection capable of positive action during construction (i.e. transplanting); (7) post-construction environmental monitoring.

Despite the inherent ecological guesswork, I would suggest that within the context of a responsible environmental program, transplanting should be respected as an emergency mitigative measure of considerable value. For this to be the case, ecologists, planners and field botanists must work to provide a firm scientific base for such species management measures (Dogan 1984). At the same time, they must be prepared to participate actively in every phase of development projects (including construction) to ensure that their findings are wisely and practically implemented.

Acknowledgments

The cooperative efforts of OMNR staff Bruce Houck and Dale Carleton; TransCanada PipeLines Construction Supervisor, Bill Binder; and MacLaren Plansearch staff Tom Wheaton (Environmental Inspector) and Eric Mueller (plant ecologist) deserve recognition.

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WHY WETLAND EVALUATIONS BEFORE INVENTORIES?

by Jeff Kaiser, Mississauga, Ontario

The identification and evaluation of biological resources has been gaining importance over the past decade. With the release of An Evaluation System for Wetlands of Ontario South of the Precambrian Shield prepared by the Ontario Ministry of Natural Resources and Environment Canada (1984) it would seem that the government is preparing for a serious inventory and assessment of wetlands in southern Ontario.

But is this the case? What does this document represent? Before evaluation begins one could expect that some reliable and fairly comprehensive inventory of wetlands in the area had been done. Data from wetlands all over southern Ontario would then serve as the basis for determining the range of values for a given variable such as size or number of muskrats/ha. A basis for determination of rare or unusual qualities would be established.

Instead the government skipped this fundamental, indeed indispensable, step and opted to borrow heavily from the work of others who have produced evaluation schemes. Much of the original work was done in the northeastern United States by or with University of Massachusetts researchers. The Federation of Ontario Naturalists did the first cut-and-paste, added some Ontario-specific material and devised an integrated scoring system. The OMNR took over the project the following year and appears to have had some good technical input from its consultants.

But the reason for beginning with evaluations and the basic approach to that task appears not to have been questioned. The evaluation scheme puts some kind of equivalency on physics, chemistry, biology and sociology which results in an aggregate score for each wetland evaluated.

The manual is to be used with some good-quality aerial photography and a large set of evaluation sheets to "score" wetland features ranging from primary production to rare species to visits by school groups. The level of effort necessary for field work is unspecified by the emphasis on secondary information sources suggests that little primary data is to be collected. Indeed, the need for special training or particular knowledge is minimized. A couple of paragraphs request a general knowledge of biology and air-photo interpretation and refer to some unspecified "field training."

It is my belief that the evaluation cannot be treated in such a summary manner. Physical features deserve to be compared with other physical features for all wetlands examined. Soil and water chemistries should be compared with other soil and water chemistries. Biotas should be compared among themselves. Each of these attributes merits independent evaluation. Indeed, there appears to be no good reason for the creation and use of such a hybrid system as this manual sets out when the basic task of inventory and description has yet to be accomplished.

My second major dissatisfaction with this manual concerns the implication that the methodology can be used by junior naturalists and biology students so that planners and government personnel can then make decisions on protection or development. Any businessman who would make critical decisions about the conduct of a multi-million dollar operation on the basis of a summer student's assessments would be stared out of the boardroom. Professionals who base their judgements on the unverified reports of hastily prepared trainees place their reputations at risk.

I could point to many smaller flaws in the evaluation system such as the emphasis on productivity, as if a wetland were some biological factory which was valued for cranking out a large biomass; the commercial valuation of wild rice, bull frogs, snapping turtles, as if wetlands were to serve as the basis for a chain of gourmet restaurants across southern Ontario; and the award of "bonus" points for rare or endangered species when their presence is unlikely to be recognized by evaluators with "minimum expertise" (a phrase from the manual) who are probably going to visit a given wetland for a rather brief period during its productive season.

Certainly there is an urgent need to identify, inventory, assess and evaluate the wetlands of southern Ontario, as there is for all the remnant natural areas. Southern Ontario continues to experience the pressure of urban expansion and suburban sprawl. There is room for both amateur and professional in such a program but there needs to be some recognition of where the manpower and skills should be applied. All can participate in the identification, preliminary inventory, and partial assessment of wetlands. But to place evaluation in the hands of any but knowledgeable specialists is to fail to recognize the consequences which planning decisions may have for the areas in question. ♦

NOTES AND REPORTS

BOTANICAL FEATURES OF THE OJIBWAY PRAIRIE, ESSEX COUNTY

by P. Allen Woodliffe, Rondeau Provincial Park, R.R. 1, Morpeth, Ontario NOP 1X0

When one thinks of Canadian prairies, the first thing that comes to mind is the bread basket of Canada, southern Alberta, Saskatchewan and Manitoba, not southwestern Ontario. Yet one must go to the increasingly urbanized and intensively farmed area in Essex County in order to see Canada's largest protected remnant of tall grass prairie. More than 500 species of plants have been found in the Ojibway Prairie and associated vegetation in Windsor. Almost 18% of these plants are considered rare in Ontario (Argus & White 1977) and a total of 132 are considered to be prairie species. Most of these rare and significant plants are concentrated on a 65 ha property, the Ojibway Prairie Provincial Nature Reserve, managed by the Ministry of Natural Resources.

In the late 1960's and early 1970's concerned scientists such as P.F. Maycock, A. Hills and C.M. Rogers brought the significance of this property to the attention of what was then the Department of Lands and Forests. In a joint venture the City of Windsor, Province of Ontario and The Nature Conservancy of Canada acquired some of the properties. By 1976 about 65 ha were placed in regulation under the Provincial Parks Act.

For naturalists, particularly botanists, Ojibway Prairie is one of the most fascinating areas of the province. The range of vegetation is briefly outlined below; much of this information is included in a comprehensive report by Paul Pratt (1979), Biologist for the City of Windsor and based at the Ojibway Nature Centre.

Tall Grass Prairie

Two moisture regimes are represented at Ojibway: wet-mesic and wet. The wet-mesic stands have Cord Grass (*Spartina pectinata*) and Big Bluestem (*Andropogon gerardii*) as the leading dominant grasses. Forbs include Prairie Mint (*Pycnanthemum virginianum*), Prairie Thistle (*Cirsium discolor*) and Heath Aster (*Aster ericoides*). Shrubs are present, but they provide discontinuous cover; Dogwood (*Cornus* spp.) thickets

and young Pin Oak (*Quercus palustris*) being most common.

The wet phase stands occur in the northwest section of the Nature Reserve. The leading dominants are Cord Grass (*Spartina pectinata*), Blue Joint (*Calamagrostis canadensis*) and Canada Goldenrod (*Solidago canadensis*). Bergamot (*Monarda fistulosa*), Ironweed (*Vernonia altissima*) and Culver's Root (*Veronicastrum virginicum*) are also present. Shrubs such as Gray Dogwood (*Cornus racemosa*), American Hazelnut (*Corylus americana*) and Smooth Sumac (*Rhus glabra*) are present, sometimes forming small thickets (Pratt 1979).

A total of 34 species of plants in the tall grass prairie at Ojibway are considered rare in Ontario (Argus & White 1977). The A₁ horizon of the soils here is a black, fine, loamy sand. The high humus content suggests long term herbaceous cover on soils which otherwise have low fertility (Hoffman 1975).

Forb Prairie

The forb prairie (Fig. 1) occurs in areas where there has been no disturbance for at least 30 years, and few exotic (non-native) species are present. Soils range from fine to very fine sands (Hoffman 1975) and moisture ranges from dry-mesic to wet-mesic.



Figure 1. The forb prairie at Ojibway with naturalist Phil Taylor for scale. (photo taken in August 1983 by Al Woodliffe)

Dominant species of dry-mesic and mesic sites include Heath Aster (*Aster ericoides*), Canada Bluegrass (*Poa compressa*), Early Goldenrod (*Solidago juncea*) and Tall Coreopsis (*Coreopsis tripteris*). Smooth Aster (*Aster laevis*), Flowering Spurge (*Euphorbia corollata*), Grey Goldenrod (*Solidago nemoralis*) and Butterfly Milkweed (*Asclepias tuberosa*) are more common in mesic stands.

A total of 31 species of plants considered rare in Ontario (Argus & White 1977) were found in forb prairies. These include Purplish Three-awned Grass (*Aristida purpurascens*), Dense Blazing Star (*Liatris spicata*), Arrow-leaved Violet (*Viola sagittata*), Prairie Fringed-orchid (*Platanthera leucophaea*) and Riddell's Goldenrod (*Solidago riddellii*) (Pratt 1979).

Oak Savannah

A series of drier, sandy ridges supports an oak savannah. This community is dominated by mature, even-aged, open grown oaks, particularly Pin Oak (*Quercus palustris*) and Black Oak (*Quercus velutina*). The shrub layer of this habitat is rather sparse, but is primarily composed of American Hazelnut (*Corylus americana*), Smooth Sumac (*Rhus glabra*) and Gray Dogwood (*Cornus racemosa*) (Pratt 1979). The soils are a fine sandy outwash, varying from moderately well-drained to poorly-drained (Hoffman 1975).

Oak-Hickory Woodland

A small portion of the nature reserve, where slightly elevated sandy soils occur, supports a stand of Sweet Pignut Hickory (*Carya ovalis*) and Black Oak (*Quercus velutina*). Shrubs are sparse, primarily Smooth Sumac (*Rhus glabra*), which tends to occur in grove edges. A few stems of Winged Sumac (*Rhus copallina*) are also present. The herbaceous layer is dominated by the sedge *Carex pensylvanica* and Bracken (*Pteridium aquilinum*). Robin's Plantain (*Erigeron pulchellus*) is also present (Pratt 1979). Soils are an imperfectly drained, fine sandy loam (Hoffman 1975).

In some areas of the nature reserve, agricultural activity occurred prior to protection under the Provincial Parks Act. This resulted in significant disturbance and species typical of disturbed areas, such as Queen Anne's Lace (*Daucus carota*) and Canada Goldenrod (*Solidago canadensis*) are still common here. However, these areas are very slowly recovering on their

own and almost all of them show some regrowth of prairie species.

