

W I N T E R 2 0 1 7

# FIELD BOTANISTS OF ONTARIO

## NEWSLETTER

VOLUME 29(4) ISBN: 1180-1417

Ellice Swamp... 3

Canadian Museum  
of Nature, twice ... 5 and 6

Isoetes of Ottawa ... 6

Sphagnum of Sudbury ... 9

Financial Review ... 12

Bill Crowley writes  
a nice note! ... 12



# President's Message

'Tis the season for holiday cheer and festivities. Not so much for field botany, however. I hope the field trip reports found on the next pages of this newsletter will remind us of fond times spent botanizing across Ontario this year. The field trip reports are the meat of the newsletter, so to all those who kindly offered to write a trip report this year, thank you for volunteering and please do get those reports in to our newsletter editor. We love to hear your stories.

If you're looking for some other reading this winter, there are a number of botanical journals that offer articles on-line free of charge. The Great Lakes Botanist (formerly The Michigan Botanist) is an excellent publication, with many articles that I believe would be of interest to our membership. The journal covers such areas as systematics, floristics, ecology, conservation, restoration, botanical history, and ethnobotany in North America, with a focus on the Great Lake states. All articles are free to download and there are many back issues one can sift through.

Also, the journal Botany (formerly The Canadian Journal of Botany) offers back-issues (1951-2009) to download free of charge. It publishes research articles on a full range of plant science topics including cell and molecular biology, ecology, physiology, biochemistry, and systematics. There are enough articles here to keep one immersed in botanical study all winter.

Biology of Canadian Weeds provides articles on the identification, biology, and ecology of species considered weeds in Canada. Here, weeds are defined from an agricultural perspective. Each article, available free of charge on-line, focuses on a particular "weed" species. Most of the featured species are non-native, but some native ones (e.g., Common Milkweed) are also covered. Whether or not one agrees with the categorization of certain species as "weeds", the journal offers good information on some familiar plants that we can often easily overlook.

These are just a few "free" botany-related resources that I've come across online and thought I would share. Of course, there are many other fine publications that are well-worth exploring with a subscription or if you make it out to the bookstore or library.

While our field trips are on hiatus until spring, the FBO is planning a winter twig ID workshop again this winter. Details will be announced in due course. Stay tuned and happy holidays.

Dan Westerhof

**On the cover:** Top: *Sphagnum rubellum*, photo Leanne Wallis. Bottom: Limestone pavement at Shirley's Bay, photo William Draper.

Sidebar artwork: *Cypripedium acaule* (painting by Irene McIlveen).

Trip location maps generated using NatGeo Mapmaker software.

The suggested standard source for scientific and common names is the Database of Vascular Plants of Canada (VASCAN): (<http://data.canadensys.net/vascan/search>).

Field Botanists of Ontario website: [www.trentu.ca/fbo](http://www.trentu.ca/fbo)

Join us on Facebook



Follow our Blog



Annual memberships are \$20.00 for individuals and \$25.00 for families. Membership forms can be found on the FBO website above.

## Field Botanists of Ontario

(FBO) is a non-profit organization founded in 1984 for those interested in botany and conservation in Ontario.

### President

Dan Westerhof  
[dwesterhof@beaconemviro.com](mailto:dwesterhof@beaconemviro.com)

### Vice President

Troy McMullin  
[tmcmullin@mus-nature.ca](mailto:tmcmullin@mus-nature.ca)

### Treasurer

Larry Lebert  
[lebert.larry@gmail.com](mailto:lebert.larry@gmail.com)

### Past President

Mike McMurtry  
[michael.mcmurtry@sympatico.ca](mailto:michael.mcmurtry@sympatico.ca)

### Membership

Bill McIlveen  
13200 Nassagaweya-Esquesing  
Town Line  
Acton ON L7J 2L7  
[wmcilveen@sympatico.ca](mailto:wmcilveen@sympatico.ca)

### Field Trips

Natalie Dunn  
[ndunn03@gmail.com](mailto:ndunn03@gmail.com)

Sarah Mainguy  
[mainrod@sympatico.ca](mailto:mainrod@sympatico.ca)

### Newsletter Editor

Christopher Zoladeski  
1220 Nathaniel Cres.  
Burlington ON L7S 2A6  
[editor:fbo@gmail.com](mailto:editor:fbo@gmail.com)

### Associate Editor

Michael J. Oldham  
Natural Heritage Information Centre  
MNR PO Box 7000  
Peterborough ON K9L 1C8  
[michael.oldham@ontario.ca](mailto:michael.oldham@ontario.ca)

### Contributing Editor

Bill McIlveen  
[wmcilveen@sympatico.ca](mailto:wmcilveen@sympatico.ca)

### Website

Melinda Thompson  
[plantgirl2002@hotmail.com](mailto:plantgirl2002@hotmail.com)

### Directors

Jessica Consiglio  
Bill Crowley  
Jennifer Doubt  
Tristan Knight  
Mary-Anne Young

## Editor's Note

Perhaps it came with the wintry season, but there is a whiff of the north in this issue of the newsletter.

