

Field Botanists Of Ontario

Newsletter

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Schreber's Moss (*Pleurozium schreberi* (Brid.) Mitt.)
Photo by Ed Morris.

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FIELD BOTANISTS OF ONTARIO NEWSLETTER

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The FBO is a non-profit organization founded in 1984 for those interested in botany and conservation in the province of Ontario.

www.trentu.ca/fbo/

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The **deadline** for submissions for **Volume 14(2) - Summer 2001** is **June 21, 2001**.

Standard source for scientific names of vascular plants:

Newmaster, S.G., A. Lehela, P.W.C. Uhlig, S. McMurray and M.J. Oldham. 1998. Ontario Plant List. Ontario Ministry of Natural Resources, Ontario Forest Research Institute, Sault Ste. Marie, Ontario. Forest Research Information Paper No. 123, 550 pp + appendices.

**Field Botanists of Ontario
Revenue and Expense Statement
January 1 to December 31, 2000.**

	<u>2000</u>	<u>1999</u>
Bank balance beginning	6 436.60	5 820.76
REVENUE		
Membership	2 439.00	2 423.00
Field Trips (1)	2 286.00	2 063.00
Workshop (2)	0.00	269.00
A.G.M.	623.00	1 350.00
Donations (3)	840.00	208.00
Publications	50.00	0.00
Bank Interest	3.21	9.73
U.S. exchange	<u>28.40</u>	<u>35.94</u>
	<u>6 269.61</u>	<u>6 358.67</u>
	12 706.21	12 179.43
EXPENSE		
Field Trips	349.30	307.89
Workshop (2)	0.00	235.40
Honoraria	975.00	1 100.00
A.G.M.-Honoraria	425.00	300.00
Newsletter (4)	1 868.76	1 978.29
President	0.00	0.00
Membership	53.80	55.63
Treasurer	76.08	24.79
Donations (5)	3 000.00	0.00
Trip Insurance	0.00	459.00
Bank charges	19.69	0.00
F.O.N. Membership	<u>50.00</u>	<u>50.00</u>
Bank Balance Ending	<u>-7 405.76</u>	<u>-5 742.83</u>
	5 300.45	6 436.60

NOTES

- (1) Includes trip refunds of \$238. Refunds outstanding \$313.
- (2) Workshop figures included with field trips.
- (3) Trip leaders donated \$825.00 in honoraria.
- (4) Newsletter account was \$700 at year-end.
- (5) \$2000 to Nature Conservancy of Canada; \$1000 to Marcy's Woods.

Field Trip Report:

Moss Workshop.

I was finishing the field season and feeling tired, so I wasn't going to go to the moss workshop, but my 9-year old daughter Miranda loves mosses and really wanted a trip, so I sort of had to go. We arrived Saturday, September 16th, 2000, at the Owen Sound high school lab to find leader Joan Crowe at the podium with a ton of material: explanatory handouts of all sorts, reference books, books for sale, and bags full of practice specimens carefully folded in sheets of paper.

We paired up and began looking through the specimens, which showed us something of the range of sizes and shapes these things come in. It also gave us practice at recognizing what is a liverwort and what is a moss—which is not an easy as it seems. Apparently, mosses are radially symmetrical while liverworts are more flattened and bilateral.

Then we began learning how to use An Enthusiast's Guide to the Liverworts and Hornworts of Ontario by

Linda M. Ley and Joan M. Crowe. It was a good place to start because I, for one, had no idea how many tiny liverworts there are. You know that green scum on tree bark? Get out your hand lens—those things are plants!!



Fern Moss (*Thuidium* sp.)
Photo by Ed Morris.

We learned a bit of terminology for liverworts (the tip of the iceberg, maybe) and got familiar with some things to look for, such as whether the "leaves" of liverworts overlap facing down, in an arrangement like shingles, or whether they face up in an arrangement which would catch water. Liverworts also have "underleaves." While I was learning all this, the kid who had been so keen to come to this workshop was busy sewing a toy cat out of felt!

After a few more attempts to key out other specimens, both moss and liverwort, on our own (well, actually with a lot of help from both Joan and fellow moss expert Peter Beckett), the morning had flown by and we headed for Joan's place to lunch on the lawn. Then, the afternoon's field explorations began in the woods across the street. The Nature Conservancy has recently acquired the adjacent property, which includes significant wetlands.

We followed Joan into the thick of some very damp forest with many fallen logs and a wealth of mosses and liverworts. The place looked like it would be one big vernal pool in the spring. My personal goal has been to try to learn to identify the mosses (and now liverworts, too) to genus so that keying them out will be an easier task, so I find in my field notes a lack of species names. It turned out that the first liverwort we keyed in the lab, *Bazzania trilobata* (L.) Gray, was all over the place. So was the moss *Thuidium delicatulum* (Hedw.) Schimp. in B.S.G., which I found easy to remember because the name sounds like *Thuja*, the cedar tree, and the moss sort of has that shape. Another easy to spot moss was *Climacium dendroides* (Hedw.) Web. & Mohr., which looks just like a miniature palm tree.

