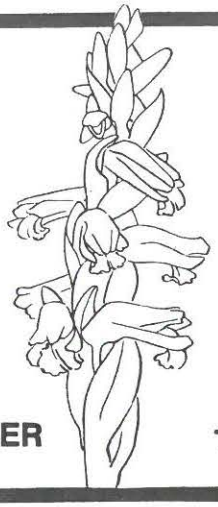
THE PLANT PRESS

FIELD BOTANY IN ONTARIO

Vol.4 No.3 SEPTEMBER 1986



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Front page illustration: Shining ladies'-tresses (Spiranthes lucida) by Wilgard Schiffers

NEWS

As a number of our readers have called to our attention, The Plant Press has slipped behind in its production schedule. We have many very good excuses (as reported in the last issue) and even more apologies for the delays. More importantly, we are setting about to eliminate bottlenecks and streamline production steps. We hope to get back on schedule soon.

You can help us with two very important matters: 1) subscription renewals and donations; and 2) submissions.

Our readers have been tremendously supportive of our efforts--and we appreciate your support and thank you for it. We hope that you will continue to show your support by promptly renewing your subscription for 1987. Subscription fees alone do not cover our cost of operation. We would like to remind you that The Plant Press is a registered charitable organization in Ontario and donations are tax-deductible. There is one more issue in the works for Volume 4 before we proceed with Volume 5 (1987).

We are very grateful to those who have responded to our plea for more material. We still need more. If we can maintain a small backlog we can ensure variety in each issue and publication within 6 months. We have heard from many of you that you would like to contribute one thing or another. We are eager to have your material in hand. Letters, Ideas, Notes & Reports, News of Field Botanists, and Ontario Plants in Print are the more obvious areas in which we need contributions. If you have another slant on things field-botanical, please give us an opportunity to consider it for The Plant Press.

We have switched to computerized production and reduced the amount of retyping by one-half or more. Formatting will also be easier and we will have more flexibility to move articles around. It would be a great help to us if those with access to computers could send us material on diskettes (these would be returned). Please contact the business manager about the details.

LETTERS

We have a few comments from your letters on hand, but we would like more for the next issue.

IDEAS

THE COLLECTING SCROLL: A PRACTICAL ALTERNATIVE TO THE FIELD PRESS

Jane M. Bowles, Department of Plant Sciences, The University of Western Ontario, London, Ontario N6A 5B7

Many field botanists who do a lot of collecting find that a standard field press (such as the one described by Savile (1962)) is inconvenient for daily use. While it ensures that the plants are pressed in fresh condition and maintains order in the collecting system, it is unwieldly and time consuming to operate. The mechanics of opening and closing a field press and laying out the plants can seem excruciatingly laborious by the end of a long day. Hurried pressing which is not corrected before the plants are too dry may result in horrible looking vouchers. I find a field press very cumbersome to carry around in thick bush, especially in addition to a clip-board and other paraphernalia. Keeping it out of poison ivy is sometimes almost impossible.

In the past I have resorted to the time honoured (and to the purist horrifying) practice of stuffing each plant into a plastic bag and tying a knot. Worse still, sometimes several specimens get stuffed into the same bag. This results, inevitably, in mixed labels, lost flower parts, bends and breaks due to excessive folding and crumpling, and a characteristic curvature of graminoids which gives new dimension to the term "falcate-secund." Bagging is far from being an ideal method and on more than one occasion I have lost complete collections when the bottom was ripped out of a large bag which contained the day's catch. I know other botanists have experienced similar misfortunes.

A few years ago I developed a system of plant collecting which, for me, solves many problems of both the field press and bagging methods. It employs a roll of polythene, about as wide as a herbarium sheet is long, which is used like a scroll (Fig. 1).

As plants are collected they are folded to the appropriate length and then rolled up into the scroll. A numbered tag or label should be placed with each specimen, but if these are omitted at least the sequence of collection is maintained. This is a great memory aid later on. I use medium weight, transparent polythene

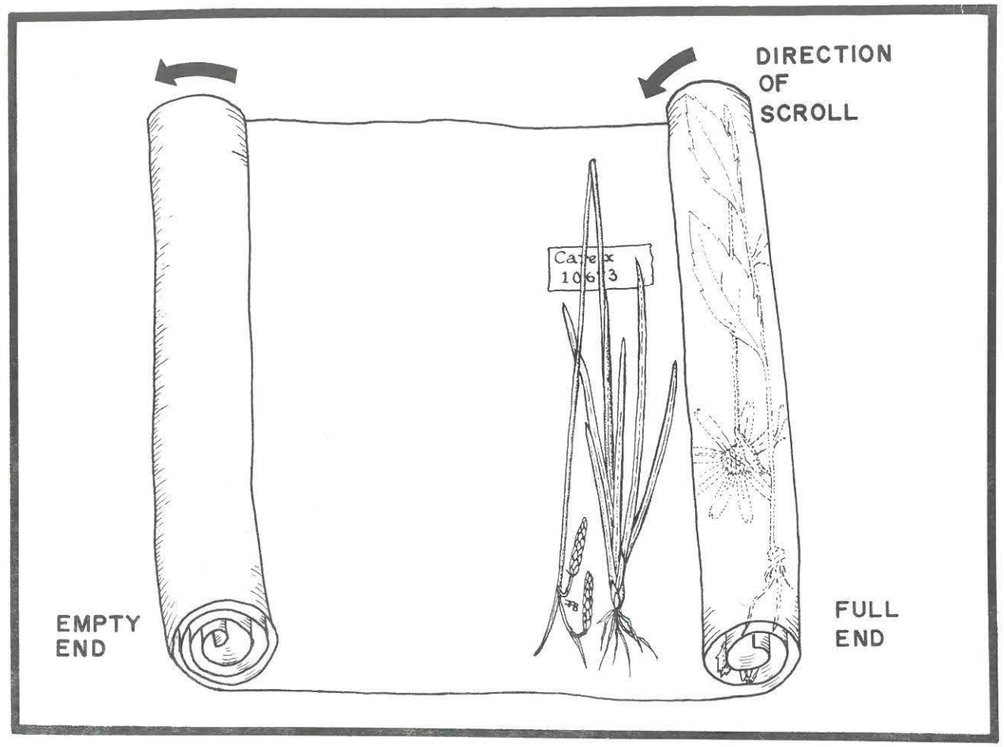


Figure 1. Diagram of a collecting scroll.

table covering for my scrolls. It can be purchased in many department and hardware stores and is quite inexpensive. A length of 2 m is enough for 5 scrolls, each 40 cm wide. The length of the scroll is determined by the standard width of the polythene. A scroll 1.5 m long will comfortably hold about 25 specimens.

In use the scroll must be secured at all times or it may unroll and spill the contents. I find that I can hold and carry it quite easily under one arm, which leaves both hands free. The completed scroll is compact and light. It can be secured with elastic bands or masking tape, labelled, and carried in a day-pack or quiver.

To release the plants one by one for pressing or examination, the scroll is merely reversed. The specimens are already conveniently folded to the correct length and somewhat flattened, but remarkably uncrumpled. Record keeping is facilitated because the plants are presented sequentially and separate rolls can be used for each location or habitat.

One disadvantage, shared with the bagging method, is that specimens left too long in the heat may "cook" and be severely discoloured. I have never had problems with discolouration in scrolls which were processed on the day they were collected, or which were refrigerated if pressing had to be delayed, even for several days.

Reference

Savile, D.B.O. 1962. Collection and care of botanical specimens. Research Branch, Canadian Department of Agriculture. Publ. 1113. 128 pp.◆

PLANTS AT THEIR GEOGRAPHICAL RANGE LIMITS IN QUETICO PROVINCIAL PARK, NORTHWESTERN ONTARIO

Shan Walshe, Quetico Provincial Park, Ontario Ministry of Natural Resources, Atikokan, Ontario P0T 5G4

Situated at the meeting place of the Boreal and Great Lakes - St. Lawrence Forest Regions, with scattered pockets of western and subarctic species, Quetico Provincial Park (Fig. 1) is a great place to study the habitats of plants close to the geographical limits of their ranges. The following observations have been noted during the past 16 years of paddling Quetico's waterways and tramping its rugged woods. Some of the plants discussed are illustrated in Figure 2.

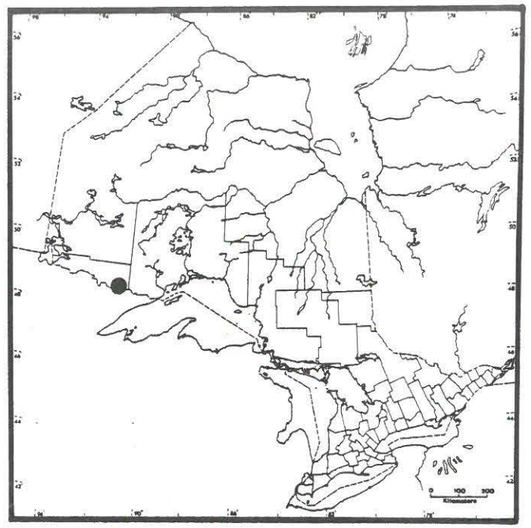


Figure 1. Location of Quetico Provincial Park in northwestern Ontario.

Boreal Forest species

Northern comandra (*Geocaulon lividum*) and lingonberry (*Vaccinium vitis-idaea*)

These plants are occasionally found in black spruce - sphagnum bogs overlying lime-rich clays near Cache Lake.

Great Lakes - St. Lawrence Forest species

Poison ivy (*Toxicodendron radicans*)

In the northern portion of Quetico, poison ivy is found in a very restricted habitat, occurring only among rocks along fast-flowing streams where the climate is warmer and the soil more basic.

Forty miles to the south, the habitat expands to include lakeshores within 15 m of the water's edge and rocks need not be present.

Bittersweet (*Celastrus scandens*)

Much rarer than poison ivy, bittersweet occupies a very similar habitat, being found only among rocks along fast-flowing streams. It has been found only twice in Quetico. It appears to require an even more basic soil.

Wild ginger (*Asarum canadense*)

Wild ginger is confined to base-rich wetlands under black ash and white elm. It is most common in the warmer, southwestern part of the park.

Partridgeberry (*Mitchella repens*)

One of the rarest of Quetico plants, partridgeberry has been found only once, on a small island under aspen in the warmer, southwest corner of the park.

Western species

Thimbleberry (*Rubus parviflorus*)

Situated at the extreme western edge of the western Lake Superior disjunct thimbleberry population, Quetico's thimbleberry, a British Columbia - Alberta species, occurs on many sites throughout the eastern portion of the park, as far west as Prairie Portage, but is most often found in the base-rich greenstone bedrock country of the southeast.