Coniferous swamps, peat mosses and news from the Capital (located "so far north" to our *banana belt* members who bask in the near-perpetual warmth of southern Ontario) - all this sounds reversely exotic.

Peter Beckett surfaced, so to speak, in the middle of the summer, last year, at Ellice Swamp in Perth County. As reported by Jennifer McPhee, his presence complemented the assortment of several northern species while he helped identify the peat mosses observed on the site. Although they were not the primary focus of the trip (the super rare Bog Fern, *Parathelypteris simulata*, was), Beckett reappeared the following year, when he led a most interesting and highly informative outing dedicated to *Sphagnum*, but this time in appropriately located Sudbury.

Ottawa was the site of our AGM this year, and reports from our trips have started to trickle in, thanks to Lada Malek, Christina Rinas and Bev McBride.

The AGM trips were partly indoors, at the Canadian Museum of Nature, and partly definitely outdoors, along Ottawa River, the latter featuring the ancient group of quillworts (*Isoetes*).

Anyways, whether we come from the north or the south, are young or old, this year is coming to an end. Again, and as always, we look forward to the next year to fulfill our botanical dreams.

All the best everyone, a Happy New Year and Merry Christmas!

Chris Zoladeski

## A report from Ellice Swamp

24 July, 2016

By Jennifer McPhee

**O**n July 24<sup>th</sup>, 2016, Graham Buck lead a trip to Ellice Swamp, which is located in Perth County, Ontario.

The trip began at Wayne Buck's (Graham's father) native plant nursery, where everyone met to carpool to the site. The nursery would have been another trip entirely to explore the wonderful collection of native species that the Buck's have amassed.

After arrival, Graham mentioned that the swamp was previously named Ellice Huckleberry Bog, and a portion of the trip was spent looking for the elusive Huckleberry (*Gaylussacia baccata*) shrubs that were once prevalent enough to make them the namesake. Ellice Swamp is a Provincially Significant Wetland and an Environmentally Sensitive Area, which is primarily owned by Upper Thames Conservation Authority. The natural area was made up of predominantly thicket swamp, conifer plantation, and marsh with smaller areas of maple swamp and Leatherleaf (*Chamaedaphne calyculata*) fen in the (centre of the swamp). The total size of this natural area is roughly 1000 ha and the. This woods arelot is one of the largest in Perth County.

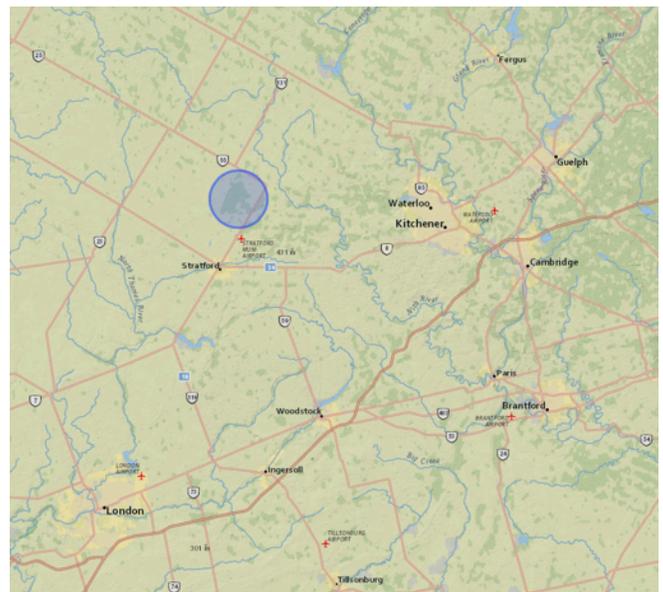
Although there are many locally and provincially uncommon species present within Ellice Swamp, there has also been a distinct

# Field Trip Reports

history of disturbance as well. Portions of the site were drained for agriculture around the year 1900. Since then, the wetland has had extensive drainage along all sides and through the middle during peak period of agricultural development. The area was also used for peat extraction in the 1930's and had cycles of burning when the peat became dry due to wetland drainage. Conifer plantations are found, particularly along the western half of the property.