With a hand lens constantly at my eye and my feet stepping over fallen logs, trying to keep up with Joan Crowe while taking notes, I somehow managed to see for myself that the genus *Brachythecium* has leaves with a mid-rib, while the unbelievably similar genus *Hypnum* does not. About half the people in the group, however, decided to slow down and walk with Peter and take pictures. I was glad when we called a halt to wait for them (it was a trailless bush except for some faded yellow flagging tape). While waiting we saw some more green scum on an ash tree. On closer inspection the scum was a blobby green liverwort in the genus *Radula*.

While waiting for the others, I assessed my collections thus far, which were being packed into the (clean) motion sickness bags they give out on the Chi Chimaun. I had *Pleurozium schreberi* (Brid.) Mitt., which has a red stem and a fuzzy look and is a common northern moss. Also there was a species of *Fissidens*, which looks like a fern (both start with F), and *Rhodobryum ontariense* (Kindb.) Par. in Kindb. which looks like miniature transparent green roses. Another genus is *Mnium*, which has a mid-rib in its translucent leaves. There were some species of *Sphagnum*, including *Sphagnum squarrosum* Crome with those little leaves sticking straight out. The genus is easy to recognize if you've slogged as many bogs as I have, but it turns out that some *Sphagnum* species are woodland species—not all are in bogs.

On being handed something, Joan and Peter would often said they could not identify whatever it was to

species in the field, but would need a dissecting scope. I see now that it takes some persistence to learn this slice of plant life. No wonder so many people learn only the vascular plants. Still, the non-vascular plants are so fascinating that I can no longer ignore them.

Just when I was feeling overloaded with new names, my daughter Miranda found yet another liverwort, *Trichocolea tomentella* (Ehrh.) Dum. It was very divided with rounded segments. However, the trip was not done yet. There was still *Aulacomnium palustre* (Hedw.) Schwaegr., and a *Hedwigia*, and a *Dicranum* which I didn't manage to learn well, but have in a jumble now in my collection.

We reached the farthest destination of our walk on a small, cleared out, upland. There was a boulder with more mosses on it, which I ignored because I was saturated. We headed back along an old bush road filled with large waterholes and enticing sedges, but I didn't stop to look because I was too tired and I didn't want Miranda to get involved with all that delicious mud before a car ride. I think I'd like to go back there again in the summer. 🌲

Judith Jones



A Leafy Liverwort (*Ptilidium* sp.)
Photo by Ed Morris.

Features:

Getting Started on Bryophytes.

Joan M. Crowe

There is no question that bryophytes form a substantial part of many Canadian ecosystems, and, in some cases such as bogs, they are the main component. Their small size and the difficulties of identification deter most botanists from attempting to become familiar with them. This is compounded by the fact that almost none of them have common names. Even the most dedicated amateur naturalists have a tendency to swoon when they see "Latin." Part of the problem is the difficulty of pronunciation. Take my advice--say it syllable by syllable, separate prefixes and suffixes, and don't try to put the emphasis on the second syllable

according to North American protocol--you may choke yourself! It really does not matter if someone says it differently from you! *Polytrichum* is a good example. *Poly* is a prefix meaning many, *trichum* means needles--separate them.

Identifying bryophytes (and for that matter lichens, too) requires the same sort of mindset as doing crossword puzzles. You have to look for clues and then fit them together. The thallose liverworts, such as *Marchantia polymorpha* L. and *Conocephalum conicum* (L.) Lindb. are not difficult to recognise. Lichens may be thallose, but their colour is never pure chlorophyll green and their texture is quite different. A little experience soon enables one to separate the leafy liverworts from the mosses. Liverworts have large cells and they are bilaterally symmetric, so something small, flat and relatively translucent will be a liverwort. One exception (there is always at least one) being the dark patches of *Frullania* on tree trunks in moist areas which are flat but definitely not translucent. Beyond that a microscope is really necessary, but it does not have to be an expensive one (or new for that matter). You can get by with x40 and x100, although x250 or even higher can be useful. For lower magnification a good x10 lens, a good light and a white surface would probably serve, although a dissecting (incident light) microscope is better.

Get in the habit of systematically noting colour, leaf shape, leaf margin, presence of a midrib (liverworts never have them), whether or not the midrib has lamellae on it, the size and shape of the cells, the presence of underleaves (liverworts only), fuzzy structures on stems (paraphyllia or pseudoparaphyllia) in mosses, the type of branching, etc. Habitat and substrate are also very important. I hate collectors who don't record substrate and leave you to guess!

If you are collecting liverworts use paper bags, note everything on the bag in pencil, flatten lightly and allow to dry--preferably with a fan heater. There is no need to worry about thorough drying as with vascular plants. They can finish off in their envelope. They can also be resurrected with a few drops of water.