The best time to visit Ojibway Prairie is during August and September when the floral display of yellow, orange, purple, green and white is at its peak. Ojibway Prairie is located on Matchette Road, opposite the Windsor Raceway and Ojibway Park (operated by the City of Windsor) which has an informative nature display centre and an excellent nature interpretation program [contact Paul Pratt, Ojibway Nature Centre, 2450 MacDougall St., Windsor, Ontario N8X 3N6]. Another source of information on the Ojibway Prairie Provincial Nature Reserve is the Ministry of Natural Resources, Chatham District, Box 1168, Chatham, Ontario N7M 5L8.

References

- Argus, G.W. & D.J. White. 1977. The Rare Vascular Plants of Ontario. National Museum of Natural Sciences, Ottawa. Syllogeus 14. 63 pp.
- Hoffman, D. 1975. The soils and their capabilities for agriculture, recreation, waste disposal and urbanization and surface water conditions of the Windsor Prairie area. Centre for Resources Development, University of Guelph.
- Pratt, P.D. 1979. A preliminary life science inventory of the Ojibway Prairie complex and surrounding area. Parks and Recreation Branch, City of Windsor and Ontario Ministry of Natural Resources, Provincial Parks Branch, Chatham District. ♦

Marsilea quadrifolia (FOUR LEAF WATERFERN) IN ONTARIO

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

Marsilea quadrifolia (four leaf waterfern) is a Eurasian species which usually grows as an aquatic with floating leaves (Fig. 1) or as an erect emergent along shorelines. This interesting aquatic fern is frequently displayed in greenhouse pools; in southern Ontario it is occasionally planted in garden ponds. Other common names are "pepperwort" and "water-clover".

The first record of a natural (i.e. non-planted) occurrence of *Marsilea quadrifolia* in North

America is based on a specimen collected from Connecticut in 1861 (Underwood & Cook 1887). This fern is now considered to be naturalized in the eastern United States (Mickel 1979). In Illinois it appears to persist once established, but does not spread rapidly (Henry 1983). Scouring by ice during spring break-up deters persistence and spread along shorelines.

Marsilea quadrifolia has been reported for Canada (Scoggan 1978). Until recently, the only Canadian record supported by specimens was based on populations from Nanticoke Creek, Regional Municipality of Haldimand-Norfolk. (The record from Woodhouse Township (Landon 1960) was based on planted material.) *Marsilea quadrifolia* was first discovered at Nanticoke Creek in 1951 by Bert Miller and this population has been well-documented (Cruise 1972). In 1980 Bill Cattley and Bill Stewart collected specimens here from "4 cm of water, in full sun, near the marina".

In August 1982 *M. quadrifolia* was discovered at Lorne Park, Regional Municipality of Peel (Fig. 2). At the time of collection, the waterfern appeared to be sparse on a 6 X 1 m band above the shoreline of a man-made pond. This shoreline of organic mud and plant debris had been recently exposed due to dam failure, resulting in a 30 cm drop in the water level.

The contour of the bottom of the pond increased rapidly to a maximum depth of 3-4 m; and the waterfern was restricted to a semi-shaded, platform-like region resulting from spreading roots of a large weeping willow (*Salix alba* var. *vitellina*). Aquatic plant associates were waterweed (*Elodea canadensis*), hornwort (*Ceratophyllum demersum*) and duckweed (*Lemna minor*).

Although drying of the substrate is known to induce sporocarp production in species of *Marsilea* (Tryon & Tryon 1982), no fertile material was found when the population was visited a month after discovery in September 1982. The individual plants, however, had increased dramatically both in size and apparent number of individuals.

In September 1983, the waterfern was observed along the same shoreline. By this time the shoreline had been colonized by forget-me-not (*Myosotis scorpioides*), purple loosestrife (*Lythrum salicaria*), water horehound (*Lycopus uniflorus*, *L. americanus* and *L. europaeus*), cut grass (*Leersia oryzoides*) and willowherbs (*Epilobium hirsutum* and *E. ciliatum*). Some fronds of waterfern were observed on the shoreline; others were floating on water to depths of 2 dm. Waterfern had not spread to adjacent

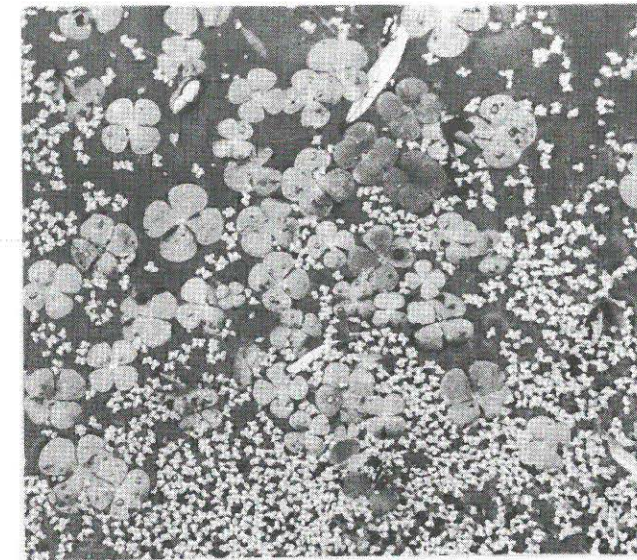


Figure 1. Floating leaves of *Marsilea quadrifolia* (X1/2) at Lorne Park. (photo taken in September 1983 by Jeff Kaiser)

shorelines of the pond, but had survived fluctuations in water level due to dam manipulations. The resistance of *Marsilea* to fluctuations in water level has been reported (Cruise 1972; Meyers 1972).

How did the waterfern get to this locality? Property owners since the mid-1950's were contacted and all claimed not to have planted it. Local naturalists who watch birds in the area had not noticed it. As an interesting coincidence, I spent many afternoons in the late 1950's at the very spot where the waterfern was found. Although at that time tadpoles and four-leaf clovers were of great interest, this clover-like fern was never noticed. Absence of cultivated species in the vicinity of the pond, neglect of lawns and shrubberies, plus the fact that this estate property has always been secluded and relatively inaccessible, have led me to the conclusion that this is probably a natural occurrence.

Malone and Proctor (1965) reported that the sporocarps of *Marsilea* germinate after passage through the digestive systems of water birds. It is thought that this is the means of the sporadic spread of waterfern throughout the northeastern United States. It seems likely that more stations of *M. quadrifolia* will be found in southern Ontario.

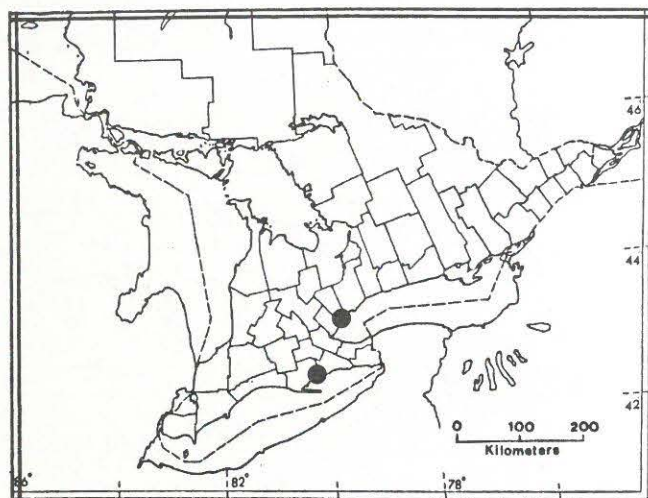


Figure 2. Ontario distribution of *Marsilea quadrifolia*.

Documentation: Ontario: Haldimand-Norfolk Regional Municipality, Nanticoke Creek, 12 July 1980, Wm. E. Cattley and Wm. G. Stewart, WEC; Peel Regional Municipality, Mississauga, Lorne Park, UTM grid reference 123211, 14 August 1982, J.M. Webber and J.M. Kaiser 4787, CAN, DAO, MICH, OAC, TRTE.

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WHY IS KENTUCKY COFFEE TREE RARE IN CANADA?

by John D. Ambrose, Curator, University of Guelph Arboretum, Guelph, Ontario N1G 2W1

In Canada, Kentucky Coffee Tree occurs naturally only in the western part of the Deciduous (or Carolinian) Forest of southern Ontario: in Essex, Kent and Lambton Counties. It is now known to occur in 19 sites in this region. Several historical populations, including ones as far east as Norfolk County, have been extirpated.

In attempting to assess the reasons for the sparse distribution of this tree, one of the first observations was the almost complete absence of fruiting, even in populations of over 100 mature trees, whereas cultivated trees at Guelph fruit annually. The name of this species, *Gymnocladus dioica* (L.) C. Koch, provides a clue: it is dioecious (i.e. individuals are either male or female). By sampling 8 of the mature populations while flowering, only one had both male and female trees. All the others were of a single sex. Only in the population with both male and female trees has the production of fruit with viable seeds been confirmed. Other sightings of fruiting trees need to be checked, since lone female trees will sometimes produce diminutive, seedless fruit.

How is it that even in the largest populations of Kentucky Coffee Tree, the sex ratio could be so drastically skewed? A clue is that this tree produces ramets - vegetative shoots from the root system - similar to aspen. In every case where a seedling-like young plant was excavated, a connection to a large root was seen. Thus, it is clear that this species is clonal, and it may well be that most of our natural stands are single clones. This would account for the observation of all male or all female "populations".

With the production of long-range dispersal units (seeds) possibly limited to only one population in Canada, it is not surprising that the natural distribution of this species is declining. If it were not for its ability to regenerate locally by vegetative means, this species might no longer be a part of our flora.

The initial survey of this species was compiled into a COSEWIC status report (Ambrose 1982). Assistance from several Arboretum Associates, including staff of the Ministry of Natural Resources, was received in the form of sightings and detailed field notes. I plan to continue observations of these natural populations in 1984, possibly including an analysis of clonal structure. Additional observations or comments are always welcome.

Reference

- Ambrose, J.D. 1982. Status report on *Gymnocladus dioica*. Committee on the Status of Endangered Wildlife in Canada. Ottawa. 26 pp. ♦

DISTRIBUTION OF ONTARIO ORCHIDS BY COUNTY AND DISTRICT

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In preparing a guide book to Ontario orchids, we prepared a chart showing distribution by county and district (Table 1). This chart will be replaced by distribution maps for all species in our final work. Thus, the chart is now unnecessary for our book, and because of the reorganization of regional government boundaries (see Appendix I) it is now politically obsolete. However, it is of considerable interest since much of the floristic work in Ontario has been done on a county or district basis, and not surprisingly, there has been a great deal of interest in our chart.