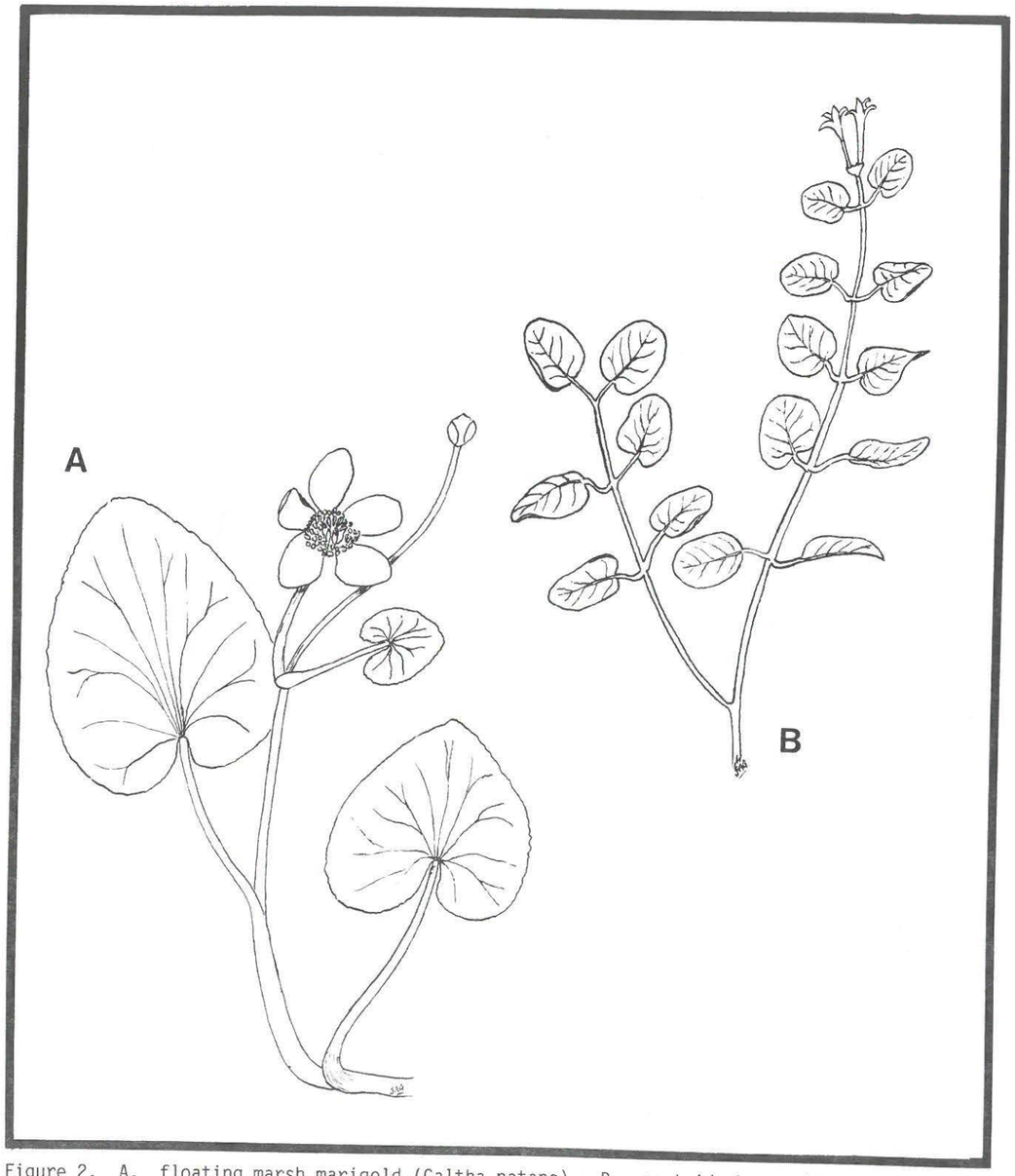


Figure 2. A. floating marsh marigold (*Caltha natans*). B. partridgeberry (*Mitchella repens*). (illustrations by John A. Graydon).

Big bluestem (Andropogon gerardii) and freshwater cord-grass (Spartina pectinata)

On Lac la Croix, Iron Lake, and the Namakan River in the southwest corner of Quetico, where the climate is warmer and drier, and the waters richer and less acidic, two prairie grasses, big bluestem and freshwater cord-grass are dominant in a very distinct shoreline community. This community also includes kalm's lobelia (Lobelia kalmii) and the provincially rare sedge Carex conoidea forma katahdinensis.

Alum-root (Heuchera richardsiana) and slender beard-tongue (Penstemon gracilis)

These two prairie species occur in dry crevices in bedrock. Alum-root is common and scattered throughout the park, whereas slender beard-tongue is found on only one rock cliff on McAlpine Lake.

Subarctic species

Snow-white cinquefoil (Potentilla nivea), smooth woodsia (Woodsia glabella), and encrusted saxifrage (Saxifraga aizoon)

These species are found in crevices on a lime-rich, north-facing, greenstone cliff on Emerald Lake. This is the only known location for these subarctic species in Quetico.

Floating marsh marigold (Caltha natans)

This aquatic species is found in abundance in a tiny shallow stream on West Bay of Quetico Lake. This is the only known location in Quetico of this white-flowered subarctic species.

The search goes on

Other plants at the geographical limits of their ranges may yet be found in Quetico. Hop hornbeam (Ostrya virginiana), bloodroot (Sanguinaria canadensis), hackberry (Celtis occidentalis), large-flowered bellwort (Uvularia grandiflora), common trillium (Trillium grandiflorum), wild plum (Prunus americana), prickly pear cactus (Opuntia compressa), showy lady's-slipper (Cypripedium reginae), fringed gentian (Gentianopsis crinita), and indian paintbrush (Castilleja coccinea) all lie just a short distance away. Quetico Provincial Park covers an area 60 miles by 40 miles in size. It will take a long time to thoroughly botanize such a vast, roadless wilderness; but what a pleasure it will be!

[Ed. note: Those interested in further study of the flora of Quetico may wish to refer to Shan Walshe's book, Plants of Quetico and the Ontario Shield published by University of Toronto Press in 1980.] ◆

WHITE WATER-BUTTERCUPS (Ranunculus SUBGENUS Batrachium) IN ONTARIO

P.W. Ball, Botany Department, Erindale Campus, University of Toronto, Mississauga, Ontario L5L 1C6

Ranunculus subgenus Batrachium is a very distinct subgenus within Ranunculus, but the recognition of species in the subgenus has always presented many problems. Recently both Morton & Venn (1984) and Voss (1985) have commented at some length on this problem, and have noted that there is no satisfactory account for eastern North America. The most recent monograph, Cook (1966), although a world-wide treatment of the subgenus, was heavily biased towards Europe and the Mediterranean, North America being treated very superficially. Cook's revision was based largely on the results of extensive cultivation experiments, cytology, and artificial hybridization, since without such data it is almost impossible to understand the variability found in the subgenus. Unfortunately he had no live material from North America and saw relatively little herbarium material.

Subsequent to the publication of his monograph Cook annotated specimens in TRT, so the following account is to some extent based on his annotations. It is clear that there are serious deficiencies in our knowledge of the species found in Ontario. It seems fairly certain that there are at least two species (Ranunculus longirostris, and a small-flowered species which is probably R. trichophyllus), but beyond this the situation is very hazy. Hopefully the following will encourage a more careful examination of these plants. In order to reliably identify a specimen it is necessary to have both flowers and at least partially developed fruit. Notes on the behaviour of the leaves when they are removed from water are also useful.

Key to species of Ranunculus subgenus Batrachium in Ontario

1.	Simple floating leaves present as well as leaves divided into capillary segments	1. aquatilis
1.	All leaves divided into capillary segments	2
2.	Style 0.7-1.2 mm, at least 1/3 the length of the achene	2. longirostris
2.	Style 0.2-0.5 mm, less than 1/3 the length of the achene	3
3.	Petals 2-5 mm; nectaries lunate or semicircular; free petioles about half as long as the stipular portion	3. trichophyllus
3.	Petals 5-10 mm; nectaries circular or pyriform; free petiole less than half as long as the stipular portion	4
4.	Achenes 1.5-2.5 mm; leaves usually 50 mm or more, often collapsing when removed from water	1. aquatilis
4.	Achenes 1-1.5 mm; leaves not more than 40 mm, not collapsing when removed from water	4. subrigidus

1. R. aquatilis L.

Floating leaves sometimes present, suborbicular, with 3-7 shallow dentate lobes; divided leaves usually more than 50 mm, collapsing or not when removed from water; free petiole less than half as long as the stipular portion. Petals 5-10 mm; nectaries circular. Achenes 1.5-2.5 mm; beak 0.2- 0.5 mm.

Specimens from northern Ontario were determined as R. aquatilis by Cook. However, Cook did not clearly distinguish between this species and R. subrigidus so it is possible that all our specimens are the latter species. Relevant to this problem is the fact that there are no Ontario specimens with floating leaves. According to Cook all plants of R. aquatilis are capable of producing floating leaves if growing under suitable conditions.

2. R. longirostris Godron

Leaves usually not more than 50 mm, usually not collapsing when removed from water; free petiole much shorter than the stipular portion. Sepals often with a bluish tinge at the tip. Petals 4-9 mm; nectaries lunate or semicircular. Achenes 1.5-2.5 mm; beak 0.7-1.2 mm, at least 1/3 the length of the achene.

The common and perhaps the only species in southern Ontario. It is difficult to reliably distinguish it from other species unless at least partially developed fruit is present.

Little is known about the variability of this species. In particular the consistency of the nectary shape and the variability of the vegetative characters need careful examination.

Voss (1985) discusses the variability of Michigan plants at some length, but the situation there seems very confused.

3. R. trichophyllus Chaix

Leaves not more than 40 mm, usually not collapsing when removed from water; free petiole usually more than half the length of the stipular portion. Petals 3-5 mm; nectaries lunate or semicircular. Achenes 1.5-2.5 mm; beak 0.3-0.5 mm.

Specimens determined by Cook from throughout Ontario. However its occurrence in the south is based only on flowering specimens. In a few of these there are some very immature achenes present and these, in my view, are developing long beaks, so should be determined as R. longirostris.

4. R. subrigidus W.B. Drew

Leaves not more than 40 mm, usually not collapsing when removed from water; free petiole much shorter than the stipular portion. Petals 5-10 mm; nectaries circular. Achenes 1-1.5 mm; beak 0.2-0.4 mm.

Not recognized by Cook (1966), nor treated by him in synonymy. However, he determined many specimens from northern Ontario (in TRT) as R. aquatilis 'subrigidus.'

In addition to the above a few specimens from Manitoba have been determined by Cook as R. sphaerospermus Boiss. and Blanche. This species will key out to R. subrigidus, but it has petals 9-25 mm, with pyriform nectaries, and the achenes less than 1 mm, with a minute beak. Ranunculus sphaerospermus is a plant of temporary ponds otherwise known only from southeastern Europe to the Himalayas.

References

Cook, C.D.K. 1966. A monographic study of Ranunculus subgenus Batrachium (DC.) A. Gray. Mitt. Bot. Staatssam. Munchen. 6:47-237.

Morton, J.K. & J.M. Venn. 1984. The Flora of Manitoulin Island. Publ. Univ. Waterlo. Biol. Ser. 28. 181 pp.

Voss, E.G. 1985. Michigan Flora. 2. Cranbrook Institute of Science. 724 pp.◆

THE CANADIAN BOTANISTS' CORRESPONDENCE ASSOCIATION

Bernard Boivin*, formerly of Herbier Louis-Marie, Université Laval, Québec G1K 7P4

[Ed. note: The paper below is the result of Jack Lord's editing of tape recordings and notes of Bernard Boivin's address to the first gathering of Ontario field botanists at Red Bay (Bruce Peninsula) on 9 June 1984. Although Dr. Boivin provided comments on an earlier draft for publication in The Plant Press, the manuscript remained incomplete at the time of his death.

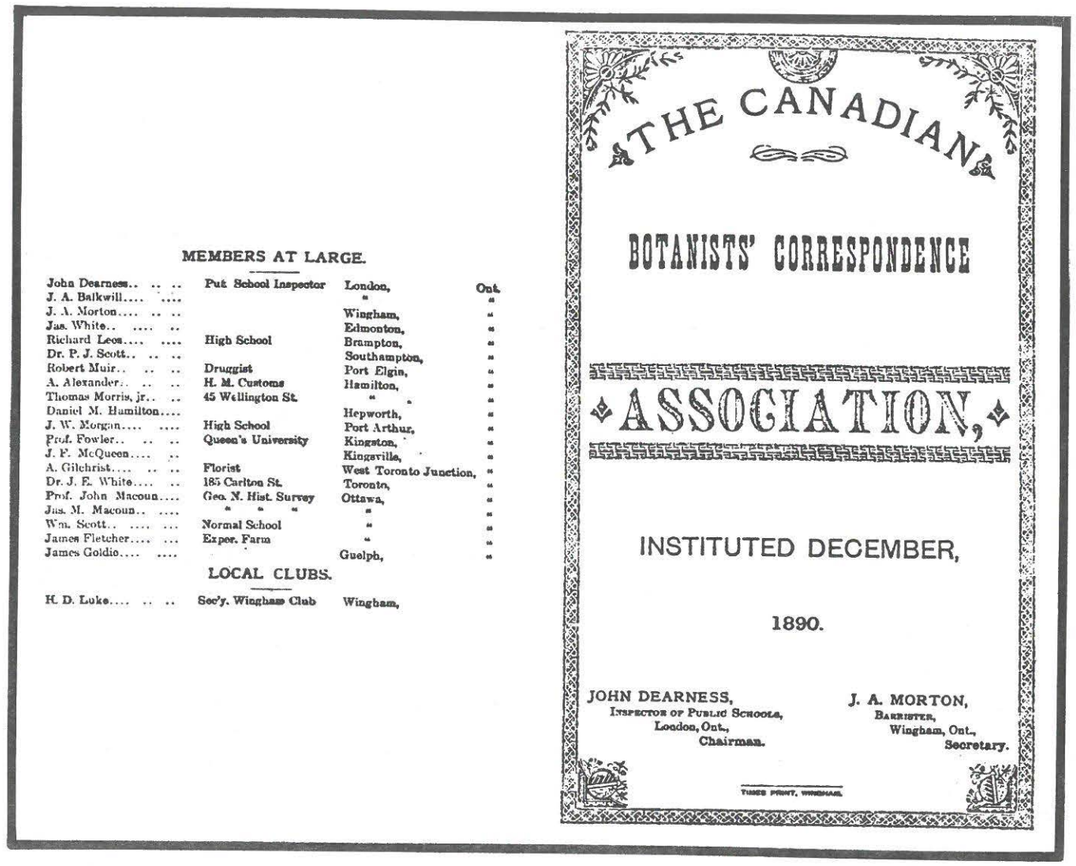
Much of the information about the botanists discussed below is noted in Survey of Canadian Herbaria (Boivin 1980). W.W. Judd and Wm.G. Stewart provided additional reference material for the editors.