Ellice Swamp is currently used for hunting, snowmobiling, hiking, and bird watching. ATV use has been damaging the trails. Unfortunately, these disturbances have made it possible for large areas of the site to become dominated by the invasive species Glossy Buckthorn (*Frangula alnus*). From an airphoto Graham showed members of the group, portions of the site with high concentrations of Glossy Buckthorn can be clearly distinguished by a greyish tinge to the vegetation. The trail we used for the trip was deeply rutted by ATVs use but appeared to be a bit of a refuge for species that could not survive as well under the thick layers of Glossy Buckthorn.

Ellice Swamp made a great location for a field trip, as there were many peaks of botanical interest while we walked from one community





Ellice Swamp expedition. Photo: A. Heagy.



*Bartonia virginica*. Photo: J. McPhee.

type to the next. The majority of the interesting species that were noted throughout the day were just off the side or even sometimes growing right in the middle of the walking path. Graham pointed out just under 50 interesting species throughout the walk. One of the anticipated highlights of the trip was observing a population of Bog Fern (*Parathelypteris simulata*), which was easily viewable along the side of the main walking trail. This species is found in only two other locations throughout all of Ontario, both in the southeast. Bog Fern looks similar to Marsh Fern (*Thelypteris palustris*), but it has veins that are unforked, while Marsh Fern has veins that are generally forked before the leaf margin. The site was rich in plant diversity, and is home to the provincially rare Yellow Screwstem (*Bartonia virginica*) – which was relocated by Tristean Knight, as well as the regionally rare Yellow Lady’s Slipper (*Cypripedium parviflorum*), Northern Slender Ladies’ Tresses (*Spiranthes lacera* var. *lacera*), Velvet-leaf Blueberry (*Vaccinium myrtilloides*), Adder’s Tongue Fern (*Ophioglossum pusillum*), and Tawny Cottongrass (*Eriophorum virginicum*).

The “Heath Bog” area appeared to be dominated by Smooth Blackberry (*Rubus canadensis*) and Late Lowbush Blueberry (*Vaccinium angustifolium*). Other plants

of interest included fen plants such as Few-seeded Sedge (*Carex oligosperma*), Three-leaved False Solomon’s-seal (*Maianthemum trifolium*), and Narrow-leaved Gentian (*Gentiana linearis*). Two species that were not previously reported from the site were located



The attraction of *Parathelypteris simulata*. Photo: A. Heagy.

during the trip included, Northern Highbush Cranberry (*Vaccinium corymbosum*) and Bog Laurel (*Kalmia polifolia*). In addition to the vascular plant species, Peter Beckett helped the group find *Sphagnum capillifolium* (nemoreum), *Sphagnum magellanicum*, *Sphagnum fimbriaum*, *Sphagnum palustre*, and *Sphagnum fuscum*.