I regret to have to say this, but your best hope for identifying liverworts in Ontario is to buy "An Enthusiasts Guide to the Liverworts and Hornworts of Ontario" by Linda Ley and Joan Crowe. Available from: The Claude Garton Herbarium, Lakehead University, 955 Oliver Road, Thunder Bay, ON P7E 5E1. The price is \$15.00 including postage. To enquire about larger quantities check with Erika North at <enorth@norlink.net>. While we would be the first to admit that the printing leaves something to be desired, and there are some problems with numbering families since the printer didn't give us a chance to proofread it; nevertheless, it was created originally for beginners and it does cover all known Ontario liverworts. Also, a very useful supplement is the "Liverworts of Britain and Ireland" by A.J.E. Smith, Cambridge University Press 1990. Rudolf Schuster's definitive work on the Hepaticae and Anthocerotae of North America may be found in a few universities, or on the bookshelves of a few lucky people like me who managed to get hold of all six volumes! For mosses: Howard Crum. 1983. "The Mosses of the Great Lakes Forest" from the University

of Michigan Herbarium, Ann Arbor, Michigan 48109. It was still available recently at about \$18.00 U.S. His keys are difficult to use, but his descriptions are very thorough. Better keys and illustrations are to be found in Robert Ireland's "Moss Flora of the Maritimes," National Museum of Natural Sciences, Ottawa. This was out of print but there has been talk of a reprint. You could e-mail Dr. Ireland at <EIRELAND@erols.com> to enquire about this. If you cannot locate a copy to use, try to, at least, acquire a photocopy of the keys. The two volume set "Mosses of Eastern North America" by Howard Crum and Lewis Anderson, Columbia University Press, 1981, will be found in most university libraries, and is a very useful reference.

To be really sure of your identifications, it is best to visit an herbarium in order to check against other specimens. Lakehead, Laurentian, Queens, and ROM all have bryophyte herbaria. The Cliff Ecology department in Guelph has a few packets and so, I believe, does UWO. As I have said many times to my Bryology students, "Whatever else you get out of this, you will never see things quite the same way again, because you will start to recognise plants you never knew existed!" Good Luck! 🍀



Hair-cap Moss (*Polytrichum piliferum*)
Photo by Ed Morris

Some Additional Lichen and Bryophyte Resources.

Edward R. Morris

Joan Crowe, Peter Beckett and I recently discussed the merits some additional moss and lichen books that are currently "in print." Regional treatments, such as Brodo's "Lichens of the Ottawa Region," were not included. Those presented here are in alphabetical order, with supplementary comments and prices in Canadian dollars (excluding taxes, shipping and handling fees).

Lichens:

Hale, M.E. 1979. How to Know the Lichens. Wm. C. Brown Co., Dubuque, Iowa.

- A good, illustrated key of fruticose and foliose lichens.
- Crustose lichens are not covered.
- Recent printings are only photocopy-quality: photos lack detail.
- Soft-cover, metal ring binding, \$48.95.

Pak Yau Wong and I.M. Brodo. 1992. The Lichens of Southern Ontario, Canada Syllogeus Vol. 69. Canadian Museum of Nature, Ottawa. pp. 79.

- Affordable book covering common lichens of southern Ontario.
- Includes keys to fruticose, foliose, and crustose lichens.
- Only two illustrations.
- Soft-cover, "perfect" binding, \$7.95

Mosses:

Conard, H.S. and P.L. Redfearn. 1979. How to Know the Mosses and Liverworts, Wm. C. Brown Co., Dubuque, Iowa.

- Illustrated keys, but no longer up-to-date.
- Soft-covered, metal ring binding, \$32.95.

Glime, J.M. 1993. The Elfin World of Mosses and Liverworts of Michigan's Upper Peninsula and Isle Royale. Isle Royale Natural History Association, Houghton, Michigan.

- Field guide format; contains no keys.
- Species organized by habitat type.
- Numerous (>175!) colour photographs.
- Good choice for those intimidated by terminology.
- Soft-cover, "perfect" binding, \$15.95.

Ireland, R.R. and G. Bellolio-Trucco. 1987. Illustrated Guide to Some Hornworts, Liverworts and Mosses of Eastern Canada, Syllogeus Vol. 62. Canadian Museum of Nature, Ottawa, Ontario. 192 pp.

- Illustrated keys to 235 common bryophytes.
- Keys easier to use than other authors'.
- Soft-covered, plastic ring binding, \$19.00.

Ireland, R.R. and L.M. Ley. 1992. Atlas of Ontario Mosses, Syllogeus Vol. 70. Canadian Museum of Nature, Ottawa, Ontario. 138 pp.

- Dot distribution maps of 490 mosses in Ontario.
- Southern Ontario is well covered; Northern Ontario is also reasonably well-covered.
- Soft-cover, "perfect" binding, \$9.95.

Muma, R. 1985. A Graphic Guide to Ontario Mosses. Toronto Field Naturalists, Toronto, ON.

- Useful diagrams to help beginner become familiar with diagnostic characteristics.
- May no longer be in-print.

Vitt, D. J. Marsh, and R. Bovey. 1988. Mosses, Lichens, and Ferns of Northwest North America. Lone Pine Publishing, Edmonton, Alberta.

- Another book that is quite useful.
- Contains colour pictures.

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Toronto, ON M5B 1J3



Electrified Cat's-tail Moss (*Rhytidiadelphus* sp.)
Photo by Ed Morris.

Recent Lichen and Bryophyte Records from Hills' (1961) Site Region 4E.