Wm. G. Stewart sent the editor a photo copy of The Canadian Botanists' Correspondence Association (Fig. 1) in late 1982 when the possibility of establishing a network of field botanists in Ontario was being discussed. Dr. Boivin had sent this to Bill Stewart some years before. When we gathered at Red Bay, it seemed appropriate that Dr. Boivin provide a history of this similar organization that existed nearly a century ago. So, finally, here is the text of Bernard Boivin's address.

*Bernard Boivin died in May 1985.]

The history of the C.B.C.A. is short indeed. The Association was created in London in 1890. John Dearness and James Morton appear to have been the key instigators. After 21 members were recruited, officers were elected and the aforementioned circular (Fig. 1) was published. Nothing more is known of this society and it does not seem to have accomplished anything significant. It is interesting, however, that the membership included some quite prestigious Canadian botanists. The full membership is listed below in alphabetical order, together with some biographical notes.

Andrew ALEXANDER: (1832-1914) was a bookkeeper, customs officer and amateur botanist and horticulturist in Hamilton. For 40 years



MEMBERS AT LARGE.

John Dearness	Pub. School Inspector	London,	Ont.
J. A. Balkwill		"	"
J. A. Morton		Wingham,	"
Jas. White		Edmonton,	"
Richard Leos	High School	Brampton,	"
Dr. P. J. Scott		Southampton,	"
Robert Muir	Druggist	Port Elgin,	"
A. Alexander	H. M. Customs	Hamilton,	"
Thomas Morris, jr.	45 Wellington St.	"	"
Daniel M. Hamilton		Hepworth,	"
J. W. Morgan	High School	Port Arthur,	"
Prof. Fowler	Queen's University	Kingston,	"
J. F. McQueen		Kingsville,	"
A. Gilchrist	Florist	West Toronto Junction,	"
Dr. J. E. White	185 Carlton St.	Toronto,	"
Prof. John Macoun	Geo. N. Hist. Survey	Ottawa,	"
Jas. M. Macoun	" "	"	"
Wm. Scott	Normal School	"	"
James Fletcher	Exper. Farm	"	"
James Goldie		Guelph,	"

LOCAL CLUBS.

H. D. Luke	Sec'y. Wingham Club	Wingham,	

THE CANADIAN

BOTANISTS' CORRESPONDENCE

ASSOCIATION,

INSTITUTED DECEMBER,

1890.

JOHN DEARNESS, Inspector of Public Schools, London, Ont., Chairman.

J. A. MORTON, Barrister, Wingham, Ont., Secretary.

THREE PRINT, WINGHAM.

Figure 1. Photo copy of the circular of the Canadian Botanists' Correspondence Association.

he was a leading member of The Hamilton Association for the Advancement of Literature, Science and Art. He published two papers, one of which was a list of the plants of the Hamilton district. This list was based mainly on the collections of Alexander and his co-author, J.M. Dickson. Eventually the Hamilton Association acquired the Alexander herbarium. It is now incorporated into HAM.

John A. BALKWILL: of London, was a member of the botanical and entomological sections of the Entomological Society of Ontario and was elected chairman of the botanical section in both 1892 and 1903.

Balkwill, an active plant collector, contributed heavily to the Society's herbarium of at least 500 sheets, and served as curator, doing

much of the monitoring and filing of specimens. We do not know whether he maintained a personal herbarium. Balkwill specimens are today found at CAN, DAO, MTMG and MICH although how these were acquired and whether they are the remains of the Entomological Society herbarium or a personal herbarium is unknown.

John DEARNESS: (1852-1954) was born in Hamilton and died in London, Ontario, at age 102, Canada's longest lived botanist. Professionally, he began his career as a school teacher but later became a principal, then an inspector. He ended his career as Professor of Botany at the University of Western Ontario.

An amateur botanist, Dearness seems to have started collecting plants around 1880. Over 60 years he built a collection of about 50,000 specimens, some 90% of which was mycological. (Indeed he was the outstanding amateur mycologist of this country for more than a half century). His herbarium was eventually bequeathed to MTJB. At present, a large block of the mycological collection is on an extended loan at DAOM.

Evidently John Macoun invited Dearness to author the section on fungi for his Catalogue of Canadian Plants but it seems no manuscript was ever prepared. However, Dearness is credited with 57 published papers. His 1916 paper on new species of fungi was a turning point for Canadian plant taxonomy. Until then, newly discovered Canadian plants were regularly described and named by foreign botanists, but rarely by Canadians. But from 1916 on, taxonomic papers by Canadian botanists were much more common.

Dearness' name is known to me as a specific epithet in at least 12 genera of fungi: Acrothera, Calonectria, Cylindrosporium, Helotium, Isariopsis, Metasphearia, Phyllosticta, Pleospora, Protoventuria, Pyrenopeziza, Septoria, and Tephrina. No doubt my list is incomplete.

James FLETCHER (1852-1908) was born in England and came to Canada in 1884 as a bank clerk. Two years later he became a librarian. Keenly interested in natural history, he was one of the founders, in 1879, of the Ottawa Field-Naturalists' Club. In 1886 he was appointed Dominion Entomologist and Botanist, and shortly thereafter he donated his 3,000 sheet herbarium to the Department of Agriculture. Thus was started the herbarium that was to become the largest in Canada. In his new appointment, Fletcher's interest gradually shifted from botany to entomology. He started an insect collection that has become one of the largest in the world. His bibliography contains hundreds of titles and the National Archives hold about 30,000 of his letters.

James FOWLER: (1829-1923), born in New Brunswick, was an ordained Presbyterian minister and science teacher at the Normal School in Fredericton. A keen and active naturalist, Fowler was author of the first annotated list of New Brunswick plants and was invited to write the official account of the geology of that province.

In 1880, Fowler accepted a post at Queen's University, Kingston as a lecturer in natural science. In 1885, he published a much enlarged revision of his earlier New Brunswick plant list. His botanical interest never shifted to Ontario. Of his twelve published papers, eight deal with New Brunswick, one with Nova Scotia, one with Ontario (one page), and two are of a general nature. A few reports of the activities of the herbarium were also published.

Fowler took a keen interest in the Queen's University herbarium in which his personal collection of 15,000 specimens, second in size only to that of John Macoun, is incorporated. Fowler's duplicates are widely distributed.

By the time of his retirement in 1907, James Fowler was in his 79th year.

A. GILCHRIST: was a florist from West Toronto Junction. He corresponded with John Macoun and at least one letter, which I have not read, is preserved at CAN. Otherwise, he is unknown to me.

James GOLDIE: (1825-1912) was born in Scotland, immigrated to the United States in 1842 and to Canada in 1860. He died at Guelph. He was a businessman with a special interest in flour mills. The nature of his botanical interest is unknown to me. I know only that he belonged to the C.B.C.A. and the Botanical Club of Canada. There is some correspondence with John Macoun at CAN, but I have not read it.

James Goldie's father, John Goldie, is well known as the botanist for whom goldie's fern

(Dryopteris goldiana (Hook.) Gray) is named, in addition to being the authority for several species such as Ranunculus rhomboideus Goldie (prairie buttercup).

Daniel M. HAMILTON: of Hepworth, Ontario, is unknown to me.

Richard LEES: (1856-1938) was a high school teacher and amateur botanist in St. Thomas. Later he became principal, then inspector. From Wm. G. Stewart's (1979) biography of Lees, we know that he was active in various natural history societies and that his interests were quite diverse. As an amateur botanist he collected vascular plants, mosses, lichens, and algae. His special interest in algae led to the preparation of an illustrated thesis on fresh water algae of southern Ontario, based mainly on specimens from Stoney Lake.

Lees does not seem to have maintained a permanent herbarium, but a few hundred specimens are to be found today at QK; others are at OXF and TRT. His lectures and research manuscripts remain unpublished.

H.D. LUKE: was secretary of an affiliated club at Wingham. I have no further information on H.D. Luke. Nothing further about the membership of the Wingham Club is known, though we might infer that James Morton belonged.

James Melville MACOUN: was the eldest son of John Macoun and his right hand man for more than 40 years. He was in charge of natural history on the Thomas Fawcett expedition to survey the Athabasca River in 1888. He collected plant specimens from the Arrow Lakes and Mount Robson, B.C. (1890), and the Peace River district (1891), and made a very large collection from the western shore of Hudson Bay (1910). His assistance in the botanical work at the National Museum in 1906-7 was followed by his appointment as Chief of the Biological Division of the Geological Survey of Canada. He died in 1920 at about the age of 60 years, predeceasing his father by six months.

John MACOUN: (1831-1920) is well known for his numerous explorations, publications, and his autobiography. I shall mention only that he came to Ontario to homestead in 1840 and developed an interest in exploration and natural history. Eventually he became Chief Naturalist of the Geological Survey of Canada. He owned the largest private herbarium and created the largest institutional herbarium of his time in Canada. He wrote extensively on natural history. His main contribution, Catalogue of Canadian Plants, is still very useful today.

J.F. MCQUEEN: of Kingsville, is known only through some specimens (at least four) that were originally part of the Dearness herbarium and are now at DAO. These specimens were all from Essex County.

J.W. MORGAN: of Port Arthur, Ontario, is very little known. From 1897 to 1901, he taught at Port Arthur High School. In 1907, he was a mining recorder. Three times in 1898-99 he sent plants to James Fletcher for identification. Relevant letters are in the National Archives. I have seen no record of existing specimens.

Thomas MORRIS Jr.: from Hamilton, is unknown to me.

James A. MORTON: (1848-1932) a lawyer and amateur botanist, lived in Wingham. W.W. Judd (1979) provided a thorough biography of Morton so I shall only point out that he was an important contributor to the herbarium of the botany section of the Entomological Society of Ontario. Furthermore, in 1919, Morton donated his herbarium of 6,000 sheets to The University of Western Ontario where it became the basis of UWO. Duplicates are widely distributed at the following herbaria: CAN, DAO, TRT, E, GH, HHFT, MSC, ND, NY, OAC, PENN, QFA, and QK.

R.S. MUIR: was a druggist at Port Elgin in 1890, but in 1895 he was living in Walkerton. I have no data on his botanical activities, except that he was also a member of the Botanical Club of Canada.

Patrick John SCOTT: was a medical doctor practising in Southampton. Very little is known of his botanical activities except that he collected plants in 1890, 1898, and 1901. One specimen is at CAN; others were part of the Dearness herbarium, now at DAO. We do not know what happened to his personal herbarium

nor how large it was. However, in view of the fact that he twice had labels printed for it, we may infer that it was a substantial collection.

William SCOTT: (1845-1920) was a normal school teacher, then principal, first in Toronto and later in Ottawa. An amateur botanist who collected extensively wherever he travelled, his herbarium of 5,500 sheets is now at TRT. Duplicates are known at CAN, CU, FFT, GH, MSC, NY, QFA, QUE, TRT, and UWO.

Some letters are in the archives at CAN. Scott was also the author of 9 short botanical papers.

J.E. WHITE: a Toronto doctor, is an enigma. I have no data on him and know of no herbarium specimens. My only information is that he lived at 159 Carlton Street. He may have been the husband of Mrs. J.E. White, also of Toronto, who did a limited amount of collecting from 1889 to 1902. Her specimens are at DAO and her 1894 correspondence with James Fletcher is in the National Archives.

James WHITE: (1848-1931) of Snelgrove (formerly Edmonton, now part of the City of Brampton) was a school teacher and amateur botanist. His 3,000 sheet herbarium, originally at FFT, was moved to TRT in 1976. White's duplicates are widely distributed: CAN, DAO, E, GH, HAM, MT, QK, and UWO each contain at least a few.

White's botanical activities ranged from 1889 to at least 1917. He was a member of various botanical and natural history societies and primarily interested in the flora of Peel County. He wrote a number of short papers, mostly published in the Ontario Natural Sciences Bulletin. I have seven titles on file.