The chart (Table 1) includes all species, documented hybrids, and well marked varieties for which we have records, despite the fact that some of the records are very old. Some dubious and poorly documented varieties have been merged. In compiling the chart we checked specimens at major Ontario herbaria.

Records based on material evidence seen and checked (i.e. specimens or photographs in a herbarium) are represented by solid dots. Unchecked material evidence and acceptable published records are indicated by half dots. Open circles denote reliable sight records. Asterisks represent questionable literature reports.

The genera are listed in phylogenetic sequence and within them the species are arranged alphabetically. Although distributional information is available in the chart (Table 1), the large size of districts in northern Ontario prevents an accurate picture. This listing of counties and districts is organized in a geographical manner: 1-12 are in the Carolinian zone; 13-48 are in central Ontario; 49-54 are in northern Ontario.

It is of interest to consider some general trends in the chart. In determining relative abundance, it must be remembered that the counties and districts vary greatly in size, with many small counties in southern Ontario and few larger districts in northern Ontario. For example, a taxon found primarily in northern Ontario may be relatively abundant over a broad area of the province but still have a relatively low county and district "score" (Table 2). As long as one takes this into account, it is still possible to gather some information on status. Our most widespread species are *Cypripedium acaule* (Pink Moccasin Flower, Stemless Lady's-slipper), *C. calceolus* var. *pubescens* (Large Yellow Lady's-slipper), *Platanthera hyperborea* (Tall Northern Green Orchid, Tall Leafy Green Orchid) the most widespread), *P. psycodes* (Small Purple Fringed-orchid), *Epipactis helleborine* (Helleborine), *Spiranthes cernua* (Nodding Ladies'-tresses), *S. romanzoffiana* (Hooded Ladies'-tresses), *Calopogon tuberosus* (Grass-pink), *Corallorhiza maculata* (Spotted Coral-root), *C. trifida* (Early Coral-root) and *Liparis loeselii* (Loesel's Twayblade). Similarly the rarities are also evident in Table 2.

The most productive counties in terms of number of orchid taxa (including species, varieties, forms and hybrids) are Bruce, Simcoe and Carleton (Table 3). Counties with few orchid taxa recorded are Haldimand, Perth, Stormont, Dundas and Glengarry (each with 10 or fewer).

We would be glad to receive evidence of orchid occurrences that are not indicated in the chart, so that we can bring it up to date from time to time. Does Perth County really have less than 10 orchids?

Table 1. Chart showing the distribution of Ontario orchids by counties and districts.
(common names of orchids are given in Table 2).

Orchids	Counties/Districts	
	1. Essex	2. Kent
<i>Cypripedium acaule</i>	●	●
<i>C. arietinum</i>	●	●
<i>C. calceolus</i> var. <i>parviflorum</i>	○	●
<i>C. calceolus</i> var. <i>planipetalum</i>	○	●
<i>C. calceolus</i> var. <i>pubescens</i>	●	●
<i>C. candidum</i>	●	●
<i>C. X andrewsii</i>	●	●
<i>C. X andrewsii</i> nm. <i>favillianum</i>	●	●
<i>C. X andrewsii</i> nm. <i>landonii</i>	●	●
<i>C. passerinum</i>	●	●
<i>C. reginae</i>	●	●
<i>Dauctylorhiza maculata</i>	●	●
<i>Amerorchis rotundifolia</i>	●	●
<i>Galearis spectabilis</i>	●	●
<i>Platanthera blephariglottis</i>	●	●
<i>P. ciliaris</i>	●	●
<i>P. clavellata</i>	●	●
<i>P. dilatata</i>	●	●
<i>P. flava</i>	●	●
<i>P. grandiflora</i>	●	●
<i>P. hookeri</i>	●	●
<i>P. hyperborea</i>	●	●
<i>P. X media</i>	●	●
<i>P. lacera</i>	●	●
<i>P. leucophaea</i>	●	●
<i>P. obtusata</i>	●	●
<i>P. orbiculata</i> var. <i>orbiculata</i>	●	●
<i>P. orbiculata</i> var. <i>macrophylla</i>	●	●
<i>P. psychodes</i>	●	●
<i>P. X andrewsii</i>	●	●
<i>Piperia unalascensis</i>	●	●
<i>Coeloglossum viride</i>	●	●
<i>Pogonia ophioglossoides</i>	●	●
<i>Triphora trianthophora</i>	●	●
<i>Isotria medeoloides</i>	●	●

Orchids	Counties/Districts	
	1. Essex	2. Kent
<i>Isotria verticillata</i>	●	●
<i>Arethusa bulbosa</i>	●	●
<i>Epipactis helleborine</i>	●	●
<i>Spiranthes casei</i>	●	●
<i>S. cernua</i>	●	●
<i>S. lacera</i> var. <i>lacera</i>	●	●
<i>S. lacera</i> var. <i>gracilis</i>	●	●
<i>S. lucida</i>	●	●
<i>S. magnicamporum</i>	●	●
<i>S. ochroleuca</i>	●	●
<i>S. romanzoffiana</i>	●	●
<i>S. lacera</i> X <i>romanzoffiana</i>	●	●
<i>Listera auriculata</i>	●	●
<i>L. australis</i>	●	●
<i>L. borealis</i>	●	●
<i>L. convallarioides</i>	●	●
<i>L. X veltmannii</i>	●	●
<i>L. cordata</i>	●	●
<i>L. ovata</i>	●	●
<i>Goodyera oblongifolia</i>	●	●
<i>G. pubescens</i>	●	●
<i>G. repens</i> var. <i>ophioides</i>	●	●
<i>G. tessellata</i>	●	●
<i>Calopogon tuberosus</i>	●	●
<i>Corallorhiza maculata</i>	●	●
<i>C. odontorhiza</i>	●	●
<i>C. striata</i>	●	●
<i>C. trifida</i>	●	●
<i>Malaxis monophylla</i>	●	●
<i>M. paludosa</i>	●	●
<i>M. unifolia</i>	●	●
<i>Liparis liliifolia</i>	●	●
<i>L. loeselii</i>	●	●
<i>Calypso bulbosa</i>	●	●
<i>Aplectrum hyemale</i>	●	●

●=verified material evidence, ○=unverified material evidence & acceptable published reports, ○=reliable sight records

*=dubious literature reports.

Note: Although much effort has been devoted to searching for material evidence and acceptable literature reports, relatively little effort has been directed toward the accumulation of reliable sight records. This is because of both the difficulty of establishing reliability and the lesser significance of reports lacking specimen or photographic evidence.

Table 2. Number of counties and districts in which various orchid taxa have been recorded.

SCIENTIFIC NAME	COMMON NAME	NUMBER OF COUNTIES & DISTRICTS
<u>Cypripedium acaule</u>	Pink Moccasin Flower, Stemless Lady's-slipper	46
<u>C. arietinum</u>	Ram's-head Lady's-slipper	28
<u>C. calceolus</u> var. <u>parviflorum</u>	Small Yellow Lady's-slipper	38
<u>C. calceolus</u> var. <u>planipetalum</u>	Flat-petalled Yellow Lady's-slipper	2
<u>C. calceolus</u> var. <u>pubescens</u>	Large Yellow Lady's-slipper	42
<u>C. candidum</u>	Small White Lady's-slipper	6
<u>C. Xandrewsii</u> (<u>C. calceolus</u> var. <u>parviflorum</u> X <u>candidum</u>)	Andrews' Lady's-slipper (hybrid between Small Yellow and Small White Lady's-slipper)	3
<u>C. Xandrewsii</u> nm. <u>favillianum</u>	Faville's Lady's-slipper	2
<u>C. Xandrewsii</u> nm. <u>landonii</u>	Landon's Lady's-slipper	1
<u>C. passerinum</u>	Sparrow's-egg Lady's-slipper, Franklin's Lady's-slipper	3
<u>C. reginae</u>	Queen Lady's-slipper, Showy Lady's-slipper	40
<u>Dactylorhiza maculata</u>	Spotted Orchid, Timmins Orchid	1
<u>Amerorchis rotundifolia</u>	Small Round-leaved Orchis	19
<u>Galearis spectabilis</u>	Showy Orchis	36
<u>Platanthera blephariglottis</u>	White Fringed-orchid	16
<u>P. ciliaris</u>	Yellow Fringed-orchid	1
<u>P. clavellata</u>	Little Club-spur Orchid	29
<u>P. dilatata</u>	Tall White Bog-orchid	27
<u>P. flava</u>	Tuberclad Orchid	18
<u>P. grandiflora</u>	Large Purple Fringed-orchid	4
<u>P. hookeri</u>	Hooker's Orchid	29
<u>P. hyperborea</u>	Tall Northern Green Orchid, Tall Leafy Green Orchid	49
<u>P. Xmedia</u> (<u>P. dilatata</u> X <u>hyperborea</u>)	(hybrid between Tall White Bog-orchid and Tall Northern Green Orchid)	5
<u>P. lacera</u>	Ragged Fringed-orchid	34
<u>P. leucophaea</u>	Prairie Fringed-orchid	13
<u>P. obtusata</u>	Blunt-leaf Orchid	27
<u>P. orbiculata</u> var. <u>orbiculata</u>	Large Round-leaved Orchid	30
<u>P. orbiculata</u> var. <u>macrophylla</u>	Long-spurred variety of Large Round-leaved Orchid	10
<u>P. psycodes</u>	Small Purple Fringed-orchid	45
<u>P. Xandrewsii</u> (<u>P. lacera</u> X <u>psycodes</u>)	Andrews' Rose-purple Orchid (hybrid between Ragged Fringed-orchid and Small Purple Fringed-orchid)	4
<u>Piperia unalascensis</u>	Alaska Orchid	3
<u>Coeloglossum viride</u>	Long-bracted Orchid, American Frog-orchid	34

Table 2. (continued)