Edward R. Morris¹ and Joan M. Crowe.²

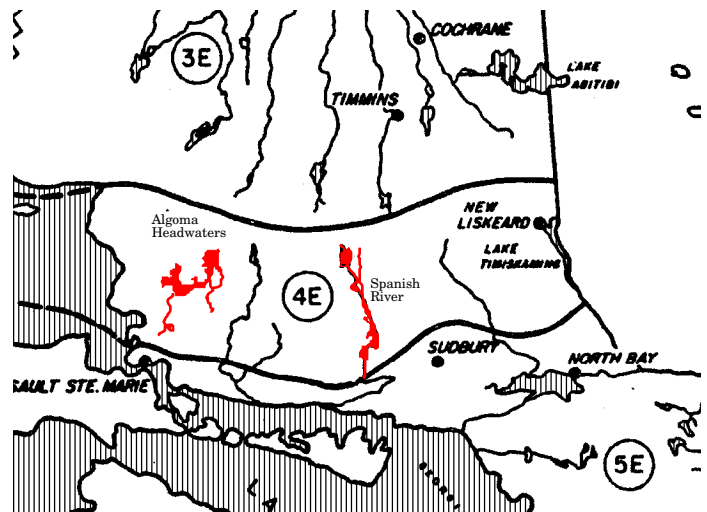
Recently, Ontario Parks retained North-South Environmental Inc. to perform terrestrial life-science inventories of two new large park complexes in Site District 4E-3 (Hills 1961). Together, these designated park complexes--termed 'Ontario's Living Legacy Signature Sites' by the Province--included over 88 000 hectares. The Algoma Headwaters Signature Site (40 335 ha) is found on the west side of Site District 4E-3, and parts of it extend in to Site District 4E-2. The Spanish River Signature Site (33 826 ha) and Biscotasi Lake Provincial Park Additions (14 065 ha) are centrally located in Site Region 4E-3 (OMNR 1999). Sarah Mainguy and Mary Ann Johnson (both FBO members) conducted the field work in September 2000, and were accompanied by Ontario Parks' interns Bob Knudsen and Ed Morris. While in the field, Sarah and Mary Ann collected grab samples of lichens and bryophytes, which were later sent to Joan Crowe for identification.

Also presented here some recent, unpublished records of lichens and mosses. Peter Beckett supplied a list of lichens collected from a reclaimed industrial site (Nordic Tailings) near Elliot Lake, which lies on the border of Site Regions 4E and 5E. Other records originated from life-science inventories previously conducted for Ontario Parks: Sharon Pappin listed lichens from the Montreal River Provincial Nature Reserve, Site District 4E-2 (Pappin 1991), and some bryophyte records from Site District 4E-4 originated from David White (1990).

Ireland and Ley (1992) published dot-distribution maps for the 490 mosses known in Ontario, but their records for Site Region 4E were often sparse. Evidently, this area has been under-explored with respect to lichens and bryophytes. This was best illustrated in the dot distribution map for the very common and easily recognized Stair-case Moss (*Hylocomium splendens*), for which no records were indicated in central Site Region 4E. Many of the records presented here could be viewed as range extensions, as they occurred more than 50 km from the nearest published record. These probable range extensions within 4E were marked with *. Moss species not previously recorded in Site Region 4E (as per Ireland and Ley 1992) were marked with *.

Unless noted, the nomenclature in this list followed Newmaster *et al.* (1998), as did the global (G) and provincial (S) ranks. Global ranks were not available for many lichen species, nor have lichens been ranked at the provincial level. In many cases, the rankings should be viewed as tentative. Common names were not included: few bryophytes have genuinely common names, and some so-called common names can be very misleading.

Hills' (1961) description of Site Region 4E was used, although we understood that the OMNR would likely



Approximate locations and boundaries of the Algoma Headwaters (West) and Spanish River (Centre) Signature Sites in Hills' (1961) Interpretation of Site Region 4E.

adopt 'new' Site Region boundaries soon, partly based on Hills' (1976) description for Site Region 4-Hm. If those revisions were adopted, the area immediately north of Sault Ste. Marie, analogous to Site District 4E-2, would be moved into Site Region 5E. With the exception of the lichen records from the Montreal River Provincial Nature Reserve (Pappin 1992), the majority of the records here would remain in Site Region 4E.

Will Kershaw maintained a master plant list for Site Region 4E, which he organized by Site District (Kershaw & Hall 1996). Any new or historical records, particularly those traceable to specimens, should be reported to him.¹ Rare species records should also be reported to the Ministry of Natural Resources' Natural Heritage Information Centre.³

Acknowledgements

Thanks to Peter Beckett and Will Kershaw for lending their expertise and experience. Mike Oldham supplied provincial (S)-ranks for the liverworts.

Literature Cited

- Hills, G.A. 1961. The Ecological Basis for Land-Use Planning. Ontario. Department of Lands and Forests, Research Report No. 46. 192 pp.
- Hills, G.A. 1976. An Integrated Iterative Holistic Approach to Ecosystem Classification. *In* Ecological (Biophysical) Land Classification in Canada. Ecological Land Classification Series, No. 1. pp. 73-98.
- Ireland, R.R. and R.F. Cain. 1975. Checklist of the Mosses of Ontario. National Museum of Natural Sciences, Publications in Botany, No. 5. Ottawa. 67 pp.
- Ireland, R.R. and L.M. Ley. 1992. Atlas of Ontario Mosses. Syllogeus 70, Canadian Museum of Nature, Ottawa. 138 pp.