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Spiranthes ovalis Lindley var. erostellata Catling (OVAL LADIES'-TRESSES): A NEW ORCHID FOR CANADA FROM LAMBTON COUNTY, ONTARIO

J. Ross Brown, Tupperville, Ontario NOP 2MO

Spiranthes ovalis, widespread but local in southeastern North America, consists of 2 varieties: 1. S. ovalis var. ovalis, an allogamous (outcrossing) plant of wooded sites, confined to the southern United States, and 2. S. ovalis var. erostellata, a recently described, autogamous (self-pollinating) plant (Catling 1983), which extends north to Illinois, Michigan, and Ohio. It is gradually expanding its range northward in woodland and old field sites (Sheviak 1974; Case & Catling 1983). In the last 20 years, it has been discovered in Kalamazoo County, Michigan and Lucas County in northwestern Ohio (Case & Catling 1983).

Luck frequently plays a major role in the discovery of rare plants. Such was the case with Spiranthes ovalis. On 11 September 1985, Gary Allen, Larry Lamb and I were slowly driving down a Walpole Island sideroad, trying to choose one last area to investigate before supper. Suddenly, Larry saw several tall, yellow-flowered composites beyond the roadside trees. Hoping that the plants might be Silphium terebinthinaceum (prairie-dock), we decided to explore the site. Unfortunately, they turned out to be the nearly ubiquitous Helianthus giganteus (tall sunflower). However, the area contained many interesting species, including several clumps of Cypripedium candidum (small white lady's-slipper).

After we had covered several hundred metres of this narrow meadow, I suggested exploring another clearing visible to our west. However, Gary and Larry felt that we should continue to the end of the "original" meadow. This proved to be a fortunate decision. Less than a minute later, I happened to glance down and see a Spiranthes orchid, familiar from the literature, but unlike any I had seen in Ontario. Excitedly I shouted, "New orchid for Canada!" It is extremely rewarding to discover a new plant for Canada (see Figure 1), and doubly so when the discovery is shared with friends. Within minutes, we found over 20 plants of S. ovalis, all in an area of ± 50 X 15m. In 6 more visits

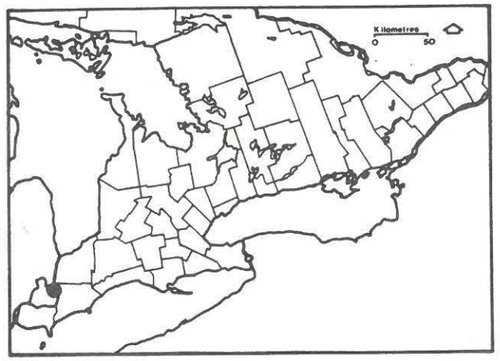


Figure 1. Approximate location of the first Canadian record of Spiranthes ovalis var. erostellata on Walpole Island, southwestern Ontario.

over the next 17 days, 32 flowering and 4 non-flowering plants were found. Flowering season was mainly throughout September with a few flowers continuing through most of October.

A closer examination of our plants revealed that they were referable to Spiranthes ovalis var. erostellata (Fig. 2), which differs from var. ovalis in several ways. Unlike the showy, well-expanded lips of the latter (see Luer 1975), var. erostellata has strongly canaliculate lips with prominently incurved margins, producing a typically narrow, triangular outline. The self-pollinating flowers are somewhat smaller, without the viscidium and rostellum of var. ovalis (Catling 1983). They are apparently shorter-lived, with an average of 10 flowers at their peak at a given time, whereas var. ovalis may display at least 24 flowers at once. Flowering rate seems to be ± 2 per day, with flowers at peak for 5 or 6 days. The corolla then closes slightly, but often remains intact for several more days.

Flowers of var. erostellata seem somewhat less white than those of var. ovalis and are suffused with green basally for ± 1 mm. Outer sepal surfaces may have a slightly greenish tint, and lip centres are somewhat cream coloured. The tiny flowers, smallest of any native Spiranthes, look disproportionately small on the often surprisingly tall plants. Lowermost ovaries are frequently well-expanded on plants still largely in bud. Interestingly, two plants were apparently cleistogamous, with no open flowers.

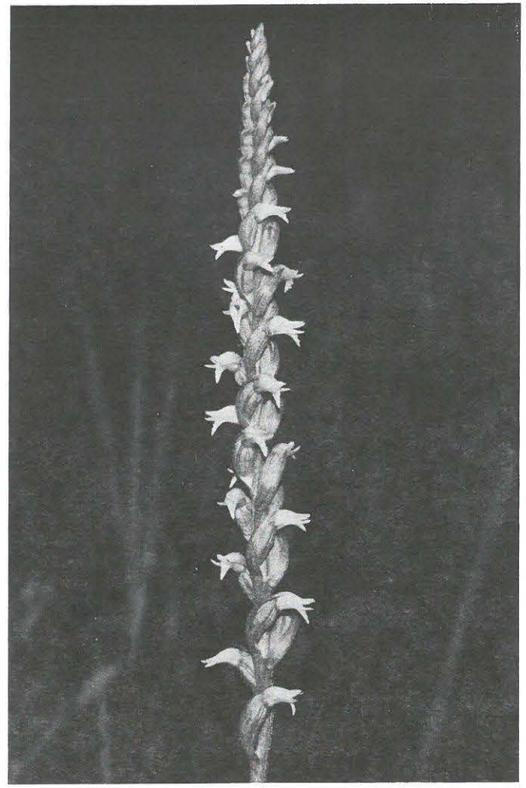


Figure 2. Inflorescence of Spiranthes ovalis var. erostellata from Walpole Island.

Stems and leaves are a distinctive dark green. Measurements and numerical data were obtained from several plants (Table 1).

On Walpole Island, Spiranthes ovalis grows in damp, calcareous (pH 7.9 - 8.1), predominantly clay soil. Formerly agricultural, the area is periodically burned, keeping shrubby growth to a minimum. Fred Case, who visited the site on 28 September, was surprised at the wide open habitat. In Michigan and northwestern Ohio, the plant grows in forested areas. Fred also stated that several of the S. ovalis plants were the tallest he has seen.

Table 1. Data for a colony of 32 Spiranthes ovalis var. erostellata at Walpole Island 1985-86.

Character	
Plant height (cm)	14.3 - 47.5
No. of flowers per plant	9 - 48
Flower length (mm)	2.7 - 5.5
Raceme length (cm)	±2.5 - 9.8
No. of basal leaves	1 - 2
Basal leaf length (cm)	- - 14.4
Basal leaf width (cm)	- - 1.1
No. of lower bracts	1 - 2
Lower bract length (cm)	- - 10.5
No. of upper bracts	3 - 4
Upper bract length (mm)	- - 12.5

Over 40 associated species were identified within 1 m of Spiranthes ovalis, the 5 most frequent were Aster ericoides (heath aster), Fragaria virginiana (wild strawberry), Gentiana procera (fringed gentian), Rudbeckia hirta (black-eyed susan) and Solidago altissima (tall goldenrod). Other interesting associates, virtually all calcophiles, included Aster dumosus var. strictior (bushy aster), Liatris spicata (dense blazing-star), Lobelia spicata (pale spike lobelia), Lysimachia quadriflora (prairie loosestrife), Pycnanthemum virginianum (mountain mint), Solidago riddellii (riddell's goldenrod), Solidago rigida (stiff-leaved goldenrod), Sorghastrum nutans (indian grass), Vernonia gigantea (tall ironweed) and Veronicastrum virginicum (culver's root), Liparis loeselii (loesel's twayblade), and Spiranthes magnicamporum (great plains ladies'-tresses).

On 31 October 1985, Gary Allen and I revisited the site. Surprisingly, a small plant (found at onset of anthesis by Mrs. Fred Case on 28 September) still had 3 or 4 flowers and as many buds. Apparently not all of the tiny, uppermost buds always open. On some plants capsules were brown and mature; on others all were still green. Seed collected from several plants was sent to Allan Anderson of the University of Guelph. Allan reports that the seeds have germinated.

We were saddened to see hundreds of logs, recently cut from nearby silver maple swamps, scattered across two of the formerly lush, prairie-like clearings which provide access to the Spiranthes ovalis colony. Two of these meadows, mown almost to the ground in September, are slated for residential development. Many logs had been skidded out through the clearing adjacent to the S. ovalis site, destroying most of the Cypripedium candidum clumps mentioned above. Several trees had been cut within 100 m of S. ovalis. The signs were indeed ominous: Canada could lose its newest orchid within months of discovery. Fortunately, field work in 1986 revealed that the site was intact. However, only 11 S. ovalis plants flowered, compared to 32 plants which flowered in 1985. Related Spiranthes, such as S. ochroleuca (yellow ladies'-tresses) and S. romanzoffiana (hooded ladies'-tresses), may exhibit similar year-to-year fluctuations. The decline in the apparent number of plants might, however, be a result of the very dry weather of late July and August 1985. In that year, S. ovalis was seen mainly in the central, somewhat drier portion of the area. In 1986, most plants were found in somewhat lower ground or in the partial shade of taller vegetation.

Documentation: A specimen has been deposited in the National Herbarium (CAN).

Acknowledgements: This discovery resulted from a resource survey encouraged by the Walpole Island Band Council and funded by World Wildlife Fund and the Ontario Ministry of Natural Resources. The author is grateful to Gary Allen and Larry Lamb for help in the field; to Jocelyn Webber and Paul Catling for helpful revisions of the manuscript; and to Fred Case and Paul Catling for verifying the herbarium specimen.

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[Ed. note: This paper was in press when Whiting & Catling's (1986) Orchids of Ontario was published, hence it was not included as a reference in this paper.] ◆

RATING POPULAR WILDFLOWER GUIDES

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In the course of giving wildflower lectures at the National Museum of Natural Sciences, I discuss several popular wildflower field guides with the audience, and comment on their usefulness and limitations. The following evaluation is an elaboration of this topic. It is given mainly as an aid to novice botanists who may like some guidance in selecting their first or additional field guides to eastern wildflowers.

Wildflower picture books and guides are designed to serve the interests and needs of the marketplace, and to reflect the publishers' desire to publish a product that is different in scope or appearance so as to increase sales and be competitive. The various guides that are available all have their good points and shortcomings, but some do not work at all when pretty pictures are merely juxtaposed with traditional taxonomic treatments of the species.

The main criteria for evaluating an illustrated wildflower guide, if identifications are to be made with confidence and ease, are comprehensiveness in species coverage and the degree to which content organization facilitates its ease of use. Consequently, the total number of species included should be relatively high in proportion to the flora of the region, and the amount of cross-referencing necessary between illustrative material and the text should be at a minimum. Any device that groups morphologically similar species is also highly desirable. Of course, clarity of the illustrations is assumed, whether they are photos or drawings. Visual appeal in the overall layout is important, but should not be an overriding consideration.

When I began identifying plants in the early 1960's, there were few popular guides to wildflowers available. At the time, I had, as yet, little formal training in plant identification. Because Gray's Manual and the Britton and Brown Flora were cumbersome for a novice, I bought a small, inexpensive, pocket-sized flora called Wild Plants of Canada by Spotton, Cosens, & Ivey. It was an old book, published in 1926, that had been used by a previous generation of naturalists (Cosens was highlighted in the December 1985 issue of The Plant Press). This simplified flora, which lacked illustrations, combined with a recently published and illustrated book on Native Wild Plants by Montgomery (1962) served as my resources for plant identification during my first two seasons of botanizing. For one whose interest in plant identification grew rapidly, these were soon inadequate. Gray's Manual, which I bought soon after, was, in hindsight, a bargain at under $ 16. My first popularized reference books, however, served their purpose of introducing me to simplified keys, and the usefulness of creating artificial groupings as aids for identification.

The basic principle used by Peterson in launching his first illustrated field guide to birds in 1934, namely, that of using obvious similarities and differences in field characters organized into artificial groupings, has been experimented with by both the publishers of the Peterson series and others. The technique is basically that of using a pictorial "key" to simplify identifications.

The most obvious difference between guides is that some use b/w line and/or colour illustrations and others are based primarily on colour photographs. This basic difference in approach also reflects on the species coverage possible within the limits of a handy, pocket-sized guide. A guide based on illustrations generally has at least double the species coverage compared to a photo guide because it lends itself to a more efficient use of space. The use of original illustrations also allows for a greater flexibility in the choice of enlargement or detail to be selected than do photographs.