SCIENTIFIC NAME	COMMON NAME	NUMBER OF COUNTIES & DISTRICTS
<u>Pogonia ophioglossoides</u>	Rose Pogonia, Snake Mouth	37
<u>Triphora trianthophora</u>	Nodding Pogonia, Three Birds Orchid	2
<u>Isotria medeoloides</u>	Smaller Whorled Pogonia	1
<u>I. verticillata</u>	Whorled Pogonia	2
<u>Arethusa bulbosa</u>	Arethusa, Dragon's Mouth	33
<u>Epipactis helleborine</u>	Helleborine	46
<u>Spiranthes casei</u> var. <u>casei</u>	Case's Ladies'-tresses	11
<u>S. cernua</u>	Nodding Ladies'-tresses	45
<u>S. lacera</u> var. <u>lacera</u>	Northern Slender Ladies'-tresses	34
<u>S. lacera</u> var. <u>gracilis</u>	Southern Slender Ladies'-tresses	5
<u>S. lucida</u>	Shining Ladies'-tresses	27
<u>S. magnicamporum</u>	Great Plains Ladies'-tresses	6
<u>S. ochroleuca</u>	Yellow Ladies'-tresses	7
<u>S. romanzoffiana</u>	Hooded Ladies'-tresses	40
<u>S. lacera</u> var. <u>lacera</u> X <u>romanzoffiana</u>	(hybrid between Northern Slender and Hooded Ladies'-tresses)	1
<u>Listera auriculata</u>	Auricled Twayblade	9
<u>L. australis</u>	Southern Twayblade	7
<u>L. borealis</u>	Northern Twayblade	3
<u>L. convallarioides</u>	Broad-lipped Twayblade	16
<u>L. Xveltmanii</u> (<u>L. auriculata</u> X <u>convallarioides</u>)	Veltman's Twayblade (hybrid between Auricled and Broad-lipped Twayblade)	2
<u>L. cordata</u>	Heart-leaved Twayblade	22
<u>L. ovata</u>	Common Twayblade	2
<u>Goodyera oblongifolia</u>	Menzies' Rattlesnake-plantain	13
<u>G. pubescens</u>	Downy Rattlesnake-plantain	31
<u>G. repens</u> var. <u>ophioides</u>	Dwarf Rattlesnake-plantain	27
<u>G. tessellata</u>	Tesselated Rattlesnake-plantain	24
<u>Calopogon tuberosus</u>	Grass-pink	41
<u>Corallorhiza maculata</u>	Spotted Coral-root	42
<u>C. odontorhiza</u>	Autumn Coral-root	6
<u>C. striata</u>	Striped Coral-root	27
<u>C. trifida</u>	Early Coral-root	44
<u>Malaxis monophylla</u>	White Adder's-mouth	37
<u>M. paludosa</u>	Bog Adder's-mouth	3
<u>M. unifolia</u>	Green Adder's-mouth	31
<u>Liparis liliifolia</u>	Lily-leaved Twayblade	6
<u>L. loeselii</u>	Loesel's Twayblade	41
<u>Calypso bulbosa</u>	Calypso, Fairy Slipper	22
<u>Aplectrum hyemale</u>	Putty-root	18

Table 3. Number of orchid taxa in Ontario counties and districts (county and district reference numbers correspond to Table 1).

COUNTY/DISTRICT	NUMBER OF ORCHID TAXA
1. Essex	23
2. Kent	28
3. Elgin	24
4. Norfolk	38
5. Haldimand	6
6. Welland	25
7. Lambton	38
8. Middlesex	38
9. Oxford	32
10. Brant	11
11. Wentworth	24
12. Lincoln	15
13. Huron	30
14. Perth	9
15. Waterloo	31
16. Wellington	34
17. Halton	20
18. Peel	26
19. York	34
20. Ontario	21
21. Durham	14
22. Northumberland	20
23. Prince Edward	25
24. Hastings	39
25. Lennox and Addington	21
26. Frontenac	38
27. Leeds	24
28. Grenville	22
29. Dundas	10
30. Stormont	6
31. Glengarry	10
32. Bruce	46
33. Grey	29
34. Dufferin	11
35. Simcoe	44
36. Victoria	13
37. Peterborough	21
38. Muskoka	37
39. Haliburton	28
40. Renfrew	37
41. Lanark	29
42. Carleton	42
43. Russell	14
44. Prescott	14
45. Manitoulin	32
46. Parry Sound	32
47. Nipissing	36
48. Algoma	35
49. Sudbury	24
50. Timiskaming	31
51. Rainy River	27
52. Thunder Bay	38
53. Cochrane	33
54. Kenora	27

Appendix I. Notes on the reorganization of Ontario municipalities

1. Carleton County has become the Regional Municipality of Ottawa-Carleton.
2. Dundas County has been combined with Glengarry County and Stormont County to form the United Counties of Stormont, Dundas and Glengarry.
3. Durham County, having gained much of the former Ontario County and lost some territory to Victoria, Peterborough and Northumberland Counties, is now known as the Regional Municipality of Durham.
4. Grenville County has been combined with Leeds County to form the United Counties of Leeds and Grenville.
5. Haldimand County has been combined with Norfolk County to form the Regional Municipality of Haldimand-Norfolk.
6. Halton County is now the Regional Municipality of Halton.
7. Lincoln County has been combined with Welland County to form the Regional Municipality of Niagara.
8. Muskoka District is now the District Municipality of Muskoka.
9. Ontario County has been eliminated, its territory being divided among the Regional Municipality of Durham, Simcoe County and Victoria County.
10. Peel County is now the Regional Municipality of Peel.
11. Prescott County has been combined with Russell County to form the United Counties of Prescott and Russell.
12. Sudbury District has lost a small part of its territory (including the City of Sudbury) to the new Regional Municipality of Sudbury.
13. Waterloo County is now the Regional Municipality of Waterloo.
14. Wentworth County is now the Regional Municipality of Hamilton-Wentworth.
15. York County, having lost some southern territory to the Municipality of Metropolitan Toronto, is now called the Regional Municipality of York.

(For more details, see the Municipal Directory 1977-78, Ontario Ministry of Treasury, Economics and Intergovernmental Affairs.) ♦

A SIGNIFICANT COLLECTION OF *Calamovilfa longifolia* var. *magna* FROM RONDEAU PROVINCIAL PARK, KENT COUNTY

by S.J. Darbyshire, 7 Braemar St., Ottawa, Ontario K1A 3C3,
S.G. Aiken¹, Biosystematics Research Institute, Wm. Saunders Bldg., Central Experimental Farm, Ottawa, Ontario K1A 0C6, and
Y. Dalpé, Biosystematics Research Institute, Wm. Saunders Bldg., Central Experimental Farm, Ottawa, Ontario K1A 0C6

The Great Lakes endemic grass taxon *Calamovilfa longifolia* (Hook.) Scribn. var. *magna* Scribn. & Merr. is known in Ontario only from the sandy shores of Lake Huron in Lambton, Huron and Bruce counties and the districts of Manitoulin and Algoma (Dore & McNeill 1980). This grass is easily distinguished from species of *Calamagrostis* by the unequal glumes and awnless lemma, and from *Agrostis* and *Panicum* species by the dense tuft of hairs at the base of the lemma (i.e. callus with long hairs).

Thieret (1960) monographed the species complex and mapped the distribution in Canada and the United States showing that no Lake Erie sites were known at that time. Although Dodge (1914) reports the species as "on the upper beach at Point Pelee but not abundant", this record is unsubstantiated and was dismissed by Dore & McNeill (1980) with "the occurrence on the shores of Lake Erie is doubtful".

In 1983 *Calamovilfa longifolia* var. *magna* was collected at Rondeau Provincial Park, a large, sandy peninsula and the enclosed bay along the north shore of Lake Erie, by Y. Dalpé and C. Babcock. This record now provides documentation of the occurrence of *Calamovilfa longifolia* var. *magna* along the north shore of Lake Erie and lends considerable support to the previous citation by Dodge (1914). The sandy deposits that make up the beach and dune complex at Rondeau (Fig. 1) are similar to those at Point Pelee. At Rondeau there is extensive suitable habitat along the eastern shore of the peninsula. Further investigation of the beaches at Point Pelee, Long Point and elsewhere may result in additional records.

It is entirely possible that *Calamovilfa longifolia* var. *magna* may have been planted

¹ S.G. Aiken is now at the Botany Division, National Museums of Natural Sciences, Ottawa, Ontario K1A 0M8



Figure 1. Habitat of *Calamovilfa longifolia* var. *magna* at the Rondeau Provincial Park site where it was collected. (photo taken in August 1983 by Y. Dalpé)

on the beach at Rondeau as a sand stabilizer. However, we have been unable to establish whether it has been deliberately planted. The present landowner, Ontario Ministry of Natural Resources, has no record of deliberately planting it. Whatever the origin, *Calamovilfa longifolia* var. *magna* is well established on at least part of the upper beach at Rondeau.

Documentation: Ontario, Kent County, Rondeau Provincial Park, 18 August 1983, Y. Dalpé and C. Babcock 581, DAO.

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Dodge, C.K. 1914. Annotated list of flowering plants and ferns of Point Pelee, Ontario and neighbouring districts. Can. Dep. Mines, Geol. Surv. Mem. 54 (Biol. Ser. 2). 31 pp.
Dore, W.G. & J. McNeill. 1980. Grasses of Ontario. Agric. Can. Monogr. 26. 566 pp.
Thieret, J.W. 1960. *Calamovilfa longifolia* and its variety *magna*. Am. Midl. Nat. 63: 169-176.

IN DEFENSE OF THE AUTUMN CORAL-ROOT
(*Corallorhiza odontorhiza*)

by J. Ross Brown, Tupperville, Ontario NOP 2MO

Autumn Coral-root is our smallest-flowered *Corallorhiza*. Large flowers may be about 6 mm wide and 7 mm high. Case (1964) noted maximum height as 40 cm, but I have seen no Ontario specimens over 31 cm. While agreeing that this polymorphic species can be very inconspicuous, I disagree with the following subjective evaluations of its appearance:

"...it has little beauty or colour...All flower parts connivent...and not opening...in most plants." (Case 1964)

"It is certainly not a plant to attract attention and is at or near the bottom of an orchid list in terms of beauty of either form or colour." (Petrie 1981)

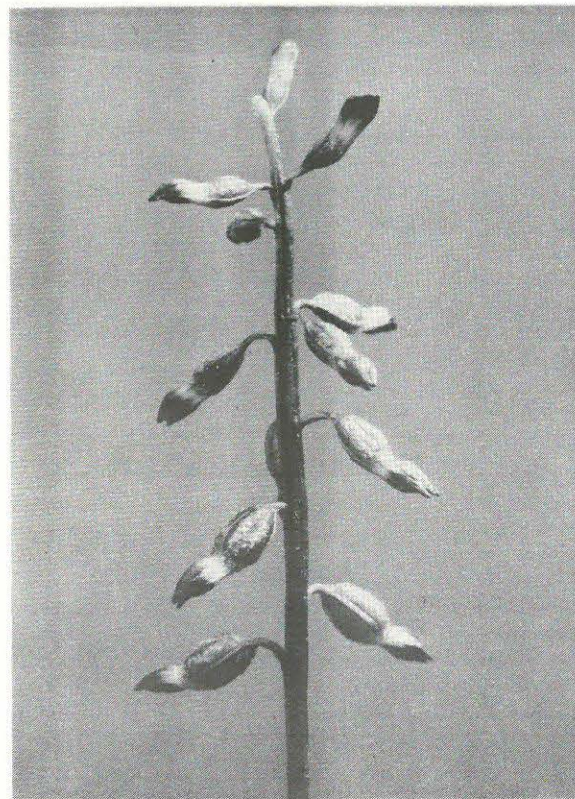


Figure 1. Flowering stem of the 'closed' race of Autumn Coral-root (X2) from a population at St. Williams, Regional Municipality of Haldimand-Norfolk. (photo by Paul Catling, 1978)

"...the 'ugly duckling' of a genus noted for its vivid colours and attractive flowers." (Luer 1975)

The above descriptions were written by highly respected authors, and doubtlessly their appraisals of the appearance of Autumn Coral-root apply to most North American specimens.