Thank you Graham for leading such an interesting trip! ❄️

## Trip one to a museum

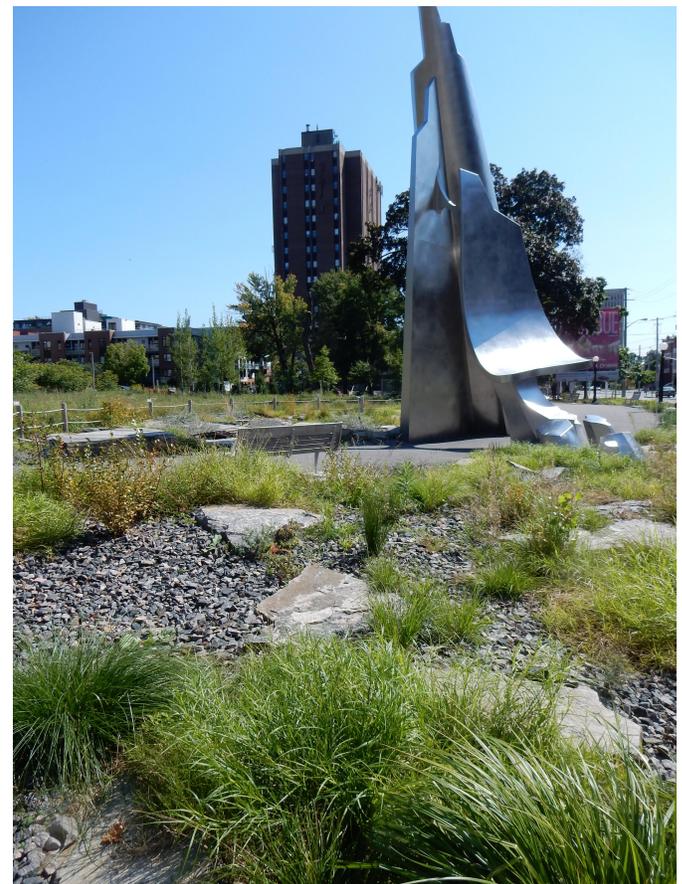
10 September, 2017

Text and photos Lada Malek

Following the morning visit to the research site of the Canadian Museum of Nature in Ottawa, the dedicated staff - Jennifer Doubt, Roger Bull, and Cassandra Robillard, gave up their Sunday afternoon to give us a tour and free access to some of the new features of the main building of the museum in downtown Ottawa.

After meeting us and having a light lunch in the museum's cafeteria, Cassandra took us outside to view the recently planted public garden on the Western flank of the main building (photo at right). The garden depicts three of the main vegetation regions of Canada - prairie, boreal and Arctic. Clearly, it is an attempt to bring Canadian nature closer to the urban dwellers and to foreign visitors to the museum. The garden reflects the trend in many modern botanical gardens to focus on local and regional species, rather than exotics brought in from other continents. The Arctic garden is of particular interest, and also a major challenge, as it tries to bring closer to the visitors the vegetation of the Arctic. To reproduce this extreme habitat of the Canadian North, which few Canadians will visit, is a truly daunting challenge. The warm and wet climate of Ottawa is definitely not conducive to the cultivation of Arctic species! Perhaps the Ottawa chapter of the North American Rock Garden Society will be able to assist with selecting, planting and maintaining native Arctic species? The physical features of the three vegetation zones are well represented: rocks of the Arctic, the larger trees of the Boreal zone, and the wide expanse of the prairie. One dead tree was retained to show the significant yellow-orange lichen cover of *Candelaria concolor* (Candleflame Lichen) and *Xanthomendoza fallax* (Hooded Sunburst Lichen), but efforts to grow reindeer (*Cladonia rangiferina* - Grey Reindeer Lichen) and other lichens will take time due to their slow growth rate, and may not be feasible in the possibly polluted city atmosphere.

The mandate of the Museum of Nature to focus on the Arctic is further emphasized by the beautiful display on the top floor of the museum. Slides and videos presented by museum's staff, as well as tastefully organized samples from the museum's collection bring the visitor in closer contact with this remote part of Canada. One



particular daunting task for museums is to “animate” for visitors botanical herbaria collections. An ingenious way to do this (at least on Sunday afternoons) is to bring the most time consuming herbarium activity, namely specimen mounting, into the public’s eye. The volunteers performing this task sit in the public space, quietly working away gluing the plants and labels to herbarium sheets (photo below), yet remain available to answer visitors’ questions about their activity and the scientific function of the herbarium. The essential contribution volunteers make to the progress of science cannot be underestimated!

Another important component of museum activity is youth engagement. The museum is full of hands-on activities for the youngest visitors. Perhaps the most ingenious are the simulators of geological forces set into old factory machinery. The artistic creativity of the museum staff in presenting their particular scientific problems



in an engaging way is an inspiration to those of us trying to interest the young’uns in potentially “geeky” science. The museum setting is ideal for this task. It is essential for the future of Canada to inspire enough young people to pursue scientific careers, and to teach at least the rudiments of the scientific method and critical thinking in our future citizenry. The Museum of Nature’s enthusiastic staff is doing a beautiful job, with limited resources but great creativity, to achieve this goal. ✨

## *Trip two to a museum*

*10 September, 2017*

*By Christina Rinas*

If you live in Ottawa you have probably visited the exhibits at the Canadian Museum of Nature. However, did you know they also manage a collection containing millions of specimens of plants, rocks, and fossils? Recently members of the Field Botanists of Ontario

visited the Research and Collections building, located in Gatineau, to learn more about what is found there.

Those interested in plants should consider a visit to the botany collection. Hundreds of thousands of specimens of plants, lichens, and even algae from all over Canada are found here, as well as a variety of historic, bound herbaria. Researchers are currently focusing on botanical studies in Arctic Canada. DNA is sometimes used to sort out difficult plant genera. For example, DNA barcoding was used to identify three species of Arctic *Boutrychium* spp. (moonworts) that were once thought to be the same species.

The mineralogy collection has a variety of rocks, gems, and minerals. We saw a quartz crystal containing fluid that is likely to be at least tens of millions of years old! The mineralogy collection also houses the national meteorite collection. About 1,000 types of meteorites are represented among 3,000 specimens.