Wildflower Guides

Wherry (1948)

One of the earliest illustrated wildflower guides that covers part of southeastern Canada must surely be Wherry's Wild Flower Guide. It covers approximately the same area as Gray's Manual, and in appearance, looks like a modern plant field guide. Although the keys to the families are somewhat simplified, they basically use the more traditional, technical floral characteristics. The organization of the monocot and dicot families in systematic order is, similarly, traditional in presentation. Some slight simplification appears in the organization of the dicot families into free-petal and united petal groupings. The species texts highlight briefly some characteristic features and provide information on range, habitat, culture, and comments on taxonomy of similar

species. The illustrations are grouped in plates placed at regular intervals with 192 species being illustrated in colour and 236 in black and white. In total, over 500 species are treated, with one hundred of these grouped separately as introduced wildflowers (weeds). The species coverage, considering the large area included, is obviously rather limited, but the author had attempted to make the guide usable by illustrating the majority of the species, nearly one half of them in colour, by using simplified keys, and by providing lists of species by flower colour. Overall, this early guide was a good attempt at popularizing the common wildflowers of eastern North America.

Montgomery (1962)

Although other guides to plants of our region appeared in the Peterson series in the following decade on ferns and on trees and shrubs, the next wildflower guide to be published for our region was Montgomery's Native Wild Plants. For me, this was a useful little book. It combined line drawings of 298 species with four colour plates, each with six photos. It had very limited coverage, but contained a combination of features that reflected the coming changes in wildflower guide formats. Identifications were to be made by using a simple key that recognized seven broad artificial groups based on such characteristics as plant type, kinds of flowers, leaf attachment, and habitat. Within each group, other simple floral and vegetative characters were used to key out the species. A useful feature was the close juxtapositioning of illustrations and texts. Although very much an introductory book, the author attempted to simplify the process of identification within the framework of a pleasing format.

Peterson & McKenny (1968)

It was another six years until the first really comprehensive wildflower guide for northeastern North America became available. A Field Guide to Wildflowers, by Peterson & McKenny, makes use of "a visual approach, arranged by color, form and detail." It includes "1293 species in 84 families;" actually, 86 families are described at the front of the book and assigned symbols, with 1344 drawings illustrating the work. In a tradition that is generally followed by most authors, the term wildflower is used to include virtually any herbaceous flowering plant outside of cultivation. Left out are the large and technically difficult groups such as the grasses, sedges, and rushes, but included are a few of the showier flowering shrubs and vines.

The overriding characteristic used for visual identification and simplification of the selection process is flower colour. Within each colour, a combination of features based on habitat and simple floral and vegetative features are used to further subdivide plants into recognizable groups. The illustrations, both black and white and colour, are accurately and simply rendered. The placement of the concise texts, which include comments on the form, habitat, distribution, and occasionally other similar species, on the pages facing the illustrations, eliminates the need for cross-referencing. Species whose flower colours vary are represented in more than one colour group, but without duplicating the same illustrations twice. It may appear in colour in one group and as an altered b/w illustration in another.

The Peterson & McKenny guide gives brief definitions of the families treated in the book, and assigns graphic symbols to each that are reproduced opposite each species' text. Another helpful feature is the glossary, which to a large extent, is also illustrated by drawings on the endpapers. The brief introduction provides some basic discussion on identification problems, the size of the flora, and some references, all of which, although brief, are helpful to the user. The main criticism of the guide is that identifications are exclusively a search-and-find procedure within a colour grouping. There is a limited degree of ordering of the subgroups within a colour, however, in that the monocots are usually near the front and the composites at the end.

Perhaps one cannot include within the pages of a simple identification guide more than one mode of identification. In this case, if simple keys based on floral and vegetative form had been included to identify the subgroups within the colour categories, it is doubtful if time would be saved by keying plants when flipping pages allows a relatively fast access to the subgroups. These can be clearly identified visually by the illustrations, and by the category titles at the top of the facing pages. To many of us, the book has been a handy

popular reference guide for a considerable number of years. Another positive feature is that over the last 17 years, the binding of my hard cover copy has remained intact under modest use.

Newcomb (1977)

The most recent milestone in the production of wildflower guides to northeastern North America is Newcomb's Wildflower Guide. This guide covers the same area as that by Peterson & McKenny, but has expanded the coverage to 1375 species. According to Jocelyn Webbers' unpublished tabulation, Newcomb's guide contains 1059 Ontario species as compared with 943 in Peterson & McKenny. Although a potential Ontario buyer could readily see that there is a difference in coverage between the guides, it would not have been evident that this difference in fact reflects a useful gain for Ontario users.

Newcomb's guide includes 32 colour plates, nine more than in Peterson & McKenny, and 190 b/w plates compared to 168. The line drawings are somewhat more delicate in appearance than those in Peterson & McKenny, which tend to be bolder in outline. Unfortunately, in some of the Newcomb b/w plates, the lines fade out resulting in a loss of sharpness. The colour illustrations are not as well rendered as those of Peterson & McKenny, which have greater leaf texture and subtle colour differences evident, but that does not detract significantly from their overall aesthetics or usability.

The main characteristic that distinguishes the Newcomb guide from its counterpart is that it presents an alternate way of identifying wildflowers using a simple, two ranked key system. Using the characteristics of flower form, numbers of flower parts, type of plant, attachment of the leaves, and type of leaf represented, a three digit numerical code is obtained. The code allows entry into a locator key that uses additional simple choices based on leaf and flower form and colour. Ultimately a page reference to a plate of illustrations is obtained where the species can be visually identified from similar plants aided by the texts on the facing page. The technique promotes the orderly examination of a number of morphological characteristics of a specimen and is, therefore, a better training tool for those wanting to gain confidence and some expertise before attempting the more technical keys found in manuals. Newcomb's guide also includes such features as labelled illustrations of inflorescence and leaf types on the endpapers, as in the Peterson & McKenny guide, but in addition, contains more explanatory information on terminology, and has a more inclusive glossary. As an aside, the binding of my hard copy broke after only minimal use.

One should not attempt to rate these two guides in that each probably serves best a different user group. The Peterson & McKenny guide, with its visual approach stressing flower colour, might be most appropriate for the more casual naturalist. On the other hand, I would recommend Newcomb to those who wish to take up plant identification as a serious hobby. For those who have a reasonable acquaintance with the common species and genera, however, I expect that the Peterson & McKenny guide may be a bit faster to use for quick reference. It is probably easier to flip through a few colour plates than to find a page number using the three digit code and locator key. Of course a knowledgeable naturalist could use the index in either book for fast reference. For such an individual it would seem that the main criterion may simply be the comprehensiveness in species coverage. Newcomb's guide has one additional advantage in bilingual Canada - there is a French edition available.

Niering & Olmstead (1979)

The format and scope of the Audubon Society Field Guide to North American Wildflowers (Eastern Region) by Niering & Olmstead is quite different from the last two guides discussed above. It is a photo guide that covers a much larger area extending, eastward from the Rockies, and from the Gulf of Mexico to the Arctic. A total of 658 colour photos together with some b/w illustrations of species and floral and vegetative structures are used to illustrate 623 plants. There are also references in the texts to about 400 other species. According to Jocelyn's figures, only about 476 Ontario wildflowers are represented in this guide. It is clear that the use of photographs and the expansion of the area covered has necessitated the reduction of species coverage. The number of species treated could, however, be increased if the page size were enlarged to about the same dimension as the Peterson & McKenny or Newcomb guides, and the text organized differently to

reduce the wasted space, about one third of each page. But then, this was probably not the primary concern when the plans for the entire series of Audubon guides was established prior to the publication of the first bird guides in 1977. It is unfortunate that the publishers selected a series of uniform style options for all of their guides. Comprehensiveness in coverage was sacrificed, at least in the wildflower guide, in opting for a small narrow book, large area of coverage, colour plates, and long texts with considerable wasted space.

The Audubon guide also differs from those of Peterson & McKenny and Newcomb by the inclusion of ten grasses and five sedges, a feature that perhaps would have been admirable if the numbers of species had been in the order of four times the number. As it stands, they should probably have been left out and other showier species included. Because the texts are separated from the photos, constant cross-referencing is necessary in order to check the descriptions. The organization of the text into alphabetically arranged families was another poor editorial decision. It would have been preferable, given that the texts were to be separated from the photos, to have the families arranged alphabetically within monocot and dicot family groupings. At least this distinction between the two main groups could have been used as another teaching device.

The photographs, which are generally of good quality and colour, are arranged by flower colour. Coloured thumb tabs, each with one of eight different graphic symbols, are used to divide the photos into colour groups and subgroups based on features such as flower and inflorescence form. Shrubs and vines are also distinguished, and as well, some fruiting plants are included. The meaning of a thumb tab symbol is explained in the introduction, and is also printed at the top left of each pair of plates. If the titles are required, in addition to the symbols to distinguish the species subgroups on the colour plates, then surely, the symbols are redundant or of minimal use. The Audubon guide no doubt has its appeal because of the photographs, but its limited coverage and minimal useful organization of material makes it a poor buy as an identification guide.

Venning (1984)

The guide by Venning to the identification of Wildflowers of North America, in the Golden series, is worth commenting on, even though it does not deal exclusively with plants of northeastern North America. This is a beautifully illustrated book containing representative wildflowers of the most common and widespread genera and families in North America. As in other guides in this series, the format is one based on the exclusive use of colour illustrations. The guide covers 1553 species in 826 genera and 101 families. The coloured plates of illustrations are arranged systematically, with the monocots followed by the dicots. The brief texts to families, genera, and species are located on the pages facing the illustrations. Being arranged in this manner with no artificial groupings, the book is not useful as a field "guide" to wildflowers, in spite of the title, nor to the genera and families. It is, however, an attractive, popular reference book that would be most useful to naturalists who avidly use their regional field guides and who would be interested in expanding their knowledge of North American genera and families. Some genera with inconspicuous or unattractive flowers (nettles, goosefeet, plantains, and ragweeds) are excluded as are such groups as the grasses and sedges that are normally excluded in wildflower guides. The scientific names are also not up-to-date in some groups, judging by the absence of the genus Platanthera, a currently recognized segregate from Habenaria. Its substantial coverage of genera and families, attractive format, and low price, however, make it a good buy.

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Spiranthes lucida (H.H. Eaton) Ames (SHINING LADIES'-TRESSES) IN KENT COUNTY, ONTARIO: SOME OBSERVATIONS

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Of Ontario's 10 recognized Spiranthes taxa, S. lucida (shining ladies'-tresses) is unique for the following reasons. It is: (a) our only spring-to-early-summer flowering species, (b) the only Ontario species with leaves persistent after anthesis, (c) our most vividly coloured Spiranthes, and (d) the only species adapted to pollination by Halictine bees (Catling 1983).

Spiranthes lucida grows in a variety of moist, calcareous habitats, such as lakeshores, riverbanks and streambanks, abandoned sand and gravel pits, crevices in limestone pavement, cottage lawns, and, rarely, marl fens. It is locally but widely distributed in southern Ontario (Fig. 1) exclusive of the Precambrian Shield (Catling & McKay 1973).

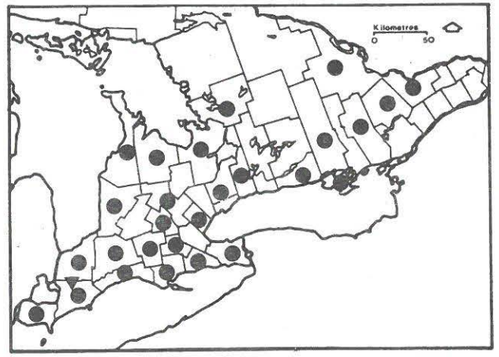


Figure 1. Counties of southern Ontario in which Spiranthes lucida has been reported (after Whiting & Catling 1984). Dots do not necessarily represent extant records or exact locations. Lindsay's Woods is represented by the symbol ▼.

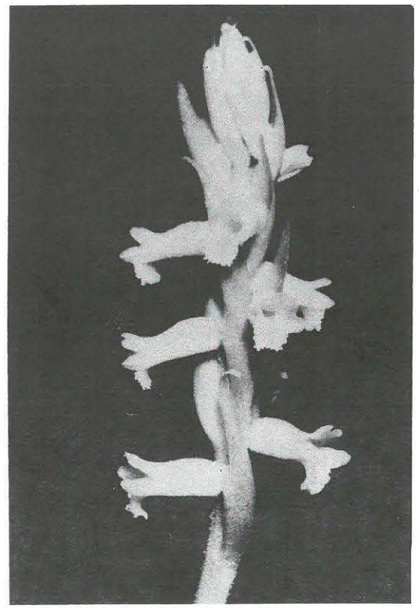


Figure 2. Spiranthes lucida from the sand pit at Lindsay's Woods, Kent County. This plant displays the laxly-flowered raceme typical at this site in 1985. The 8 "good" flowers were the most seen on any plant at any one time.