This species includes two genotypes, or races, with these having uniformly closed flowers (Fig. 1) or open flowers (Fig. 2). The 'showy', open-flowered race, although very small, definitely ranks with our more beautiful orchids in both form and colour. Study of one Lambton County station containing both genotypes indicates that the races were constant in flower type from year to year. This strongly suggests genetic differences. The 'showy' race differs from the much commoner 'closed' race in both morphology and breeding system (Catling 1983).

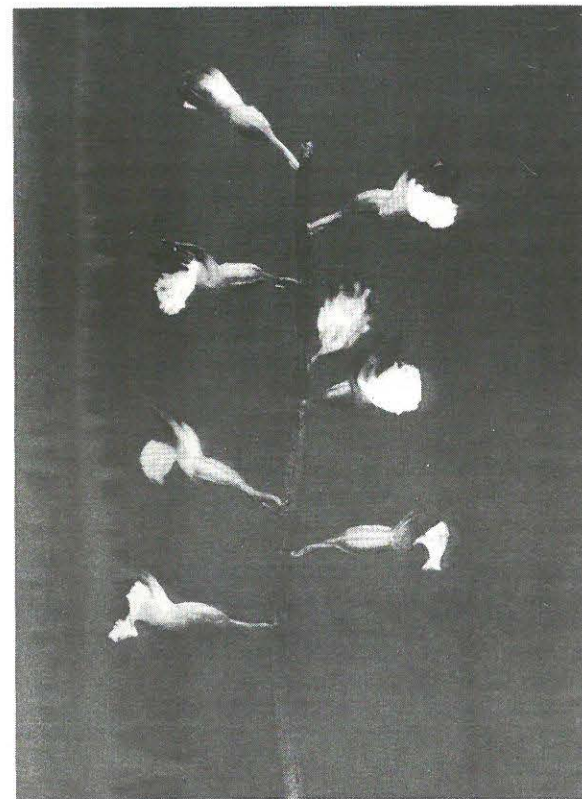


Figure 2. Flowering stem of the 'showy' race of Autumn Coral-root (X2) from a population at Pinery Provincial Park, Lambton County. (photo by Paul Catling, September 1978)

In the 'showy', open-flowered race (Fig. 3), dorsal sepal and petals more or less form a hood over the rounded to oval, sharply deflexed lip apron. Lateral sepals may be clasping, to somewhat spreading. Occasional plants with widely spreading petals and sepals are reminiscent of miniature Spotted Coral-root (*Corallorhiza maculata*). Inner surfaces of petals and sepals are cream to pale yellowish-green basally, becoming bronze to rich reddish-brown towards margins and tips. Lateral petal margins range from reddish-brown to crimson. Columns are yellow to pale yellowish-green with magenta spots. The pure white lips have erect lateral margins edged with magenta, and the lamellae (two swollen, central ridges) and the remainder of the lip are randomly spotted with magenta. Rarely, plants with predominantly pale green bronze-tipped petals and sepals and immaculate lips occur. Ovaries range from yellowish-green through various browns to orange-red with darker 'ribs'. Stem colour varies from pale greenish-brown to reddish or purplish-brown.

As shown by Catling (1983), the open-flowered (chasmogamous) race, with larger mentum, longer lip and differences in column structure, is morphologically different from the closed-flowered (cleistogamous) race. The cross-pollinated (allogamous), 'showy' flowers have a small but distinct rostellum which effectively prevents self-pollination. The 'closed' form is self-pollinated (autogamous) (Catling 1983).

Autumn Coral-root is restricted to southeastern North America and occurs in Canada only in extreme southwestern Ontario. It is listed as provincially rare (White et al. 1982) and has been collected in Lambton, Etgin, and Kent Counties as well as the Regional Municipalities of Haldimand-Norfolk and Niagara (Fig. 4). In Michigan it has been discovered recently in the Leelanau Peninsula, well to the north of any known Ontario site; therefore, it may turn up somewhat farther north in Ontario in the future.

This orchid grows in a variety of habitats in Ontario: dry to moist deciduous forest, pine plantations, oak-pine forest, white cedar thickets, and open glades adjacent to dune slacks bordered by white cedar. All observed stations occurred on sandy soil. In Lambton County this orchid has been seen most frequently in two habitats: (1) Shaded groves or thickets of pine or White Cedar where Canada Mayflower (*Maianthemum canadense*), Fringed Polygala (*Polygala paucifolia*), Shinleaf (*Pyrola elliptica*), One-sided Pyrola (*P. secunda*), the sedge *Carex eburnea* and Poison Ivy (*Rhus radicans*). (The last-mentioned species often makes photography

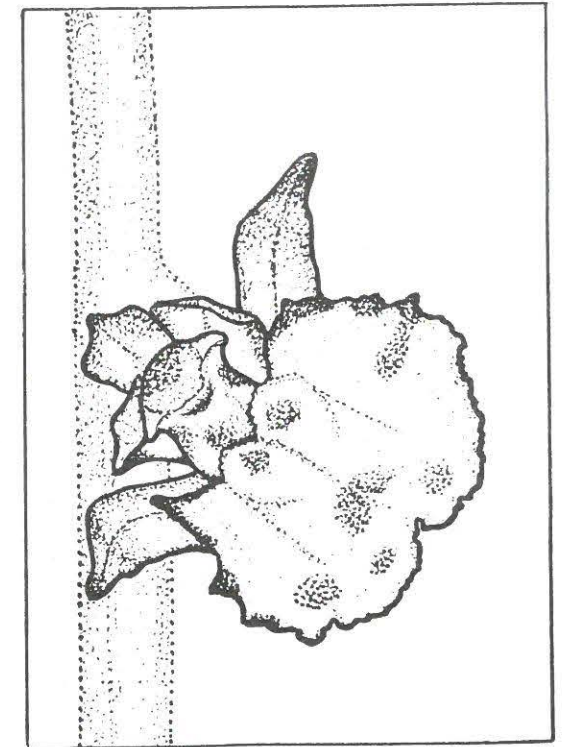


Figure 3. Flower of the 'showy', open-flowered race of *Corallorhiza odontorhiza* illustrated by Ross Brown from photographs taken at Ipperwash, Lambton Co., 19 September 1976.

of choice plants of Autumn Coral-root almost impossible!); and (2) Relatively open glades on low, sand ridges near cedar swamps, where associated species are more diverse and include Bracken (*Pteridium aquilinum*), Marsh Fern (*Thelypteris palustris*), the sedges *Carex castanea*, *C. eburnea* and *C. flava*, Starry False Solomon's-seal (*Smilacina stellata*), Ram's-head Lady's-slipper (*Cypripedium arietinum*), Large Yellow Lady's-slipper (*C. calceolus* var. *pubescens*), Loesel's Twayblade (*Liparis loeselii*), Common Strawberry (*Fragaria virginiana*), Shrubby St. John's-wort (*Hypericum kalmianum*), Grass of Parnassus (*Parnassia glauca*), Self-heal (*Prunella vulgaris*), Flat-topped Aster (*Aster umbellatus*), and Rough Goldenrod (*Solidago rugosa*). Nearby trees and shrubs include White Cedar, Tamarack, White Birch, dogwood (*Cornus* spp.), and Common Juniper (*Juniperus communis* var. *depressa*).

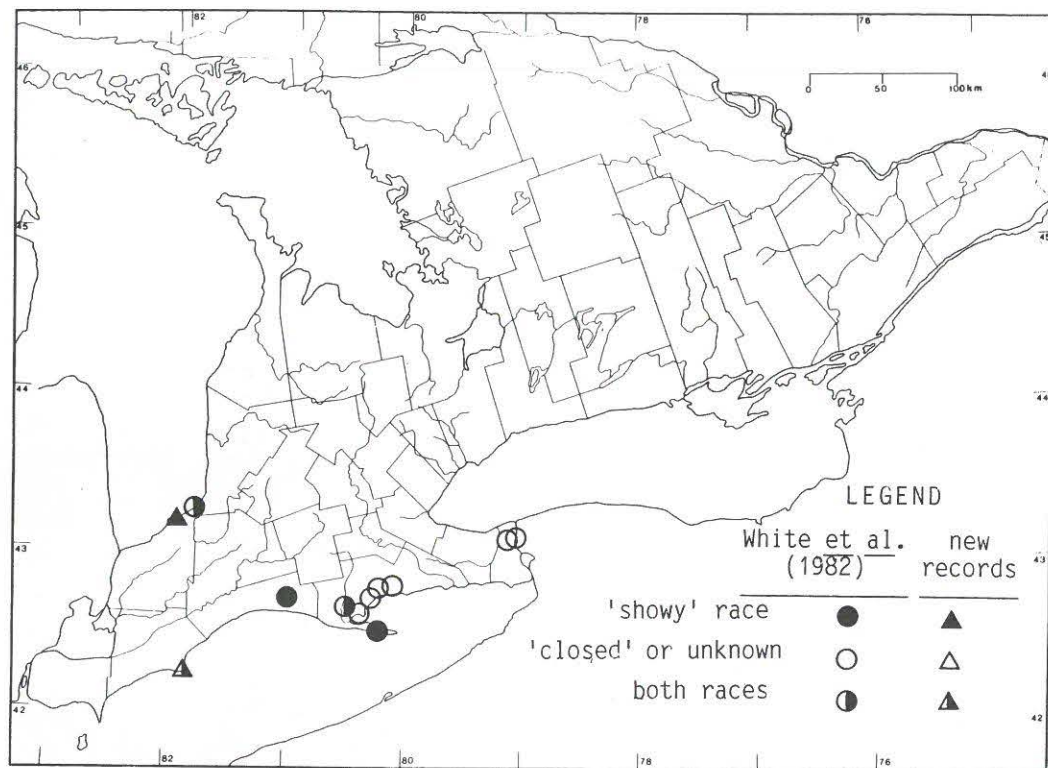


Figure 4. Ontario distribution of the 'showy' and 'closed' races of *Corallorhiza odontorhiza* based on observations made at localities mapped in White et al. (1982). (base map provided with permission from the National Herbarium) and from localities not mapped in White et al. (1982).