¹ Ontario Parks, Northeast Zone, 199 Larch St., Suite 404, Sudbury, ON. P3E 5P9

² 222416 Derby-Keppel Town Line, RR#5, Owen Sound, ON. N4K 5N7

³ Natural Heritage Information Centre, 300 Water Street, Peterborough, ON. K9J 8M5

- Kershaw, W. and M. Hall. 1996. Provisional Plant Checklist, Northern Great Lakes Forest, Site Region 4E, version 1.4, Ontario Ministry of Natural Resources, unpublished.
- Newmaster, S.G., A. Lehela, P.W.C. Uhlig, S. McMurray and M.J. Oldham. 1998. Ontario Plant List. Ontario Ministry of Natural Resources, Ontario Forest Research Institute, Sault Ste. Marie, Ontario. Forest Research Information Paper No. 123, 550 pp. + appendices.
- North-South Environmental, Inc. (in prep.) Life Science Report - Algoma Headwaters Signature Site. Ontario Ministry of Natural Resources.
- North-South Environmental, Inc. (in prep.) Life Science Report - Spanish River Signature Site. Ontario Ministry of Natural Resources.
- Ontario Ministry of Natural Resources. 1999. Ontario's Living Legacy Land Use Strategy, Queen's Printer for Ontario, Toronto 136 pp.
- Pappin, S. 1991. A Life Science Survey of Montreal River Provincial Nature Reserve and Adjacent Lands, Laurentian University, 40 pp.+ appendices.
- Robinson, H. and M.S. Ignatov. 1997. *Brachythecium laetum* (Brid.) B.S.G. The correct name for the species commonly known as *Brachythecium oxycladon*. *The Bryologist*, 100(3):359-361.
- White, D.W. 1990. An Assessment of Representative and Special Life Science Features of the Temagami Planning Area. Ontario Ministry of Natural Resources, Northeastern Region, Sudbury and Temagami District, Temagami, 254 pp.

RECENT LICHEN RECORDS FROM HILLS' SITE REGION 4E

<u>TAXA</u>	<u>Nordic Tailings (4E-3)</u>	<u>Montreal River (4E-2)</u>	<u>Spanish River (4E-3)</u>	<u>Algoma Headw. (4E-3)</u>	<u>G Rank</u>
CLADONIACEAE					
<i>Cladina mitis</i> (Sandst.) Hustich	✓	✓		?	G5
<i>Cladina rangiferina</i> (L.) Nyl.	✓	✓	✓	✓	G5
<i>Cladina stellaris</i> (Opiz) Brodo		✓			G5
<i>Cladonia amaurocraea</i> (Flörke) Schaer.			✓		G5
<i>Cladonia botrytes</i> (K. Hagen) Willd.	✓			✓	G5
<i>Cladonia cariosa</i> (Ach.) Spreng.	✓				G5
<i>Cladonia carneola</i> (Th. Fr.) Th. Fr.	✓				G5
<i>Cladonia cenotea</i> (Ach.) Schaer.	✓			✓	G5
<i>Cladonia cervicornis</i> (Ach.) Flot.				✓	
ssp. <i>verticillata</i> (Hoffm.) Ahti				✓	
<i>Cladonia chlorophaea</i> (Flörke ex Sommerf.) Spreng.	✓	✓	✓	✓	G5
<i>Cladonia coccifera</i> (L.) Willd.		✓		✓	G5
<i>Cladonia coniocraea</i> (Flörke) Spreng.		✓	✓	✓	G5
<i>Cladonia cornuta</i> (L.) Hoffm.	✓	✓			
<i>Cladonia crispata</i> (Ach.) Flot.		✓	✓		
<i>Cladonia cristatella</i> Tuck.	✓	✓		✓	
<i>Cladonia deformis</i> (L.) Hoffm.	✓			✓	G5
<i>Cladonia digitata</i> (L.) Hoffm.				✓	
<i>Cladonia fimbriata</i> (L.) Th. Fr.	✓	✓			
<i>Cladonia gracilis</i> (L.) Willd.	✓	✓	✓		
<i>Cladonia macilenta</i> Hoffm.	✓				
<i>Cladonia multiformis</i> G. Merr.		✓			
<i>Cladonia phyllophora</i> (L.) Hoffm.			✓		G5
<i>Cladonia pleurota</i> (Flörke) Schaer.	✓	✓		✓	G5
<i>Cladonia pyxidata</i> (L.) Hoffm.		✓			G5
<i>Cladonia rei</i> Schaer.				✓	
<i>Cladonia squamosa</i> Hoffm.	✓	✓	✓	✓	G5
<i>Cladonia uncialis</i> F.H. Wigg.		✓	✓	✓	G5
LECANORACEAE					
<i>Lecanora</i> sp.		✓			
LECIDEACEAE					
cf. <i>Lecidea tessellata</i> Flörke				✓	
<i>Lecidia</i> sp.				✓	
LOBARIACEAE					
<i>Lobaria pulmonaria</i> (L.) Hoffm.		✓		✓	G4G5