Many years ago, the late Mort Eddy, then assistant naturalist at Rondeau Provincial Park, discovered Spiranthes lucida there. However, it has not been seen at Rondeau, hence anywhere in Kent County, since the early 1960's.

On 3 June 1985 Spiranthes lucida (Fig. 2) was rediscovered in a small sand pit in Lindsay's Woods, 4 km east of Tupperville. As often happens, the discovery was made while I was studying another species, in this case Sisyrinchium montanum (blue-eyed-grass) found at the site a few days earlier. While examining plants of S. montanum, I glanced to my right and was surprised to see a flowering plant of Spiranthes

lucida. A brief search resulted in discovery of 2 more plants, one flowering, within a metre of the first.

For several years fellow orchid enthusiast Dennis Rupert and I had noticed that Spiranthes lucida from several sites generally displayed few "good" (i.e., open and apparently available for pollination) flowers. We wondered what combination of opening and fading rates led to this condition. With the discovery of a population of S. lucida within 4 km of home, I was given an unexpected but welcome opportunity to study this orchid's phenology, pollination ecology, morphology, and general ecology. Over the next 32 days, 14 more field trips, all but one on foot, were made to the site.

In all, over 100 plants of Spiranthes lucida were found at the Lindsay's Woods sand pit. However, only 8 of these produced flowers. During each site visit I recorded the number of flower buds, "good" flowers, and faded flowers for each plant. This information is summarized in Table 1. Other measurements useful in identifying this orchid were taken and this data is compared with published reports where available (Table 2). The plants were photographed and 2 soil samples were taken on 6 June 1985 by Gary Allen. Associated plants were listed.

Table 1. Summary of flowering data for 8 plants of the Lindsay's Woods population of Spiranthes lucida in 1985.

	range	average
Total number of flowers per plant	10 - 20	15
Flowering rate (fls. per day)	0.65 - 1.0	0.8
"good" flowers per plant on a given day	3 - 8	4.8
Duration of individual flowers (in days)	2 - 10	5.7

Phenology

The flowering period of the Lindsay's Woods population of Spiranthes lucida was estimated to be from approximately 28 May to 5 July in 1985. The first plant, found on 3 June, had 4 faded and 6 open flowers. By extrapolation, flowering must have begun around 25 to 28 May, the earliest for this species in Ontario to my knowledge. Plants in the lower, partly shaded portion of the sand pit flowered fully 2 weeks later than those in sunnier, somewhat drier sites.

As indicated in Table 1, the Kent County population of Spiranthes lucida never had more than 8 "good" flowers per plant on a given day; the average was nearly 5. This is in marked contrast to other native Spiranthes spp., which may have 20 to 50 "good" flowers per plant. (Spiranthes cernua and S. ochroleuca often have entire racemes in good flower.) Due to its typically small stature and the (usually) few, small flowers, S. lucida can be very inconspicuous and is probably often overlooked. However, showier plants with 12 to 18 open, closely spaced flowers in 3 secund ranks have been seen and photographed (Case & Catling 1983) from several Ontario locations. Greater flowering rates, genetic differences, or lack of pollinators could account for the greater number of "good" flowers exhibited by these other populations of S. lucida.

Pollination ecology

The pure white flowers of Spiranthes lucida have golden yellow lip centres, often heavily veined with bright green. The green veins fade somewhat as the flowers age. Yellow and green are known to be highly visible colours to bees (Van der Pijl & Dodson 1966), and these lip markings plus a central ridge of short, white hairs, probably act as nectar guides for pollinators. On one occasion I thought I detected a very faint, but pleasant fragrance. I was surprised to see, and very briefly at that, only one small bee during the entire study. Nevertheless, considering the relatively short-lived flowers and the fact that S. lucida is a sexual, allogamous (outcrossing) species (Catling 1983), it appeared that pollination of the Lindsay's Woods population was occurring very efficiently. By early July the plants that had flowered early had several mature capsules that were dispersing seed.

Table 2. Variation of morphological characters of the Lindsay's Woods population of Spiranthes lucida compared with maximum values from Bruce and Essex County populations and those reported in the literature (Case 1964; Luer 1975; Petrie 1981; and Williams & Williams 1983).

Character	Lindsays' Woods population range	Lindsays' Woods population average	Bruce and Essex populations (maximum values)	Published reports (authors listed above) range
Plant height (cm)	16 - 29	22	38	8 - 37
Number of leaves	6 - 7	6.5	-	3 - 4
Largest leaf length (cm)	6.4 - 14.6	11.2	14.7	3 - 12
Largest leaf width (cm)	1.2 - 2.2	1.6	2.2	0.5 - 1.5
Number of flowers	10 - 20	15	31	up to 20
Flower length (mm)	5.0 - 7.0	6.4	7.2	4 - 6
Largest bract length (cm)	1.1 - 1.6	1.3	-	1

Morphology

Comparison of the characters listed in Table 2 suggests that the population of Spiranthes lucida from Lindsay's Woods, and plants from Bruce and Essex counties, have character variations that fall beyond the range published in the literature (Case 1964; Luer 1975; Petrie 1981; and Williams & Williams 1983). Although the Ontario populations studied were too small to provide statistically significant results, many of the Ontario plants are larger and more robust than has been reported.

General ecology of the site

The Lindsay's Woods sand pit, approximately 15 X 45m, was excavated several years ago and is partially flooded in early spring. Almost all plants of Spiranthes lucida occurred in an area approximately 12 X 15m toward the higher, western end. The soil at this site was a moist, calcareous sand. The 2 samples tested had pH 7.5 and 7.8.

Of 33 associated species recorded within 1 m of Spiranthes lucida, the 16 most prevalent were: Ambrosia artemisiifolia (ragweed), Aster lanceolatus (panicled aster), Carex granularis (sedge), Daucus carota (wild carrot), Eleocharis sp. (spike-rush), Equisetum arvense (field horsetail), Eupatorium perfoliatum (boneset), Lycopus uniflorus (northern bugleweed), Plantago major (broad-leaved plantain), Poa compressa (canada bluegrass), Prunella vulgaris (self-heal), Salix spp. (willows), Taraxacum officinale (dandelion), Trifolium hybridum (alsike clover), and Ulmus americanus (white elm). Most of these species are common in southern Ontario and are typical colonizers of recently disturbed, moist, sandy sites. The most notable plants were Sisyrinchium montanum (blue-eyed grass), Spiranthes cernua (autumn ladies'-tresses), and Vernonia gigantea (tall ironweed). Several plants of Liparis loeselii (loesel's twayblade) grew along the southern bank of the sand pit, within a few metres of Spiranthes lucida.

Concluding remarks

More work could be done to investigate the variability of Ontario populations of Spiranthes lucida. For example, I think it would be interesting to compare my observations of flowering periods for the Lindsay's Woods population with similar data from other populations.

Acknowledgements: I thank Gary Allen for obtaining soil samples and Jocelyn Webber and Paul Catling for constructive criticism of the manuscript.

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[Ed. note: The paper above was in press when Whiting & Catling's (1986) Orchids of Ontario was published; therefore, this reference was not available.] ◆

SHELL FLOWER (Molucella laevis L.) ADVENTIVE IN MISSISSAUGA, ONTARIO

John A. Graydon, 105 Laurel Ave., Islington, Ontario M9B 4T1

On 4 August 1985, my wife Margaret and I were wandering around a new landfill site on the the shore of Lake Ontario near the Roy K. McMillan Conservation Area in Mississauga (Fig. 1). As we passed a cluster of metre-high boulders I noticed some unfamiliar plants sheltered on bare soil. We both took photos immediately and I picked a stem to take home for identification.

The mystery plant (Fig. 2) was an annual about 70 cm high with 6 green, conical calyces clustered at each node of the inflorescence. Lobes of the calyces were tipped with soft spines and there were also 12 soft spines at the base of the calyces in groups of three around the stem. (Eventually these became hard and sharp as a cluster of 4 small nutlets ripened in the base of each calyx. By this time the calyces were no longer green but had become a network of dried, brown veins.) Small, white, two-lipped, tubular flowers were set deeply in the calyx. These flowers had two pairs of stamens, one pair slightly longer than the other. The leaves were almost circu-

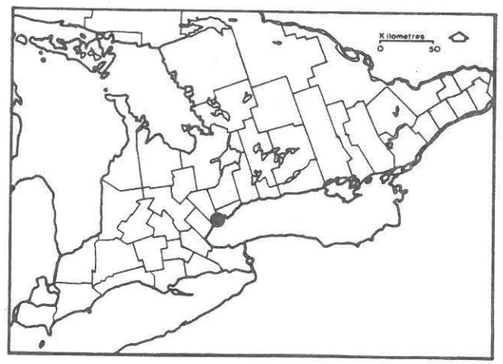


Figure 1. Location of Molucella laevis in Mississauga, southern Ontario.

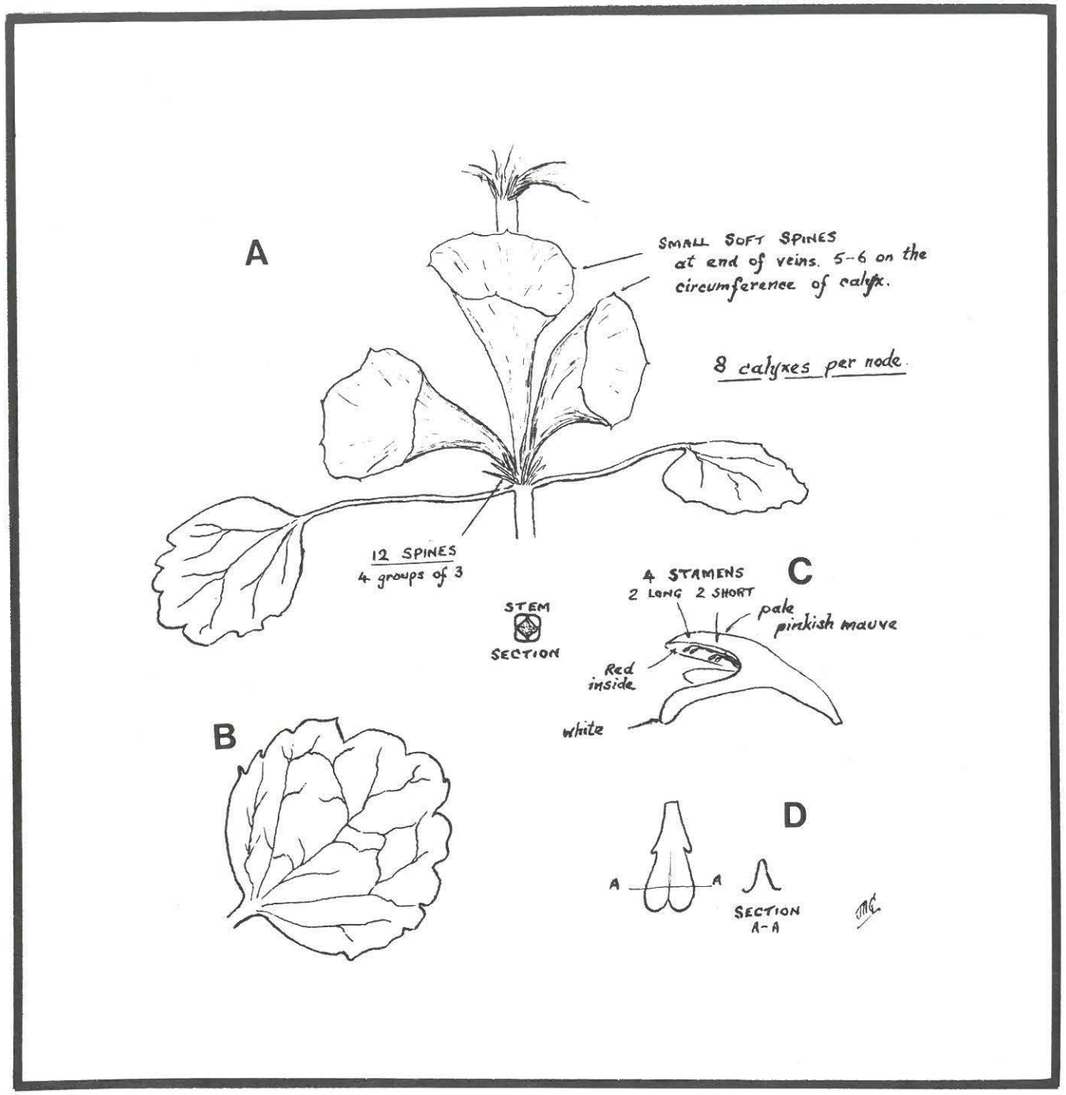


Figure 2. Molucella laevis. A. Node with some calyces removed to show spines (X1). B. Blade of leaf showing venation (X1). C. Lateral view of flower (X3). D. Cross section of lower lip of flower (X3).

lar with wavy, somewhat irregular margins and long petioles that reached beyond the flowers. The leaf arrangement was opposite, with each succeeding pair at right angles.