Flowering normally extends from mid-August to late September, peaking in the first half of September. However, on 3 November 1968, botanist Rob Simpson, a former neighbour now teaching in Virginia, discovered hundreds of 'showy' Autumn Coral-root in flower at the St. Williams Forestry Station in Haldimand-Norfolk.

Searching for Autumn Coral-root is challenging but rewarding. Although the plants are difficult to detect against a typical back-drop of pine or cedar needles, or oak leaves, the beauty of the tiny flowers and the possibility of discovering 'new' forms make the search worthwhile. In 1976 I discovered 2 plants with 2 and 3 racemes, a condition apparently unknown in other Ontario Orchidaceae. On 5 September 1982 Dennis Rupert and I discovered a clump of 5 very unusual but striking Autumn Coral-root in Pinery Provincial Park, Lambton County. These plants, in early anthesis and apparently of the 'closed' race, were mostly pale magenta in colour, ranging from near-white on 1 or 2 stems to a fairly rich magenta on the sepals. These were quite unlike any we had previously seen.

If any Ontario field botanists doubt the attractiveness of the 'showy' genotype of this tiny coral-root, I would suggest an early September

field trip to Kent or Lambton. Come equipped with an open mind, a good magnifying glass and close-up camera equipment. I am sure you will not be disappointed.

Documentation of new records: Ontario: Kent County, Rondeau Provincial Park, 5 September 1959, M. Eddy, RPM [also reported in Lindsay 1982]. Lambton County: Ipperwash Beach: 19 September 1976, photograph by Ross Brown; September 1978, Catling & Brown, TRT [Lindsay 1982].

Acknowledgments

I would like to thank Paul Catling and Dennis Rupert for assistance in the field and transportation. Paul's recent research on autogamy in native orchids contributed greatly to this article. I am also grateful to him for use of 2 of the photographs which were previously published in *Le Naturaliste canadien* and for identification of the sedges listed above.

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NEWS OF BOTANISTS

ONTARIO MINISTRY OF NATURAL RESOURCES CONTRACTS FOR FIELD BOTANISTS

"Joyce Gould is the only botanist on staff in Central Region at this time. Joyce is working on inventories in a number of sites in the Region, the most notable being the Fleetwood Creek area...Ian Macdonald has a contract with Huronia District to do inventory work in the portion of Site District 5-7 included in a planning project the District will be undertaking."

Jim Griffin, Central Region, Richmond Hill

Four field botanists were hired by Southwestern Region to work in various District Offices:

Gary Allen - Chatham District
Joe Johnson - Owen Sound District
Donald Kirk - Simcoe District
Dave McLeod - Aylmer & Wingham Districts

THE BOTANY DIVISION OF THE NATIONAL MUSEUM OF NATURAL SCIENCES ANNOUNCES TWO NEW STAFF MEMBERS

Two new plant taxonomists are joining the Botany Division staff of the National Museums of Canada this summer: Dr. Michel Poulin will be Curator of Algae and head of the Phycology section; Dr. Susan Aiken will join the Vascular Plant Section as an Assistant Curator.

Dr. Poulin is an expert in the microscopic algae, specifically the diatoms. He will be building the collection of fresh water algae to complement the already impressive collection of marine algae at CANA. Dr. Poulin received his university degrees from Université Laval and was part of a team of oceanographic researchers known as "GIROQ".

The new Assistant Curator of Vascular Plants, Dr. Susan Aiken, was born in Wellington, New Zealand, but earned an M.S. and Ph.D. from the University of Minnesota. Before spending several years at the Biosystematics Research Institute in Ottawa studying grasses, she dealt mostly with aquatic plants, especially the taxonomy of the genus *Myriophyllum*. She also brings to the Museum an expertise in plant morphology and computerized key generation.

Irwin M. Brodo,
Botany Division,
National Museums of Natural Sciences, Ottawa

William G. Stewart
6 Yarwood St., St. Thomas, Ontario N5P 2Y3
Bill Stewart will now handle "Archives" for The Plant Press and other field botanists' activities. If you have any information, newspaper clippings, etc., which you think may be of interest, please send such material directly to him.

We were interested to see the following note about Bill Stewart in *Western News* (19 April 1984): "William G. Stewart, a technician in the Department of Astronomy, has been awarded first prize in the print section of the Diamond Jubilee Photographic Competition of the British Bryological Society in London, England. Mr. Stewart's entry was the rare moss *Buxbaumia aphylla* Hedw., photographed in Elgin County."

INFORMATION AND REQUESTS

POST-DOCTORAL FELLOW OR RESEARCH ASSOCIATE WANTED

To work on NSF-sponsored project "Evolutionary Systematics of the Maloideae (Rosaceae)". Position to start 1 October 1984, or as soon as possible thereafter, to last one year with the possibility of a second by mutual agreement. Applicant should hold a recent M.Sc. or Ph.D. in Plant Systematics. Applicant should be skilled in one or more of the following: light microscopy (cytology, anatomy), SEM, phytochemistry (particularly phenolics), archival work, computer assisted methodologies.

Please send application and names of three references to Dr. J.B. Phipps, Department of Plant Sciences, The University of Western Ontario, London, Ontario N6A 5B7.

"CAROLINIAN CANADA"

"Carolinian Canada" is a two-year program for conservation of habitats in the Carolinian Life Zone involving World Wildlife Fund, The Nature Conservancy of Canada, and The Ontario Heritage Foundation. This program has three components: Carolinian Conservation Strategy, Wildlife Conservation projects and Natural Areas protection program.

A draft report on the 29 most significant, unprotected areas in the Carolinian Life Zone has been prepared by Paul Eagles based on discussions with Tom Beechey, Paul Maycock and Mike Oldham. The significance of these and other natural areas will be discussed at a meeting at Burt Matthews Hall, Rm. 1035, University of Waterloo, at 10:00 a.m. on 6 September 1984.

This meeting is open to anyone with interest or knowledge of the Carolinian Life Zone.

"ENVIRONMENTAL CHALLENGES 1984"

Environment Canada's annual public consultation conference will be held in Toronto in November. This agency is interested in reaching more individuals who are interested in contributing

to the policy-making process. Any field botanist who is interested may get on the mailing list by contacting Sally Leppard, 208 Bloor St. W., Ste. 603, Toronto, Ont. M5S 1T3.

RESTORATION ECOLOGY: THEORY AND PRACTICE

This symposium will be held at the University of Wisconsin, Madison, Wisconsin, 11-12 October 1984. It is planned to explore the value of ecological restoration as a technique for basic research and to examine the role of experimental and theoretical ecology in the development of the science and art of community and ecosystem restoration.

A number of topics of interest to Ontario field botanists will be discussed: the role of soil and climatic factors in community development; introduction of species; community structure and species diversity; assembly of communities; plant-soil interactions, nutrient cycling and mycorrhizae; competition; succession; the role of fire and disturbance. Speakers include internationally known botanists such as Anthony Bradshaw, Grant Cottam and John Harper.

The registration fee is \$ 40.00 (US) until 28 September; after which it is \$ 50.00 US. Those interested in attending should write to Nancy Dopkins, University of Wisconsin Arboretum, 1207 Seminole Highway, Madison, WI 53711 (608-262-2746).

BIOGEOGRAPHY OF THE ISLAND REGION OF WESTERN LAKE ERIE: A CONFERENCE AT THE OHIO STATE UNIVERSITY IN 1985

"We are pleased to announce the 9th Biosciences Colloquium of the College of Biological Sciences at the Ohio State University. The conference, entitled "Biogeography of the Island Region of Western Lake Erie: A Laboratory for Experiments in Ecology and Evolution," will be held in Columbus, Ohio on 28-30 May 1985.

"The primary aims of the colloquium will be (1) to develop more fully the ecological data bases including present and past biotic distributional patterns for western Lake Erie; (2) to analyze these data bases with special regard to modern concepts of island biogeography; and (3) to identify areas for special emphasis of future research programs.

"Plenary sessions will feature invited lectures and panel discussions by national and regional authorities addressing the broad concepts of island biogeography applicable to the western Lake Erie region. Contributed papers and workshops will address the status of the information base of specific biotic (terrestrial and aquatic) groups and the factors which affect biotic distributional patterns in the region.

"Persons wishing to participate by contributing formal papers are invited to submit titles and abstracts for consideration. Other types of information are known to exist in small amounts (e.g. field notes and projects from classes at F.T. Stone Laboratory, specimen records from collections in the region, and contract research reports which have never been published) and are solicited for the workshops.

"Dr. Jerry F. Downhower will be the Editor of the Proceedings which promise to be a major contribution not only to the literature of western Lake Erie but also to the world's literature concerning biogeography."

Charles C. King, Ph.D.,
Executive Director,
Ohio Biological Survey,
484 W. 12th Avenue,
Columbus, Ohio 43210

UPDATED CATALOGUE OF BOTANICAL SURVEYS IN ONTARIO

I am presently nearing completion of a revised and updated catalogue of botanical surveys in Ontario. If you have conducted, or know of any botanical surveys not listed in *A Guide to the Literature on the Herbaceous Vascular Flora of Ontario* (1978), I shall be glad to incorporate any new titles received before 30 November 1984.

The following information should accompany each title: author(s), date, publisher & address, number of pages, total number of plant species in survey, and cost of publication (if available).

Publication date and price for this new catalogue will be announced in *The Plant Press*.