<u>TAXA</u>	<u>Nordic</u> <u>Tailings</u> <u>(4E-3)</u>	<u>Montreal</u> <u>River</u> <u>(4E-2)</u>	<u>Spanish</u> <u>River</u> <u>(4E-3)</u>	<u>Algoma</u> <u>Headw.</u> <u>(4E-3)</u>	<u>G</u> <u>Rank</u>
PARMELIACEAE					
<i>Alloctetraria oakesiana</i> (Tuck.) Randle & Thell				✓	-
<i>Arctoparmelia centrifuga</i> (L.) Hale				✓	-
<i>Bryoria capillaris</i> (Ach.) Brodo & Hawksw.			✓		G4
<i>Cetraria arenaria</i> Kärnefelt		✓			G4
<i>Cetrelia chicitae</i> (Culb.) Culb. & C. Culb.				✓	G5
<i>Hypogymnia physodes</i> (L.) Nyl.		✓	✓	✓	-
<i>Parmelia sulcata</i> Taylor			✓	✓	-
<i>Parmeliopsis hyperopta</i> (Ach.) Arnold				✓	-
<i>Platismatia tuckermanii</i> (Oakes) Culb. & C. Culb.		✓			-
<i>Punctelia bolliana</i> (Müll. Arg.) Krog			✓		-
<i>Punctelia rudecta</i> (Ach.) Krog				✓	-
<i>Tuckermannopsis sepincola</i> (Ehrh.) Hale			✓		-
<i>Vulpicida pinastri</i> (Scop.) J.E. Mattsson & M.J. Lai		✓		✓	-
<i>Xanthoparmelia tasmanica</i> (Hook. & Tayl.) Hale (usually included under <i>X. cumberlandia</i>)		✓			-
PELTIGERACEAE					
<i>Peltigera aphthosa</i> (L.) Willd.		✓	✓		-
<i>Peltigera canina</i> (L.) Willd.	✓		✓		G5
<i>Peltigera horizontalis</i> (Hudson) Baumg.				✓	-
<i>Peltigera malacea</i> (Ach.) Funck				✓	-
PHYSICIACEAE					
<i>Physcia aiopolia</i> (Ehrh. ex Humb.) Fürnr.				✓	G5
RAMALINACEAE					
<i>Ramalina intermedia</i> (Delise ex Nyl.) Nyl.				✓	
RHIZOCARPACEAE					
<i>Rhizocarpon geographicum</i> agg. (L.) DC.		✓			
STEREOCAULACEAE					
<i>Stereocaulon dactylophyllum</i> Flörke				✓	G3G4
<i>Stereocaulon tomentosum</i> Th. Fr.	✓				G5
TRAPELIACEAE					
<i>Trapeliopsis granulosa</i> (Hoffm.) Lumbsch.		✓			-
UMBILICARIACEAE					
<i>Lasallia papulosa</i> (Ach.) Liano		✓			-
<i>Umbilicaria deusta</i> (L.) Baumg.				✓	-
<i>Umbilicaria mammulata</i> (Ach.) Tuck.		✓	✓	✓	-
<i>Umbilicaria muehlenbergii</i> (Ach.) Tuck.		✓		✓	-
USNEACEAE					
<i>Evernia mesomorpha</i> Nyl.		✓	✓	✓	G5
<i>Usnea hirta</i> (L.) F.W. Wigg.				✓	-
<i>Usnea subfloridana</i> Stirt.		✓		✓	-

RECENT LIVERWORT AND MOSS RECORDS FROM HILLS' SITE REGION 4E.

<u>TAXA</u>	<u>Tem-</u> <u>agami</u> <u>(4E-4)</u>	<u>Spanish</u> <u>River</u> <u>(4E-3)</u>	<u>Algoma</u> <u>Headw.</u> <u>(4E-3)</u>	<u>G</u> <u>Rank</u>	<u>S</u> <u>Rank</u>
PSEUDOLEPICOLEACEAE					
<i>Blepharostoma trichophyllum</i> (L.) Dum.			✓	G5	S5
PTILIDIACEAE					
<i>Ptilidium pulcherrimum</i> (Webb) Hampe	✓	✓	✓	G5	S5