The palaeobiology collection contains about 100,000 fossils that represent 400 million years of history. This collection contains everything from pollen to fossilized dinosaur scat! We saw the jawbone of a hadrosaur that was discovered in the Arctic. We also learned how to distinguish a mastodon from a mammoth by the structure of their teeth.

These collections help us understand our environment and improve our connection to nature. They are open to the public and the staff is available to help those who want to learn more. Simply contact the curator listed on the web page for the collection that interests you (<https://nature.ca/en/research-collections/collections>) and set up a visit; for botany, contact Jennifer Doubt ([jdoubt@mus-nature.ca](mailto:jdoubt@mus-nature.ca), 613-364-4076). In addition, the collections also hosts open house events. Don’t miss out on the opportunity to view natural history collections in palaeobiology, mineralogy, zoology, and of course botany, and to meet the Museum experts who work to preserve and share these amazing collections! ✨

## *In Ottawa bays*

*10 September, 2017*

*By Bev McBride*

**I**t wouldn’t have been the first time in history that people waded together into a river. Our reason was surely among the noblest, though – to look for quillworts (*Isoetes* spp.). With great anticipation of these and other wonders, 20 Field Botanists of Ontario members and guests gathered in the parking lot of Ottawa’s Britannia Water Purification Plant, a water supply intake for the City of Ottawa. Leaders Holly Bickerton and Dan Brunton, both experienced and recognized voices on Ottawa Valley flora, had scouted in advance and arrived complete with props.



Dan ramped up our enthusiasm with a physiographic overview of the area and showed us specimens, both dry and wet, of the *Isoetes* and other notable species we hoped to find, such as Golden Hedgehyssop (*Gratiola aurea*; now *G. lutea* according to VASCAN) and American Shoreweed (*Litorella americana*). The area is significant for being in the basin of the post-glacial Champlain Sea and having



*Litorella americana*. Note the large green tubular leaves.  
Photo: B. Draper.

some associations with Appalachia and with Atlantic Coastal Plain flora. Dan and Holly further explained that that moderating effect of the Ottawa River, a large waterbody, has created microclimatic conditions allowing growth of more southerly species such as Common Hackberry (*Celtis occidentalis*).

On we went, down to the river's edge. The water level was high, flooding much of the beach in "Quillwort Bay" (informal name) that would normally be exposed. Water Smartweed (*Persicaria amphibia*) in bloom contributed colour, with contributions from

Fringed Loosestrife (*Lysimachia ciliata*) and Square-stemmed Monkeyflower (*Mimulus ringens*). Swamp Loosestrife (*L. terrestris*) had finished blooming.

Amid larger plants, our leaders located Spiny-spored Quillwort (*Isoetes echinospora*), Northern Quillwort (*I. septentrionalis*) - the northernmost member of the Riverbank Quillwort (*I. riparia*) complex, and their sterile hybrid Dodge's Quillwort (*I. x dodgei*). Quillwort Bay is one of the best sites in Ontario to find Northern Quillwort and is its holotype location. Many participants got a look at the plants' megaspores while the leaders explained how their characteristics were key to identifying the species (magnification advised). Readers wanting more details on this group of plants should refer to Brunton and McNeill (2015).



*Isoetes echinospora*. Note the curved leaves and small size.  
Photo: B. Draper.

After the great wade we returned to the parking lot, some of us upping the fitness value of the walk with our boots full of water. On the way, in a woody area near the beaver-dammed outlet of Mud Lake, participants were surprised to spot Gray's Sedge (*Carex grayi*), very uncommon for the Ottawa area. Then, following a certain amount of sock-wringing, we were off up-river (by road) to Shirley's Bay.

After lunch in the pleasant Shirley's Bay picnic area we meandered across the limestone pavement beach toward the well-vegetated, wetter shoreline along a small bay. Interesting species on the rock beach included one tiny plant of Red-whiskered Clammyweed (*Polanisia dodecandra*) tucked in beside a boulder. This species is known to grow on the Shirley's Bay causeway about 200m upstream. Perhaps this plant arrived on the downstream beach thanks to recent flooding. It is a recent arrival to Ottawa and has been noted by observers along some rural-suburban roadways.

Also of great interest, at least to me, were Branching Centaury (*Centaureum pulchellum*), a non-native member of the gentian family, and Hairy Spurge or Wormseed Sandmat (*Euphorbia vermiculata*). The latter, a native species, resembles the non-native Spotted Spurge (*E. maculata*) from which it can be distinguished



Dan Brunton, at Quillwort Beach, guarding his terrarium for viewing and collecting *Isoetes*. Photo: B. Draper.

by, among other features, the absence of a purple smudge or spot on the leaves.