James L. Hodgins,
Botany Press,
90 Wolfrey Ave.,
Toronto, Ontario M4K 1K8

OBTAINING HERBARIUM SHEETS

"I have a comment to offer Dorothy Tiedje, who requested information on herbarium papers in the June '84 issue of *The Plant Press*. I buy herbarium sheets of standard size (11½ X 16½") from the University of Guelph Campus Bookstore (Box 1150, Guelph, Ontario N1H 6N5). These are identified as "Mayfair White Cover, bs. 201M". They sell for 12¢ each, but when I buy in lots of 500 sheets I get a 10% discount and the total (including shipping) is under \$ 60.00. I would recommend to anyone making specimens that they good good quality, standard-size paper. Otherwise, if the specimens are passed on to some public collection, the material may have to be remounted (or possibly discarded)."

Dan Brunton, Ottawa

THE MYCOLOGICAL SOCIETY OF TORONTO

Established in 1973 "for fun and for fungi", this Toronto based group has monthly meetings (except in summer) featuring talks illustrated with slides or movies. Spring and fall weekend forays are held during which participants collect and identify mushrooms and other fungi. All members receive the quarterly newsletter *Mycelium* which includes articles on the natural history of fungi; checklists; field trip reports; notices of meetings and fungi fairs; recipes; accounts of poisonings and identification tips. The membership fee is \$ 12.50 (payable to the Mycological Society of Toronto) and those interested in joining should write or telephone Mrs. Audrey Harris, 29 Hounslow Avenue, Willowdale, Ontario M2N 2A9 (416-221-0423).

Members of the Mycological Society of Toronto (MST) are busy preparing for the first meeting in Canada of the North American Mycological Association (NAMA). All those hoping to attend must be members of the MST or NAMA and must register in advance.

PLANT CHECKLISTS FOR NORTHERN ONTARIO

A report similar to the one by Steve Varga for southern Ontario in the December '83 issue is being compiled for northern Ontario. Keith Winterhalder, Curator and Associate Professor, Biology Department, Laurentian University, Sudbury, Ontario P3E 2C6 is compiling this information. More contributions are requested.

TRANSPLANTATION AND PROPAGATION OF
Zigadenus glaucus (White Camass)

by James L. Hodgins, 90 Wolfrey Ave., Toronto,
Ontario M4K 1K8

White Camass is a member of the Lily Family and a native wildflower of Ontario. It is usually found on beaches of the Great Lakes; however, it also occurs inland in calcareous wetlands on limestone rock. Its 30-100 cm tall stem bears a panicle of 30-70 white to greenish-white, waxy flowers. The long, narrow leaves are greyish-green.

In August 1979 I transplanted 3 mature specimens with clods of soil from a beach near Providence Bay, Manitoulin Island, to my garden in Toronto. The new site was open, flat and south-facing. The soil was rich, fine-textured, well drained, with a pH of 7.1. Specimens were planted approximately 1 m apart among established companion specimens of *Hypericum kalmianum* (Shrubby St. John's-wort), *Juniperus horizontalis* (creeping juniper), *Iris versicolor* (Blue Flag), and several large limestone rocks, all of which had been observed at the Lake Huron site from which the transplants came.

The White Camass flowered profusely each year after transplanting and it multiplied abundantly by bulb offsets. In July this year it was necessary to divide and transplant 1 of the 3 clumps for the first time since their original transplant. Normally division of bulbous plants is done in the fall, but removal of an adjacent shrub necessitated premature removal of the White Camass clump. Examination revealed 22 robust, onion-like offsets from the original, single bulb. Each bulb was approximately 1.5 cm in diameter. One third of these bulbs were successfully transplanted to gardens in Etobicoke and Willowdale [which border Toronto]. The remaining two thirds of these bulbs were replanted in my garden. None of the plants exhibited any disease, damage or lack of vitality. The other two clumps will be divided this fall.

Propagation information for this species is not listed by Sperka (1973) or Sullivan et al. (1981), but Sullivan et al. (1981) and Kruckeberg (1982) list such information for *Z. elegans*, a western species not found in Ontario. The latter two sources recommend seed germination and root division for propagation of *Z. elegans*. Several authors consider *Z. glaucus* to be a variety of *Z. elegans*.

The presence of steriod alkaloids in the tissues of *Z. glaucus* makes all parts of the plant toxic to humans if ingested. (Kingsbury 1964). Single bulbs grown in cultivation will be available from the writer in early October 1984.

References

- Sperka, M. 1973. Growing wildflowers. Charles Scribner's Sons. New York. 277 pp.
Sullivan, G.A. et al. 1981. Directory to resources on wildflower propagation. Missouri Botanical Garden. St. Louis, Missouri. 331 pp.
Kruckeberg, A.R. 1982. Gardening with native plants of the Pacific northwest. University of Washington Press, Seattle. 252 pp.
Kingsbury, J.M. 1964. Poisonous plants of the United States and Canada. Prentice-Hall. Englewood, New Jersey. 626 pp.

ONTARIO PLANTS IN PRINT

THE BRYOLOGIST
REFERENCES FROM 1980 - 1983

compiled by Patricia M. Eckel, 43 Crescent Ave.,
Buffalo, New York 14214

- Zander, R.H. and P.M. Eckel. 1980. *Tortula cainii*: additional Ontario records and behavior in a common garden. 83(2):209-211. (a rare endemic on karst in Simcoe Co. and Victoria Co.)
Ireland, R.R. and N.G. Miller. 1982. *Grimmia anodon* (Musci: Grimmiaceae) in North America north of Mexico 85(1):112-114. (disjunct on man-made concrete structures in Ontario)
Ireland, R.R. 1982. *Grimmia teretivervis* (Musci: Grimmiaceae) in North America. 85(3):332-334. (localities in Frontenac Co. and Thunder Bay Dist. listed for this rare moss of calcareous habitats)
Allen, B.H. 1982. *Isoetecium alopecuroides* new to North America. 85(4):421-423. (first record in Thunder Bay District noted; key to North American *Isoetecium*)
Allen, B.H. 1983. *Isoetecium myosuroides* Brid. and *I. stoloniferum* Brid.: a quantitative study. 86(4):358-364. (*I. myosuroides* mapped on north shore of Lake Superior is disjunct from the Atlantic and Pacific coasts)

TRAIL & LANDSCAPE
REFERENCES FROM 1983

compiled by Dan Brunton, 2704 Marie St., Ottawa,
Ontario K2B 7E4

- Anderson, R. 1983. Winter wildflowers in Ottawa. 17:24-30. (popular treatment of identification of common plants from remains visible in winter; accompanied by excellent line drawings)
----. 1983. Ottawa collectables. 17:203-211. (discussion of edible 'weeds' found commonly in the Ottawa District and some recipes for cooking them)
Crompton, C.W. & I.J. Bassett. 1983. Pollen Allergies at Ottawa. 17:252-255. (list of major pollen species in Ottawa; discussion of remedial options of hay-fever sufferers)
Cuddy, D. 1983. Alfred Bog. 17:147-163. (detailed discussion of the vegetation and significant flora of the largest bog in southern Ontario (in Prescott County); its endangered status is discussed)
Dobson, I. & P. Catling. 1983. Pondweeds (Potamogeton) of the Ottawa District. 17:79-99. (treatment of virtually all of Ontario's Potamogeton species, with illustrations of important identification features and a complete identification key; distribution maps for the Ottawa District, of which half is in Quebec)
Dore, W.G. 1983. The first plant specimen collected at Ottawa. 17:128-132. (collection of Red Juniper (*Juniperus virginiana*) by P. MacLagan in 1843 is discussed as the first for the District; MacLagan's other activities in 'Canada West' are mentioned for that year)
Gummer, W. & F. Bell. 1983. How many uninvited plants in your garden? 17:179-181. (discussion and list of 56 species of vascular plants found in the authors' gardens as weeds; mention of which were most aggressive)
Harrington, C.F. 1983. Significance of the fossil locality at Green Creek, Ontario. 17:164-178. (details of the internationally-famous fossil finds from Champlain Sea marine mud deposits in the Ottawa area; includes a list of 27 plant species, all from ca. 10,000 B.P.)
Nelin, J. 1983. Early botanizing in Bytown. 17:248-249. (identifies literature references for botanical collections in the Ottawa District which pre-date MacLagan's 1843 specimens (see Dore, above) by W. Sheppard prior to 1831)
Thomson, S.C. 1983. Junipers, (Onions), robins and waxwings. 17:66. (description of American Robin and Cedar Waxwing feeding

on Common Juniper (*Juniperus communis*) berries in winter)
----. 1983. Plant pitfalls, traps and snares. 17:126-127. (description of entrapment of European Butterfly in the pouch of Showy Lady's-slipper (*Cypripedium reginae*)).

SYSTEMATIC BOTANY
REFERENCES FROM 1980 - 1983

compiled by Bill Crins, Biology Department,
Erindale College, Mississauga L5L 1C6

- Voss, E.G. 1981. Review of "A Synonymized Checklist of the Vascular Flora of the United States, Canada, and Greenland". (by Kartesz, J.G. & R. Kartesz, 1980). Syst. Bot. 6:91-93.
Schilling, E.E. 1981. Systematics of *Solanum* sect. *Solanum* (Solanaceae) in North America. Syst. Bot. 6:172-185. (no Ontario material used in numerical analyses, but key to all species included; no range maps)
Woodland, D.W. 1982. Biosystematics of the perennial North American taxa of *Urtica*. II. Taxonomy. Syst. Bot. 7:282-290. (key, maps (*U. dioica* ssp. *dioica* and ssp. *gracilis* in Ontario))
Bayer, R.J. & G.L. Stebbins. 1982. A revised classification of *Antennaria* (Asteraceae: Inuleae) of the eastern United States. Syst. Bot. 7:300-317. (key, general range maps; *A. neglecta*, *A. neodioica*, *A. parlinii* in Ontario)
Keating, R.C., P.C. Hoch, & P.H. Raven. 1982. Perennation in *Epilobium* (Onagraceae) and its relation to classification and ecology. Syst. Bot. 7:379-404. (some Ontario material studied; *E. palustre*, *E. strictum*, *E. angustifolium* ssp. *circumvagum*)
Beal, E.O., J.W. Wooten, & R.B. Kaul. 1982. Review of the *Sagittaria engelmanniana* complex (Alismataceae) with environmental correlations. Syst. Bot. 7:417-432. (key to the complex, including *S. latifolia* and *S. cuneata*)
Barber, S.C. 1982. Taxonomic studies in the *Verbena stricta* complex (Verbenaceae). Syst. Bot. 7:433-456. (key, some Ontario material examined in taxonomic analyses)
Sinnot, Q.P. & J.B. Phipps. 1983. Variation patterns in *Crataegus* series *Pruinosae* (Rosaceae) in southern Ontario. Syst. Bot. 8:59-70. (numerical analyses)
Haber, E. 1983. Morphological variability and flavonol chemistry of the *Pyrola asarifolia* complex (Ericaceae) in North America. Syst. Bot. 8:277-298. (morphology, maps, key to subspecies)

compiled by Joan M. Venn, Herbarium Curator,
Biology Department, University of Waterloo,
Waterloo, Ontario N2L 3G1