<u>TAXA</u>	<u>Tem- agami</u> (4E-4)	<u>Spanish River</u> (4E-3)	<u>Algoma Headw.</u> (4E-3)	<u>G Rank</u>	<u>S Rank</u>
LEPIDOZIACEAE					
<i>Bazzania trilobata</i> (L.) Gray			✓	G5	S5
CALYPOGEJACEAE					
<i>Calypogeja integristipula</i> Steph.		✓		G4G5	S4S5
CEPHALOZIACEAE					
<i>Cladopodiella fluitans</i> (Nees) Joerg.	✓	✓	✓	G5	S3?
LOPHOCOLEACEAE					
<i>Lophocolea heterophylla</i> (Schrad.) Dum.		✓		G5	S5
JUNGERMANNIACEAE					
<i>Anastrophyllum helleranum</i> (Nees) Schust.		✓		G5	S3S4
<i>Barbilophozia barbata</i> (Schmid. ex Schreb.) Loeske		✓		G4?	S4?
<i>Jamesoniella autumnalis</i> (DC.) Steph.		✓	✓	G5	S5
RADULACEAE					
<i>Radula complanata</i> (L.) Dum.		✓		G4	S4?
PELLIACEAE					
<i>Pellia epiphylla</i> (L.) Corda			✓	G5	S5
SPHAGNOPSISIDA; SPHAGNACEAE					
<i>Sphagnum angustifolium</i> (C. Jens ex Russ.) C. Jens in Tolf	✓			G5	S5
<i>Sphagnum capillifolium</i> (Ehrh.) Hedw.	✓		✓	G5	S5
<i>Sphagnum fallax</i> (Klinggr.) Klinggr.	✓			G5	S5
<i>Sphagnum fuscum</i> (Schimp.) Klinggr.	✓	*	*	G5	S5
<i>Sphagnum magellanicum</i> Brid.	✓	✓	✓	G5	S5
<i>Sphagnum majus</i> (Russ.) C. Jens.	✓	*		G5	S5?
<i>Sphagnum palustre</i> L.	✓			G5	S5
<i>Sphagnum papillosum</i> Lindb.			*	G5	S4
<i>Sphagnum pulchrum</i> (Lindb. ex Braithw.) Warnst.	✓			G5	S3
<i>Sphagnum quinquefarium</i> (Lindb. ex Braithw.) Warnst.		*		G5	S3
<i>Sphagnum rubellum</i> Wils.			*		
<i>Sphagnum russowii</i> Warnst.		✓	✓	G5	S5
<i>Sphagnum subsecundum</i> Nees ex Sturm			*	G5	S4
<i>Sphagnum tenerum</i> Sull & Lesq. in Sull. in Gray			*	G5	S3
<i>Sphagnum teres</i> (Schimp.) Angstr. in Hartm.	✓			G5	S4
<i>Sphagnum warnstorffii</i> Russ.			✓	G5	S5
<i>Sphagnum wulfianum</i> Girg.		*		G5	S5
ANDREAEACEAE					
<i>Andreaea rupestris</i> Hedw.			✓	G5	S4
POLYTRICHACEAE					
<i>Atrichum undulatum</i> (Hedw.) P.Beauv.		*		G5	S2S3
<i>Polytrichum commune</i> Hedw.	*	*		G5	S5
<i>Polytrichum formosum</i> Hedw.			*	G5	S3
<i>Polytrichum juniperinum</i> Hedw.		*	*	G5	S5
<i>Polytrichum ohioense</i> Red & Card.			✓	G5	S5
<i>Polytrichum piliferum</i> Hedw.		*	*	G5	S5
<i>Polytrichum strictum</i> Brid.	*			G5	S5
TETRAPHIDACEAE					
<i>Tetraphis pellucida</i> Hedw.		*	*	G5	S5
SPLACHNACEAE					
<i>Splachnum ampullaceum</i> Hedw.	*			G5	S3

<u>TAXA</u>	<u>Tem- agami (4E-4)</u>	<u>Spanish River (4E-3)</u>	<u>Algoma Headw. (4E-3)</u>	<u>G Rank</u>	<u>S Rank</u>
BRYACEAE					
<i>Bryum pseudotriquetrum</i> (Hedw.) Gaertn., Meyer & Schreb.		*	*	G5	S5
<i>Pohlia wahlenbergii</i> (Web. & Mohr) Andrews			✓	G5	S5
MNIACEAE					
<i>Mnium spinulosum</i> Bruch & Schimp. in B.S.G.			✓	G5	S5
<i>Plagiomnium cuspidatum</i> (Hedw.) T. Kop.		*		G5	S5
BARTRAMIACEAE					
<i>Bartramia pomiformis</i> Hedw.			✓	G5	S5
AULACOMNIACEAE					
<i>Aulacomnium androgynum</i> (Hedw.) Schwaegr.		*		G5	S3
<i>Aulacomnium palustre</i> (Hedw.) Schwaegr.			*	G5	S5
AMBLYSTEGIACEAE					
<i>Campylium polygamum</i> (Schimp. in B.S.G.) C. Jens.			*	G5	S5
<i>Leptodictyum humile</i> (P. Beauve.) Ochyra			*	G5	S5
<i>Sanionia uncinata</i> (Hedw.) Loeske		*	✓	G5	S5
<i>Warnstorfia exannulata</i> (Schimp. in B.S.G.) Loeske	✓		*	G5	S5
<i>Warnstorfia fluitans</i> (Hedw.) Loeske			*	G5	S5
BRACHYTHECIACEAE					
<i>Brachythecium laetum</i> (Brid.) B.S.G.		*			
(<i>Brachythecium oxycladon</i> ; see Robinson & Ignatov 1997).					
<i>Brachythecium reflexum</i> (Starke) Schimp. in B.S.G.		*	*	G4G5	S4S5
<i>Brachythecium velutinum</i> (Hedw.) Schimp. in B.S.G.		*		G5	G5
PLAGIOTHECIACEAE					
<i>Plagiothecium denticulatum</i> (Hedw.) Schimp. in B.S.G.		*	✓	G5	S5
HYPNACEAE					
<i>Callicladium haldanianum</i> (Grev.) Crum		*		G5	S5
<i>Hypnum cupressiforme</i> Hedw.			*?	G5	S3
<i>Hypnum pallescens</i> (Hedw.) P. Beauv.		*		G5	S1
<i>Ptilium crista-castrensis</i> (Hedw.) De Not.	✓	*	*	G5	S5
<i>Pylaisiella polyantha</i> (Hedw.) Grout			*	G5	S5
HYLOCOMIACEAE					
<i>Hylocomium splendens</i> (Hedw.) Schimp. in B.S.G.	*		*	G5	S5
<i>Pleurozium schreberi</i> (Brid.) Mitt.	✓	*	*	G5	S5
<i>Rhytidiadelphus squarrosus</i> (Hedw.) Warnst.			*	G4G5	S2
HEDWIGIACEAE					
<i>Hedwigia ciliata</i> (Hedw.) P. Beauv.		✓	✓	G5	S5
DICRANACEAE					
<i>Dicranum flagellare</i> Hedw.		✓	✓	G5	S5
<i>Dicranum fuscescens</i> Turn.		*	*	G5	S5
<i>Dicranum montanum</i> Hedw.		*	*	G5	S5
<i>Dicranum ontariense</i> Peters.		*	✓	G4G5	S4S5
<i>Dicranum polysetum</i> Sw.		*	✓	G5	S5
<i>Dicranum undulatum</i> Brid.		*		G5	S5
LEUCOBRYACEAE					
<i>Leucobryum glaucum</i> (Hedw.) Angstr. in Fries	✓	*		G5	S5
GRIMMIACEAE					
<i>Racomitrium affine</i> (Schleicher ex Web. & Mohr) Lindb. (<i>Racomitrium</i> cf. <i>heterostichum</i>)			*		
<i>Racomitrium venustum</i> Frisvoll			✓	G?	S3