Shirley's Bay's limestone beach was once part of an airbase for float planes. Holly pointed out rusting iron fixtures in the rock that served as anchors. The beach looks out on a wide bay much used by seasonal passage waterfowl and other water birds, as well as small-craft boaters and wind surfers. The causeway, also called "the dike", is on Department of National Defense property and links the mainland to two islands. It creates a wind shelter on its downstream side, no doubt influences river currents and contributes to the formation of the "shoreline prairie" conditions with accumulating soil and moisture. The field trip quickly moved from the beach to this more vegetated area. My personal favourites from this site included Marsh Bellflower (*Campanula aparinoides*), Tubercled Orchid (*Platanthera flava*) and Hidden Spikemoss (*Selaginella eclipes*). A nice assortment of grasses included Yellow Indiangrass (*Sorghastrum nutans*), Little Bluestem (*Schizachyrium scoparium*) and Prairie Cordgrass (*Sporobolus michauxianus*, formerly known as *Spartina pectinata*). A short stretch of perhaps 50 metres took us several hours to cover. This hit home when I went back afterwards to help another participant look for lost sunglasses: we reached the end of our route in about four minutes.

It was a pleasure to spend the day at fascinating sites with the friendly and knowledgeable Field Botanists of Ontario. I'm sure I wasn't the only one to head home well tuckered out. Thank you very much to Holly and Dan, who were enthusiastic and full of information throughout; to Bill Draper for reporting assistance with species list and photographs; and to everyone for tireless spotting and identification assistance and good cheer. ✨

## References

Brunton, Daniel F., and John McNeill. 2015. Status, distribution, and nomenclature of Northern Quillwort, *Isoetes septentrionalis* (Isoetaceae) in Canada. *Canadian Field-Naturalist* 129(2): 174–180.

*The following are lists of species observed during the trip, compiled by Bill Draper:*

### OTTAWA RIVER: QUILLWORT BEACH

#### Regenerating Woods

*Leersia virginica*  
*Lycopus virginicus*  
*Celtis occidentalis*  
*Carex grayi*

#### Pond

*Potamogeton robbinsii*

#### Ottawa River (flooded) shoreline

#### aquatic plants with submerged and/or floating leaves

*Elodea canadensis*  
*Myriophyllum spicatum*  
*Potamogeton amplifolius*  
*Potamogeton richardsonii*  
*Potamogeton perfoliatus*  
*Nymphoides cordata*  
*Ceratophyllum*  
*Sium suave*

#### Emergent aquatic species in shallow waters and on receding shorelines

*Isoetes echinospora*  
*Isoetes septentrionalis*  
*Isoetes xodgei*  
*Persicaria hydropiperoides*  
*Persicaria amphibia*  
*Bolboschoenus fluviatilis*  
*Mimulus ringens*  
*Hypericum fraseri*  
*Juncus filiformis*  
*Littorella americana*  
*Ranunculus flammula* var. *reptans*  
*Gratiola aurea*  
*Cyperus strigosus*

### OTTAWA RIVER: SHIRLEY'S BAY

#### Herbaceous and graminoid species on limestone pavement and upper shoreline margin

*Euthamia graminifolia*  
*Agalinis tenuifolia*  
*Eragrostis frankii*  
*Eleocharis elliptica*  
*Euphorbia* sp.  
*Helenium autumnale*  
*Sporobolus michauxianus*  
*Juncus compressus*  
*Centaurium pulchellum*  
*Xanthium strumarium*  
*Scirpus pendulus*  
*Juncus alpinoarticulatus*  
*Andropogon gerardi*