- Moore, M.I. 1980. Book review of *Edible Wild Fruits and Nuts of Canada* (by N.J. Turner & A.F. Sczawinski. 1979). 13:9
- Semple, J.C. 1980. Book review of *Medical Botany: Plants Affecting Man's Health* (by W.H. Lewis & M.P.V. Elvin-Lewis. 1977). 13:9-10.
- 1980. Book review of *The Species Problem in Cannabis Vol. 1* (by E. Small. 1979). 13:18-19.
- Hebda, R.J. 1980. Book review of *Use of Plants for the Past 500 Years* (by C. Erichsen-Brown. 1979). 13:19.
- Shay, J.M. (ed.) 1979. Hybridization and the nature of species in higher plants. An invited paper by P.H. Raven at the 14th Annual Meeting of the CBA at Winnipeg, July 1977. 13(Suppl.):3-10.
- Woodland, D.W. 1980. Index to Canadian Herbaria. 13(Suppl.):1-14 (list compiled in 1979).
- Reznicek, T. 1981. Plant collection guidelines. 14:18.
- McNeill, J. 1981. CITES: Convention on International Trade in Endangered Species. 14:38-39.
- 1982. National Repository for floristic checklists. 15:43.
- Morton, J.K. 1982. Book review of *Plants of Quetico and the Ontario Shield* (by S. Walshe. 1980). 15:22.
- Phipps, J.B. 1982. Book review of *Plants of Essex County* (compiled by W. Botham, 1981). 15:45.
- Keddy, P.A. 1983. Transplanting rare plants to protect them: a plant ecologist's perspective. 16:13-15.
- Morton, J.K. 1983. Book review of *Shrubs of Ontario* (by J.H. Soper & M.L. Heimbürger, 1982). 16:16.
- Canne, J. (compiler). 1983. What's on in systematics and phytogeography in Canada. IV. Ontario. 16:27-30; 41.

The Natural Resources of the Fletcher Creek Swamp Forest Conservation Area by P.F.J. Eagles & M. Gewurz. 1982. 231 pp. Available from the Hamilton Naturalists' Club, c/o Shirley Klement, RBG Library, P.O. Box 399, Hamilton, Ontario L8N 3H8 (\$ 10.00 includes postage).

This is an inventory for future management of the biological and physical features of "Crieff Bog", which straddles the boundary of Wellington County and Hamilton-Wentworth Region. The 74 ha study area, owned by the Hamilton Naturalists' Club

and managed by the Hamilton Region Conservation Authority, includes a high diversity of habitats: sedge meadow, marsh, riparian, gravel pit, old field, successional woodland, upland mixed forest, upland deciduous forest, and treed swamp. Geology and soils, vegetation, reptiles and amphibians, mammals, birds, limnology and hydrology were investigated.

Botanical features are discussed on pages 31-95. Unfortunately much of the double-spaced text includes pages of raw data, charts and methods which should have been put in a separate appendix. This space would have been better used for a comprehensive discussion of the flora and vegetation. The list of 318 vascular plants does not include common names which be of interest to naturalists. Only 12 grass taxa (including *Bromus dudleyi* (?) and 17 sedges are listed. It is likely that many regionally and/or provincially rare graminoids have been overlooked.

Despite shortcomings in the botanical section, this report should be of interest to any naturalist familiar with "Crieff Bog" and other wetland complexes in central Ontario.

Jocelyn Webber, Mississauga

Field Guide to Forest Ecosystem Classification for the Clay Belt, Site Region 3e by R. Keith Jones, Geoffrey Pierpoint, Gregory M. Wickware, John K. Jeglum, Robert W. Arnup, and Jane Bowles. 1983. Ontario Ministry of Natural Resources. 123 pp. (\$12.00 Can.)

This field guide is designed to help the user to recognize vegetation and soil features in forest stands in the Clay Belt and to allocate any stand to one of 14 Operational Groups within the classification. The guide is organized into a logical sequence for user convenience. Section 1 is an orientation to the classification. Section 2 is the actual key to classifying (allocating) stands and thus will be the section most frequently used in the field. A description and understanding of the nature of each Operational Group will be gained from Sections 3 and 4. A straight-forward and practical classification of soil conditions, with a key, is given in Section 5. Section 6 provides a description of the 23 vegetation types (the key to which is within Section 2). Sections 7 and 8 contain aids to the description and recognition of soil features and plant species used in the preceding classification sections. Section 9 deals with photointerpretation and mapping the mosaics of operational Groups occurring in the

various landscapes of the Clay Belt. Thirteen references cited comprise section 10.

The Guide is 19.5 X 13.5 cm, ring-bound with a sturdy cover. It looks well-suited for field use, although the binding has separated from the cover in my copy. Field botanists and particularly foresters in the Clay Belt region of Ontario will probably want to obtain a copy of this publication. Copies may be obtained for \$ 12.00 (includes postage) from the Ontario Tree Improvement and Forest Biomass Institute, Ontario Ministry of Natural Resources, Maple, Ontario L0J 1E0

Michael J. Oldham, Essex

Wilderness Now by the Wildlands League. Third revised edition. 1980. 72 pp. \$ 6.00 (Can.)

Wilderness Now is the Wildland League's popular summary of wilderness management and conservation in Ontario. Of particular interest are the extensive appendices describing in detail the purpose and concept of park classification and zoning in Ontario and checklists of permitted and prohibited activities in the different zones of each class of park. There is a three-page bibliography of books, journals and films devoted to the environment generally, wilderness and Canadian parks.

This publication is available from the Wildlands League, 69 Sherbourne St., Suite 313, Toronto, Ontario M5A 3X7.

Checklist of Vascular Plants - Point Pelee National Park by Janice E. Jellicoe. 1984. Parks Canada. 21 pp. \$ 2.50 (Can.)

This checklist was published by Parks Canada in co-operation with Friends of Point Pelee, Inc. In addition to a list of scientific and common names of 755 vascular plant species, this publication includes information on plant status (native, introduced, rare in Ontario) and flowering dates. An introduction includes comments on origins of the flora and descriptions of the beach, dryland forest, swamp forest, marsh, and cedar savanna habitats of Point Pelee. An excellent piece of work, well-worth obtaining.

Cheques for \$ 2.50 (postage included) may be made payable to Friends of Point Pelee, Inc., R.R. 1, Leamington, Ontario N8H 3V4.

A preliminary annotated list of the plants of the Regional Municipality of Waterloo, Ontario. by C.A. Campbell & L.E. Lamb. 1984.

This computer print-out of all vascular plant records discovered to date in Waterloo Region is now available for \$ 3.50 c/o L.E. Lamb, Ecology Lab, Department of Man-Environment, University of Waterloo, Waterloo, Ontario N2L 3G1

REPRINTS AVAILABLE FROM THE BIOSYSTEMATIC RESEARCH INSTITUTE

There are considerable quantities of reprints from retired Agriculture Canada scientists still available for distribution. A list of titles has been drawn up and is available from:

Curator of the Reprint Collection,
Vascular Plant Herbarium,
Biosystematics Research Institute,
Wm. Saunders Bldg.,
Central Experimental Farm,
Ottawa, Ontario K1A 0C6

These reprints are all by past BRI (PRI) scientists and include many papers by Dore, Bowden, Moore, and Mosquin. Some titles are in short supply, so a quick response is encouraged.

Stephen Darbyshire, Ottawa

NOTICE OF PUBLICATION

Part 3 of the *Atlas of the Rare Vascular Plants of Ontario*, edited by G.W. Argus and C.J. Keddy, has been published by the National Museum of Natural Sciences. This part treats over 160 species in 25 families, including the Brassicaceae, Ericaceae, Fabaceae, Poaceae and Rosaceae.

The Atlas is available free-of-charge from:

The Rare and Endangered Plants Project,
Botany Division,
National Museum of Natural Sciences,
Ottawa, Ontario K1A 0M8

Those who have already received Parts 1 and 2 of the Atlas will automatically be sent Part 3 and subsequent parts. If Part 3 does not arrive within a reasonable length of time, please contact the Museum. Copies of Parts 1 and 2 are still available for new recipients of the Atlas.

Kathleen Pryer, Ottawa

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OBJECTIVES OF THE NEWSLETTER

1. Provide a medium for communication among Ontario field botanists;
2. Distribute information on Ontario botanists and their activities;
3. Report on projects and research in progress;
4. Distribute current botanical information on subjects such as species distributions, identification keys, field equipment and methods;
5. Monitor Ontario plants in print and provide reviews where appropriate;
6. Encourage 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

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We are pleased to receive submissions about native or naturalized vascular plants, bryophytes and lichens in Ontario. All submissions should include original information (i.e. your own observations or experiences). All submissions are informally reviewed by the Editorial Committee. Submissions with content beyond our expertise may be sent to North American specialists. Although our system is not so rigorous as that of scientific journals, we request that articles be well-written and in the style of this publication. We request 3 copies of typed, double-spaced manuscripts whenever possible.

Non-subscribers are requested to 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 is published.

DEADLINES FOR SUBMISSIONS

A minimum of 3 months is needed to review most submissions. Material for 'Information and 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 appearing in this publication. Black and white photographs are preferred, but figures can be made from colour slides. Those submitting more than one photograph per article may be asked to pay for the cost of production of the figures.

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
THE PLANT PRESS Vol. 2 No. 3 (September 1984)

ABBEY PRINTING
(416) 826-1281

1984 SUBSCRIPTIONS

The 1984 subscription fees are as follows:

all 1984 subscriptions* - \$ 12.00 (Can. & US)
back issues (1983) - \$ 10.00 (Can. & US)
(some photocopied)

* there will be a change in subscription fees
for institutional/corporate subscribers in 1985

THE PLANT PRESS is a quarterly publication
which is entirely supported by its subscribers.

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ONTARIO
L5N 1A2