Book Review:

The Asters, Goldenrods and Fleabanes of Grey and Bruce Counties.

This is the latest publication of the Bruce-Grey Plant Committee, a group that has published the well-received Orchids of Bruce and Grey and Ferns of Bruce and Grey. The book was designed as a field guide for amateur botanists to thirty-one species of *Solidago* and *Aster* including three *Erigeron* found in Bruce and Grey counties. I field-tested this book on the upper Bruce Peninsula last summer.

First, the layout is clear, making it quick to get at the information. There is a nice balance between illustrations and text. The guide becomes more accessible to an amateur audience by not relying exclusively on dichotomous keys to separate the species. Summary charts allow the comparison of traits within difficult groups of species at a glance and diagnostic morphological characters are explicitly defined with the aid of an illustrated glossary. This makes the guide useful to those who find Gleason and Cronquist's treatment of Asteraceae prohibitively daunting.

Anyone familiar with Semple's more technical treatments of the species formerly in *Aster* and *Solidago* will recognize the illustrations in the present work. Since much of the information presented here was garnered from the work of Semple and colleagues, the guide reads like a shortened, regionally specific version of the Asters and Goldenrods of Ontario. If you liked the various editions of Semple, you'll like this. There is one exception: perhaps with a nod to field botanists who are impatient with the rules of taxonomy, the more familiar species names are used instead of the new, taxonomically correct epithets, thus Heath Aster appears first as *Aster ericoides* (with synonyms *Virgulus e.* and *Symphytotrichum e.* in brackets).

The keys are essentially Semple's, but without the species that do not occur in Bruce and Grey counties. As such, they are fairly straightforward but I found the same difficulties in keying out several *Solidago* sp. as I had with Semple. It is probably just lack of experience on my part, but I still can't seem to separate *S. canadensis* from *S. altissima* without the pronouncement of an expert. As a field ecologist, I often have to identify plants in specific plots regardless of their developmental stage. While most *Solidago* are easy to distinguish in flower, I have a persistent problem on Bruce Peninsula alvars with juveniles: *S. ohioensis* and *S. uliginosa* both seem to have sheathing basal leaves. While the adults are easy to separate based on the shape of the capitulescence, juveniles of both species appear similar. That said, I had no trouble separating many other species of all three genera on the upper Bruce Peninsula, regardless of life-stage.

While many of the species covered are widespread within the area covered in the book, I had hoped to find range maps in the back as in previous Bruce-Grey Plant Committee publications. This is only a minor defect and

does not diminish the value of this guide. Bruce and Grey counties are increasingly becoming destinations for botanical tourism. This book will make some of the conspicuous genera of this area more accessible for amateur botanists. I look forward to future publications from the Bruce-Grey Plant committee. 🌱

Jeremy Lundholm
University of Guelph

The Bruce-Grey Plant Committee (Owen Sound Field Naturalists).
2000. The Asters, Goldenrods and Fleabanes of Grey and Bruce Counties. Stan Brown Printers, Ltd., Owen Sound. 56 pages.

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Publication Notice:

Johnson, Lorraine. 2001. The New Ontario Naturalized Garden: The Complete Guide to Using Native Plants. Whitecap Books Ltd., Vancouver, B.C.

"As groundbreaking as the first edition, this updated and revised version of The Ontario Naturalized Garden has been long awaited. Now featuring colour photographs of native gardens: everything from ferns and woodland combinations featuring hepatica and wild ginger to Indian grass and meadow gardens that spotlight purple cone-flower and Joe-pye weed. this book provides detailed information on plants that belong in Ontario.

Lorraine Johnson's The New Ontario Naturalized Garden is an inspirational guide infused with practical philosophies for helping home gardeners get the best out of their native plant garden. It focuses on the methods for planting and maintaining indigenous plants, and emphasizes the environmental importance. This is due to the fact that native plants require less care, use less water, foster biodiversity, and are not dependent on chemical fertilizers or herbicides. it also explores how a garden can become more than a mere display case for the latest botanical fad and can be transformed into a mini-ecosystem."

-Whitecap Books Ltd.

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