#### Shoreline Prairie

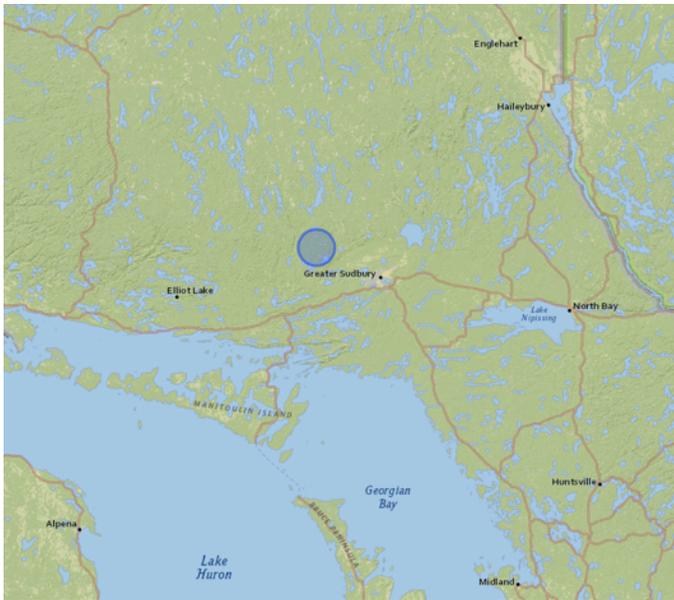
*Sorghastrum nutans*  
*Schizachyrium scoparium*  
*Sporobolus michauxianus*  
*Helenium autumnale*  
*Platanthera flava*  
*Selaginella eclipes*  
*Carex conoidea*  
*Gentiana andrewsii*  
*Campanula aparinoides*  
*Chelone glabra*  
*Equisetum variegatum*

## All about peat mosses

24 September, 2016

By Leanne Wallis

**O**n a sunny Saturday morning in Sudbury, nine FBO members met at Laurentian University. We had made the trek from all parts of Ontario, some of us coming the night before and staying all weekend. The event: wetland mosses, specifically the peat mosses (*Sphagnum*), with Peter Beckett. Peter Beckett is a restoration ecologist at Laurentian University, and for this outing, we are joined by seven of his students.



To have a northern Ontario trip on non-vascular plants so well attended is certainly a testament to the botanical passion of FBO members. In fact, in past years, members have showed a keen interest in attending other moss workshops (Jennifer Doubt and Linda Ley; Allan Aubin), and also workshops on lichens (Troy McMullin) and algae (Shelly McCabe and Dawn Renfrew).

After introductions, Peter shares with us the plan for the day. We will drive west to Cartier Peatland, a roadside wetland located along Highway 144 (lat/long: 46.662867, -81.520186). There we will explore the wetland and learn field identification of the *Sphagnum*. After that, we will have lunch, then return to Laurentian University to study some of the collected specimens in the lab.

We carpool to the field site, and upon arrival, park on the side of the highway and carefully disembark as transport trucks and other vehicles whiz by. We can see the wetland across the road,

sandwiched between the highway and a railroad, and bisected by a hydro corridor. We pull on rubber boots, get out notebooks, and string on our cameras. We are ready.

Carefully crossing the highway, we enter the wetland and cluster around Peter. He reminds us that the wetland is fragile, and to carefully traverse it in single-file to reduce our impact on the vegetation. He also explains that with floating moss mats, there is a risk of falling through. The *Sphagnum* mat we are standing on is at least 10 m deep, with the submerged portion of the stems decomposing into peat.

Peter starts by pointing out the vascular flora around us. Tamarack (*Larix laricina*), and Black Spruce (*Picea mariana*) dominate the sparse tree cover, with the occasional Jack Pine (*Picea banksiana*). Below these are the shrubs, dominated by Leatherleaf (*Chamaedaphne calyculata*), with also Speckled Alder (*Alnus incana* ssp. *rugosa*), Bog-rosemary (*Andromeda glaucophylla*), Sheep-laurel (*Kalmia angustifolia*), Bog-laurel (*Kalmia polifolia*), Labrador Tea (*Rhododendron groenlandicum*), Balsam Willow (*Salix pyrifolia*), Low-sweet Blueberry (*Vaccinium angustifolium*), Large Cranberry (*Vaccinium macrocarpon*) and Small Cranberry (*Vaccinium oxycoccos*).

At this point, there is some discussion on whether we are in a bog or a fen. As many of the participants are trained in Ecological Land Classification (ELC) and Ontario Wetland Evaluation System (OWES), we are familiar with these occasional discussions on whether a community is a true bog or a poor fen. And the verdict? Alas, Peter would not tell us as the students attending would later be answering this question as part of their course work.

Other vascular plants include the sedges *Carex magellanica*, *C. oligosperma*, *C. trisperma* and *C. utriculata*; *Eriophorum vaginatum* and *E. virginicum*; and *Rhynchospora alba*. Also present are Three-leaved Solomon's Seal (*Maianthemum trifolium*) and Purple Pitcher Plant (*Sarracenia purpurea*).

So, onto the *Sphagnum*: Peter encourages us to look around us. There is a micro-topography of *Sphagnum* hummocks, flat areas ("lawns") and pools of water. He explains that the pH in this wetland varies between 3.5 and 5.6, with the pH being more acidic on top of the hummocks and more basic at the bottom. Each *Sphagnum* species around us has found a niche within a certain pH spectrum (see diagram).