The square stems and the structure of the flowers gave me a hing that the mystery plant belonged to the mint family (Lamiaceae, formerly Labiatae). However, I could find no reference to the mystery plant in my popular wildflower guides and was unable to identify it to genus. I sent drawings and photos to The Plant Press hoping that someone there would be able to identify it. At first Jeff Kaiser and Jocelyn Webber were puzzled but later they identified it by means of keys in Bailey (1949). It turned out to be Molucella laevis L. (shell flower or bells of ireland; not to be confused with Alpinia speciosa [shellflower] seen in Florida and the West Indies).

On further research I found the plant in Exotica, a pictorial cyclopedia. There are two photos and a reference stating that the plant is native to Syria (Graf 1970). In Encyclopedia Britannica it is reported to be native to western Asia and "widely grown as a garden curiosity" and "popular in flower arrangements" (McClintock 1974), although I have not seen it used. I called a number of florists and nurseries and only one answered that they occasionally have it in stock. It is included in the most recent catalogue of Dominion Seed House.

It appears that shell flower at the Mississauga landfill site was not planted and represents a natural occurrence. Although 4 individual plants were observed in 1985, only one was found at this site in 1986. According to Dr. J.K. Morton of the University of Waterloo, shell flower may grow reasonably well in hot, dry summers in southern Ontario, but our growing season is too short for the seeds to ripen regularly, hence it rarely escapes from cultivation and is unlikely to persist. In view of the unusually wet summer in 1986, it will be interesting to see if shell flower persists in Mississauga. Neither Boivin (1967) nor Scoggan (1979) include Molucella laevis in their respective floras of Canada. Dr. Morton has seen old specimens from Simcoe (Norfolk County) and Windsor (Essex County) and is aware of other reported occurrences. Stephen Darbyshire reports that the Biosystematics Research Centre (DAO) has only a few specimens of cultivated material.

In conclusion, I think one should always watch for anomalies everywhere, especially in disturbed areas, as in this case. I would be interested to hear of any other reports of shell flower in Ontario.

Documentation: A specimen has been given to the Erindale College Herbarium (TRTE).

Acknowledgements: Jeff Kaiser and Jocelyn Webber helped identify the specimen and solicited information from Dr. J.K. Morton. Stephen Darbyshire provided information from specimens at BRC.

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NEWS OF FIELD BOTANISTS

GORD MICHENER MOVES TO THE YUKON

Recently Gord Michener of Orillia accepted a position with the Justice Department of the Yukon Territorial Government. Gord will continue to subscribe to The Plant Press, but he has resigned from the Board of Directors. We shall really miss him.

Since the inception of The Plant Press, Gord always gave freely of his time, interest and legal expertise. His advice was instrumental in getting our incorporation and status as a registered charitable organization completed so smoothly.

Thank you Gord for all your help and encouragement. We wish you and your family all the best.

ELEANOR AND EMERSON SKELTON

Sheila M. McKay-Kuja, Botany Department, University of Toronto, Toronto, Ontario M5S 2A1

When this energetic couple reached their 55th wedding anniversary this September, they were in the process of putting the finishing touches on their manuscript "The Flora of Haliburton County" which includes more than 930 taxa and will be published soon.

The Skeltons grew up in Toronto. They met at the University of Toronto where Emerson was studying chemical engineering and Eleanor was in a general arts program, majoring in biology. Eleanor's interest in biology, and no doubt her exuberant determination and competence, led to her obtaining a summer job during her last year of university studies in a field which few other young ladies could have, or might have wanted, to be involved in: identifying the contents of fish stomachs for the Ontario Fish Research Laboratory at Lake Nipissing under the direction of Dr. Wm. J. Harkness. It had been an exclusively male lab camp, and the authorities needed some convincing, but Eleanor's deep interest in the field work end of her job, with the O.F.R.L. at U. of T. persuaded them to include her in the summer research program.

With the depression closing down industries in Toronto in the summer of 1932, Emerson also went north and camped along the Nipissing shores to be close to his new bride. He had been a "city man" until he met Eleanor, but he soon came to know and enjoy life in the outdoors, and learned what it meant to be a field biologist.

The economy eventually turned upward and Emerson took employment in Wallaceburg where the couple stayed for six years. Their next move was to Sarnia, where they settled in and spent 25 happy years raising their three boys, David, Gerry, and Philip. As might be expected, family activities included canoeing and camping expeditions. Plant photography became one of Emerson's chief hobbies, and he soon became an expert and accomplished photographer.

When the children were all grown and had left home, Emerson accepted a project for his Company, Polymer Corp., connected with synthetic rubber production in Mexico. For 2½ years Eleanor and Emerson became part time archaeologists in their spare time and learned a great deal about the Mayan culture. They next experienced northern British Columbia, where Emerson was employed for a short time. Always ready to learn more about the environment at hand, geology and glaciers became of prime interest during their stay in the Rockies.

Finally Eleanor and Emerson returned to Toronto to enjoy a well-earned "rest." They decided that as a retirement project they would delve deeper into the mysteries of botany and for this reason they went to the Botany Department at the University of Toronto in 1975. Here they enrolled in the taxonomy course where they were exceptional students: conscientious, always observant and always questioning.

Inspired by the enthusiasm and direction of Dale (Leadbeater) Hoy, they began collecting plants in Haliburton County where Eleanor has family roots. Eleanor spent many enjoyable summers as a young girl at the cottage that her parents owned on Gull Lake. The Skeltons were spurred on in their project by the encouragement of Paul Catling, John Riley, Steve Varga and others at the "old herbarium." Deb Metsger, Jock McAndrews, and Timothy Dickinson have been most supportive at the "new herbarium" (TRT was recently moved to the Royal Ontario Museum).

The Skeltons rented a cottage on Soyers Lake in Haliburton in 1976. For 5 years they used this as their base camp for investigations of the Haliburton flora, often leaving Toronto as early as April to watch the ice go out on the lakes and staying until Thanksgiving. Except for a week or two when they hosted their children and grandchildren at the cottage, most of their time was spent botanizing. Occasionally they took short trips back to Toronto to tell us of their discoveries and attend to personal matters. There was always an open invitation for botanist guests to visit and stay with them at Soyers Lake.

To fill in distribution gaps and explore other sections of the County more fully, Eleanor and Emerson rented a cabin at Hall's Lake for one year and another on Lower Paudash Lake the following year. Finally they decided that they would get down to the business of writing up their work in Haliburton.

The Haliburton flora project has kept the Skeltons exceedingly busy, but I think they



Emerson and Eleanor Skelton (photo by Jeff Kaiser)

agree that it has been well worth the effort. Listening to them recount tales of innumerable canoeing adventures and forest escapades (like the time Eleanor got lost in the woods for 4 hours and Emerson called in the Ontario Provincial Police to find her), you can see the glint of excitement and enjoyment in their eyes. They had fun doing their field work, there is no doubt about that; but putting a county flora together is a big job and Eleanor and Emerson have met the challenge. They have visited various herbaria to check specimen records and distributions, and, despite health problems that have arisen along the way, have checked and re-checked identifications.

Not only have the Skeltons done an excellent job in the field, but their specimens are among the most magnificently prepared at TRT: the painstaking care they have taken is always evident in their material which is mounted so beautifully. They provide the kind of specimens that taxonomists dream of: showing flowering parts and identification features distinctly; with accurate location and habitat data; and, sometimes, even photographic documentation. In some cases, they tagged trees and shrubs in the field (especially for the willows) and have both flowering and fruiting branches in a single sheet. Emerson has become the grass and sedge expert while aquatics have become Eleanor's chief specialty, probably as a result of all that earlier exposure to fish biology!

A few years ago the Skeltons presented a talk on their findings in Haliburton County to the Botany Group of the Toronto Field Naturalists. Emerson's exceptionally fine photographs were a delight, as was their interesting and informative commentary. All in all it was a most enjoyable evening. So now, I am looking forward, as many of us are, to a work that I wager will be as excellent as anything these two perfectionists put their minds to complete. Their retirement has indeed been a fruitful one. Good work Eleanor and Emerson! ♦

INFORMATION & REQUESTS

RECORDS OF Lonicera japonica (japanese honeysuckle) REQUESTED

Dr. W.H. Wagner is researching the distribution and spread of Lonicera japonica in the Great Lakes region. This introduced species is a pernicious weed which has been aggressively invading natural areas. In several U.S. states researchers have been investigating its phenomenal spread and looking for ways to control this weed. Dr. Wagner would be pleased to learn of Ontario records. Please send full documentation to him at Dept. of Botany and University Herbarium, University of Michigan, Ann Arbor, 48109.

HUMBER ARBORETUM WILDFLOWER SYMPOSIUM

Humber Arboretum presents The Third Annual Wildflower Symposium on Friday, 8 May 1987 at the Humber Arboretum, Toronto (time: 9:00 a.m. to 4:30 p.m.). This one-day programme will touch on many areas of interest to the wildflower gardener including North American terrestrial orchids, Eastern American trilliums, native wildflowers in the rock garden, late summer and early fall wildflowers and naturalizing in North York's parks. For further information contact Mr. Art Coles, Director, Humber Arboretum, 205 Humber College Blvd., Rexdale, Ontario M9W 5L7. Telephone (416) 675-3111, ext. 445.

CANADIAN BOTANICAL ASSOCIATION'S POSITION ON TRANSPLANTING AS A MEANS OF PRESERVATION

[Ed. note: The paper below was published in the Canadian Botanical Association Bulletin 19(2):19-21 in April 1986. It was presented to the Annual General Meeting of the Canadian Botanical Association in June 1986 where it was passed and adopted as policy on the matter.]

Natural vegetation is being increasingly threatened by land development; such development is often opposed by conservationists because of the potential destruction of native species as well as habitat. Suggestions have been made that transplanting rare species from proposed development sites to other locations would eliminate conflict and, thus, tend to satisfy both developer and conservationist.

The Canadian Botanical Association is strongly opposed to the idea that transplanting is a reliable method of conserving rare species. Ecosystem preservation is the only viable means of maintaining a full range of genetic diversity and thus removal of some elements from natural communities to other locations is not a desirable conservation alternative. Not only may transplantation fail to perpetuate species, but degradation of natural areas may be accelerated in the process.

This policy is based on the following rationale. A rare native species cannot be considered in isolation from its habitat. It is not simply the presence of rare plants that makes a site significant. Rather, rare species indicate that the habitat and, thus, the entire ecosystem is significant. Rare species may signify sites of phytogeographical importance, or unusual soil, microclimatic or other ecological conditions. In some cases, their presence may indicate the lack of disturbance. In all instances, the habitat is as important to scientific knowledge and or cultural heritage as the rare species itself. Thus, the transfer of rare species to a garden or habitat where they did not occur naturally does not constitute a reasonable conservation alternative because the native habitat has been lost. Further, the extensive literature on ecological information needed to transplant rare species, methods of ascertaining whether transplanting has been successful, and schemes for expediting transplanting are largely irrelevant because transplanting does not preserve the native habitat.

Since any species taken from its native habitat no longer interacts with its natural suite of biological and physical environmental factors, the answers to many important questions dealing with its biology are lost along with the native habitat. For example, if plants are introduced to non-native sites, it may be difficult if not impossible to discover how natural factors

determined the native range of species or even what the original native range was. It will be impossible to probe physiological adaptations which have fitted plants to grow under specific natural conditions.

In parts of the world where the entire landscape has already been heavily altered by man, and no other conservation alternatives exist, transplantation has been used to permit some genotypes to persist at least for some period of time. However, the success of a transplant cannot be predicted and the permanence of the protection available in cultivation is similarly uncertain -- further reasons why transplantation is not a desirable alternative.

The propagation of rare plants in gardens may be aesthetically pleasing and indeed can be an important tool for scientific research. However, many desirable natural ecosystems could be destroyed or impoverished by collecting rare or uncommon plants for purposes of cultivation, and certainly, neither the plant community nor a reasonable range of genetic variability of a species will be preserved in most gardens.

Perhaps the most serious problem of all is the possibility that extensive transplanting might become viewed as a standard way of resolving the preservation vs. development conflict. If transplanting is condoned as a standard conservation method, then uninformed decision-makers will feel no compunction about approving developments in any natural area.

Attempts have been made to "recreate" natural ecosystems through transplantation and seeding. This has been generally undertaken in environments which were known to have formerly supported a similar community. Despite considerable expense, development of sophisticated techniques, and passage of time which might have allowed for establishment, such attempts can only be judged as partially successful. The best results have generally been obtained with simple grassland communities but even the most successful examples of these are not similar to natural communities. Attempts to re-create forest communities have only partly reestablished the natural forest canopy and the understorey in these cases is decidedly out of character. While attempts to reestablish a few of the commonest, least environmentally challenging elements, such as trees, are fraught with difficulty, establishment of understorey and rare species is even more problematical. It is quite a different matter simply to produce green vegetational cover over an eroding or unstable site; it is a worthwhile undertaking but not remotely equivalent to reconstituting a natural ecosystem -- floristically, structurally or compositionally.◆

COMPACTOR SYSTEMS INSTALLED FOR DAO AND DAOM HERBARIA

William J. Cody, Curator, Vascular Plant Herbarium, Biosystematics Research Centre, Agriculture Canada, Ottawa, Ontario K1A 0C6

In late June 1985 the Mycological Herbarium (DAOM) and the Vascular Plant Herbarium (DAO) of Agriculture Canada were moved (in their cabinets) from the William Saunders Building at the Central Experimental Farm, to a warehouse in downtown Ottawa where the specimens were inaccessible to visitors. This was to allow for work to begin on a compactor system that was required to make more space available for the crowded and expanding collections.

For the rest of the year the west end of the Saunders Building was the scene of intense activity. Additional steel supports had to be installed in order to carry the increased weight of the new system on the second and third floors. The lighting was completely revamped. Smoke detectors and a sprinkler system were installed and the rooms were painted. Then work on the compactors began. Steel track that had to be absolutely level was laid. In the basement, cement was poured to raise the floor level to that of the top of the track. A false plywood floor was laid on the second and third floors to gain the same effect. Carriages were then mounted on the track, and steel open-face cabinets on the carriages in turn. The carriages are electrically operated and a required section can be opened up at the push of a button. When closed, a specially designed gasket prevents the intrusion of dust and insects. Safety features include a kick bar along the base of each run and "stop" keys that prevent movement of segments of the modules when aisles are open and in use (see Fig. 1).

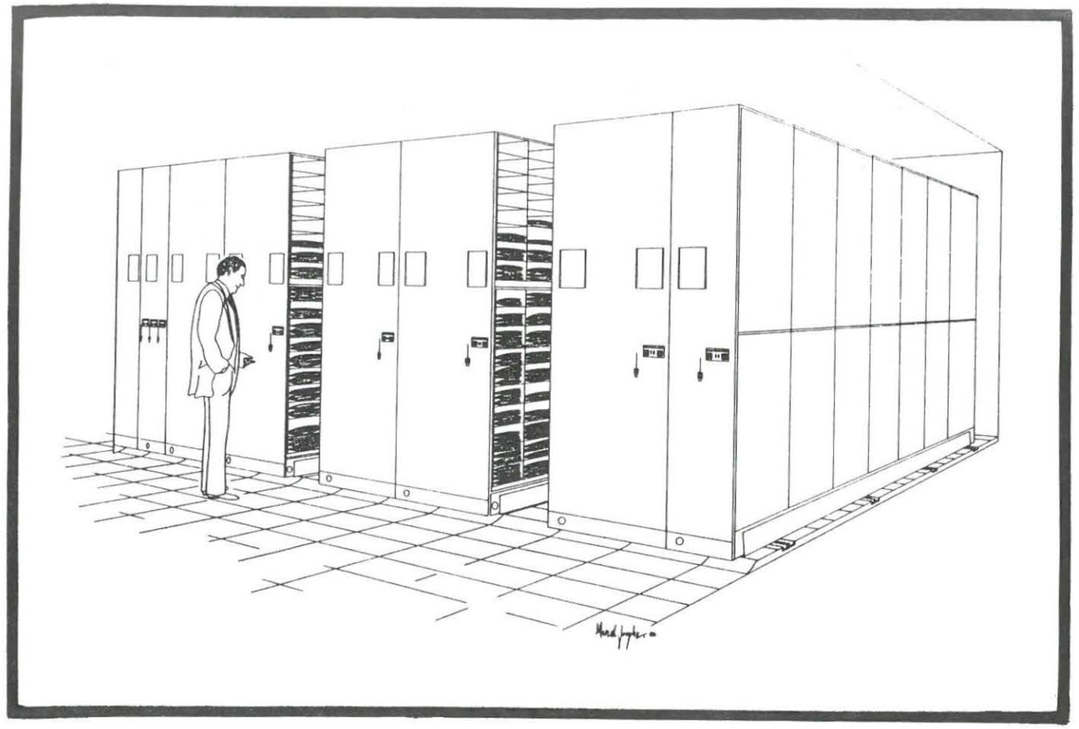


Figure 1. The new compactor system at the Biosystematics Research Centre (illustration by Marcel Jomphe)

Shortly before Christmas we began to transfer the mycological specimens from storage to the new compactor module on the third floor. This was followed by vascular plant specimens to the modules on the second and first floors. This operation, because of the care required in handling the specimens and the need to be sure that specimens were kept in the correct sequence and properly spaced, continued until the end of May, almost a year from the original disruption.

The Mycological Herbarium now numbers about 250,000 specimens and the Vascular Plant Herbarium nearly 780,000 specimens. At current expansion rates, there is ample space in the new modules for at least 15 years. This space was gained at considerably less cost than a new wing to the building and new standard herbarium cases would have cost. Herbarium cases that were no longer required were trasferred to other Agriculture Canada establishments or were sold through Crown Assets at reasonable prices to other herbaria.

Both DAO and DAOM are now fully available for consultation and visitors are welcome. Visitors must however receive instruction on use and safety features before entering the modules.◆

ONTARIO PLANTS IN PRINT

Material for this column is urgently needed. If you have a reference compilation to submit or if you would be agreeable to doing a book review, please contact Timothy Dickinson (address on back cover).

BULLETIN OF THE TORREY BOTANICAL CLUB REFERENCES FROM 1980 - 1985

compiled by Patricia M. Eckel, Clinton Herbarium, Buffalo Museum of Sciences, Humboldt Parkway, Buffalo, New York 14211

Miller, N.G. 1980. Mosses as paleoecological indicators of late glacial terrestrial environments: some North American studies. 107(3):373-391. (Distribution maps include Ontario stations: Scorpidium scorpioides in North America, fossil and recent collections - single reference for Manitoulin Island (CANM); Scorpidium turgescens; Saxifraga azoides in North America. Discusses late glacial moss floras and paleofloristic communities of upland and lowland sites in the Great Lakes - New England region - Ontario falls within the general areas discussed.)

Thieret, J.W. 1983. Review: Flowers of the Wild, Ontario and the Great Lakes Region, by Z. Zichmanis & J. Hodgins, Oxford University Press, Toronto. 1982. 110(2):233-234. (Recommended basically for its artistic photographs rather than its biological merit.)

Baskin, J.M. & C.C. Baskin. 1983. Germination ecology of Collinsia verna, a winter annual of rich deciduous woodlands. 110(3):311-315. (The range of C. verna is discussed in the introduction with a bibliography including references to Ontario.)

Nozolillo, C. & I. Thie. 1983. Aspects of germination of Impatiens capensis Meerb., formae capensis and immaculata, and I. pallida Nutt. 110(3):335-344. (The after-ripening period for seeds adapted to the climatic conditions of Ontario is determined from material collected around Ottawa and Ontario; different germination responses may be reflected in the predominance of forma immaculata seedlings in the study area.)◆

ECOLOGY BULLETIN (TRENT UNIVERSITY) REFERENCES FROM 1980 - 1984

compiled by Thomas Atkinson, R.R. #3, Lakefield, Ontario K0L 2H0

Miller, D. 1981. Bogs. 5(1):3-7. (Development and unique characteristics of bogs, with illustrations.)

Dowd, S. 1982. Dutch elm disease. 6(1):22-26. (The life cycle, history, economic impact, and control is discussed.)

Richardson, N. 1983. The effect of fires in the ecology of northern Ontario forests. 7(1):27-33. (Physical, chemical, and biological effects of fire on wildlife and succession of plant communities.)

Ford, B. 1984. Pollination of orchids. 8:4-8. (Unique morphology of orchids with pollination techniques matching various insect pollinators is discussed.)

Whillans, T. 1984. Ecologic basis for a policy on Ontario wetlands. 8:14-18. (Government guidelines, key ecological factors, the necessity of the ecosystem approach to management as contrasted to dyking.)

Williams, H. 1984. Some notes on the Hepaticae (liverworts) of Ontario. 8:19-21. (Physical features of liverworts, their life cycles, habitat, locale, and the species to be found in various regions.)

Ecology Bulletin is published by the Biology Department, Trent University, usually on an annual basis. Contributions are primarily from advanced students with other articles from specialists in some branch of biology. Back issues may be obtained by contacting the Biology Department, Trent University, Peterborough, Ontario K9J 7B8.◆

The Plant Observer's Guidebook: A Field Botany Manual for the Amateur Naturalist by Charles E. Roth. 1984. Prentice Hall. Englewood Cliffs, N.J. 222 pp. Paper bound. $ 13.95 (Can.).

reviewed by Jeff Kaiser, #408 - 3120 Kirwin Ave., Mississauga, Ontario L5A 3R2

Chief of Interpretive Services for the Massachusetts Audubon Society, there is every reason to believe Mr. Roth knows his audience, but unfortunately his book does not address that audience. The title identifies a very significant gap in the literature of field botany. That gap between the amateur and professional botanist has widened by leaps and bounds since we have entered upon the Information Age. Even professionals from near and related fields need to be able to put their hands on a good general reference work every now and again--a work in which the methods and techniques of field botanical studies are discussed and described in non-specialist language.

However, after singing the joys of plant watching, the book presents a sketchy and poorly organized review of phenomena which the amateur naturalist might investigate. Beginning with an all-too-brief discussion of plant life histories, the book presents chapters on identification, methods of recording observations, making environmental observation and analysis, community and association analysis, sampling methods (primarily quadrat techniques), rare species conservation, some specific considerations for the investigation of each of the broad plant groups from trees to marine seaweeds, and the equipment that can be employed in the various investigations which the book describes. A thorough consideration of any of the above subjects would be a welcome addition to the information available to the non-specialist or amateur. Alas, nowhere is the discussion comprehensive. Rather it reads like the outline of notes for a lecture on each topic.

Another considerable shortcoming which attends the sketchiness of the presentation is the failure to detail the many problems and cautions which attend field projects. By this I do not mean the trivial concerns that common sense and a bit of experience will quickly address. For example, biological variation and diversity are not given a satisfactory treatment and thus there is no basis for understanding why replicate samples are frequently necessary, nor determining when they are needed and when not. The distinction between flora and vegetation is not made as clear as it should be both at the point of its appearance (p. 7) where autecology and synecology are mentioned in passing, nor in the subsequent discussion of techniques some of which deal with flora and others of which address vegetation. Finally, the various quantitative techniques which are introduced in the text seem to me to be altogether inadequately described. I do not see how anyone could apply these without referring to a more comprehensive text and since such is the case, Mr. Roth could have more usefully devoted his space to some general explanation of quantitative analysis. Too frequently, Mr. Roth suggests that when the time comes the investigator should turn to some knowledgeable professional or academic to assist in the analysis and interpretation of data that has been collected. Never does he explain that the type of analysis to be performed has an important bearing on the process of data collection.

The premise of Mr. Roth's book is a valuable and worthwhile one. Many individuals, in growing numbers, are filling their leisure time or retirement years with natural history pursuits. These people are often isolated by geographic or economic circumstances from academic institutions. The majority have never been exposed to the scientific community except through the popular media and the numerous field guides directed toward the burgeoning amateur naturalist market. It is extremely important that a literature be developed which enables the keen and disciplined amateur to advance his or her interest and possibly make a lasting contribution to our knowledge of the natural world. Despite all mankind knows, there is a still larger body of knowledge that we do not possess. Fewer pursuits are more exciting or satisfying than that of exploring the unexplored or poorly known phenomena of the natural world.

Unfortunately, The Plant Observer's Guidebook is not a book which will speed the amateur down those paths of exploration.◆

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