And now for an interesting fact: *Sphagnum* actually make their environment more acidic through chemical means (cation exchange). In turn, the acidic conditions allow these mosses to flourish, as well as creating habitat for the various sedges, ericaceous shrubs and carnivorous plants found in such habitats. So...we are standing in the wetland that moss built!

Peter now tells us that there are about 20-25 common *Sphagnum* species in Ontario (according to the NHIC, there are 36 Ontario

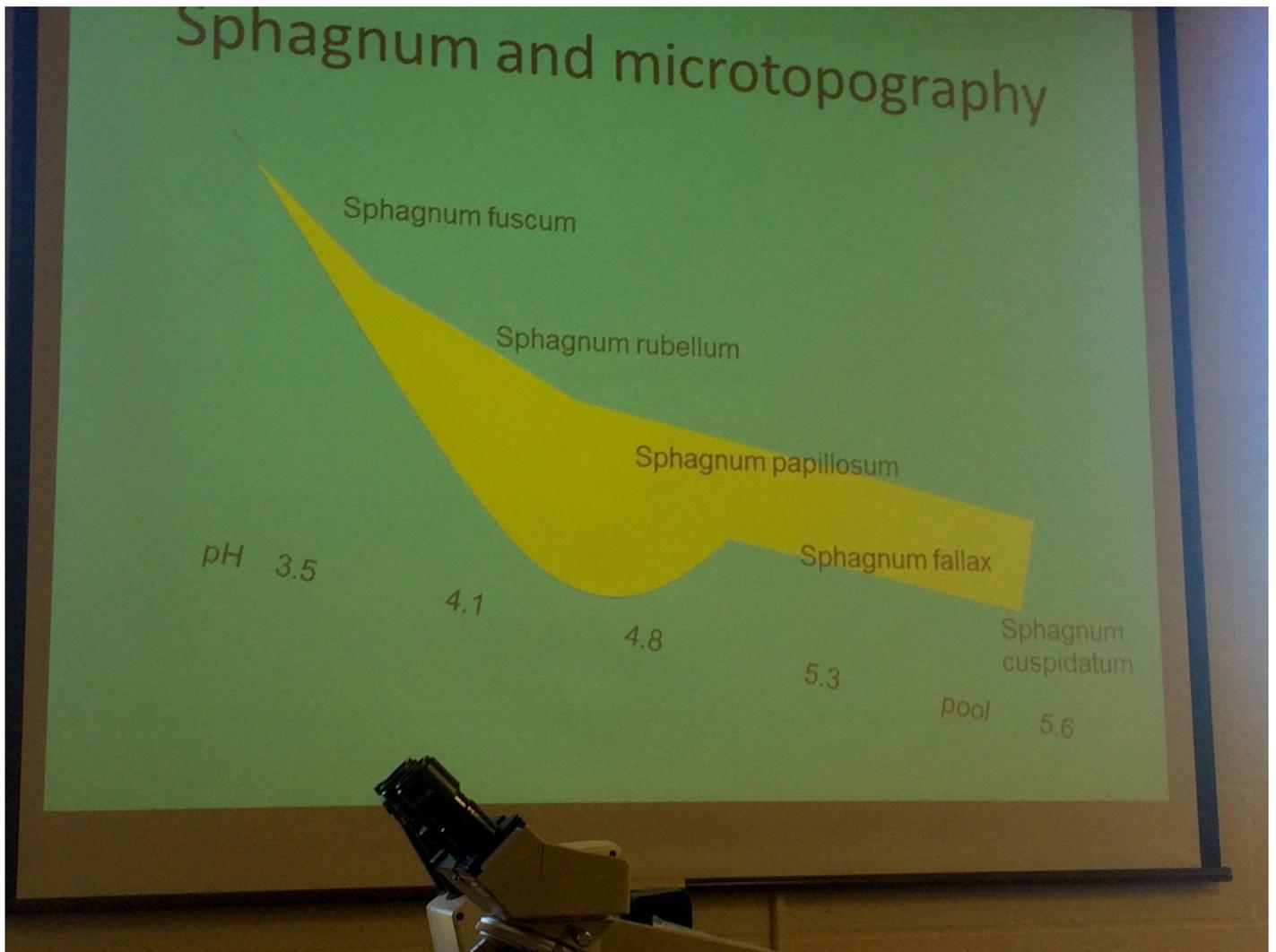


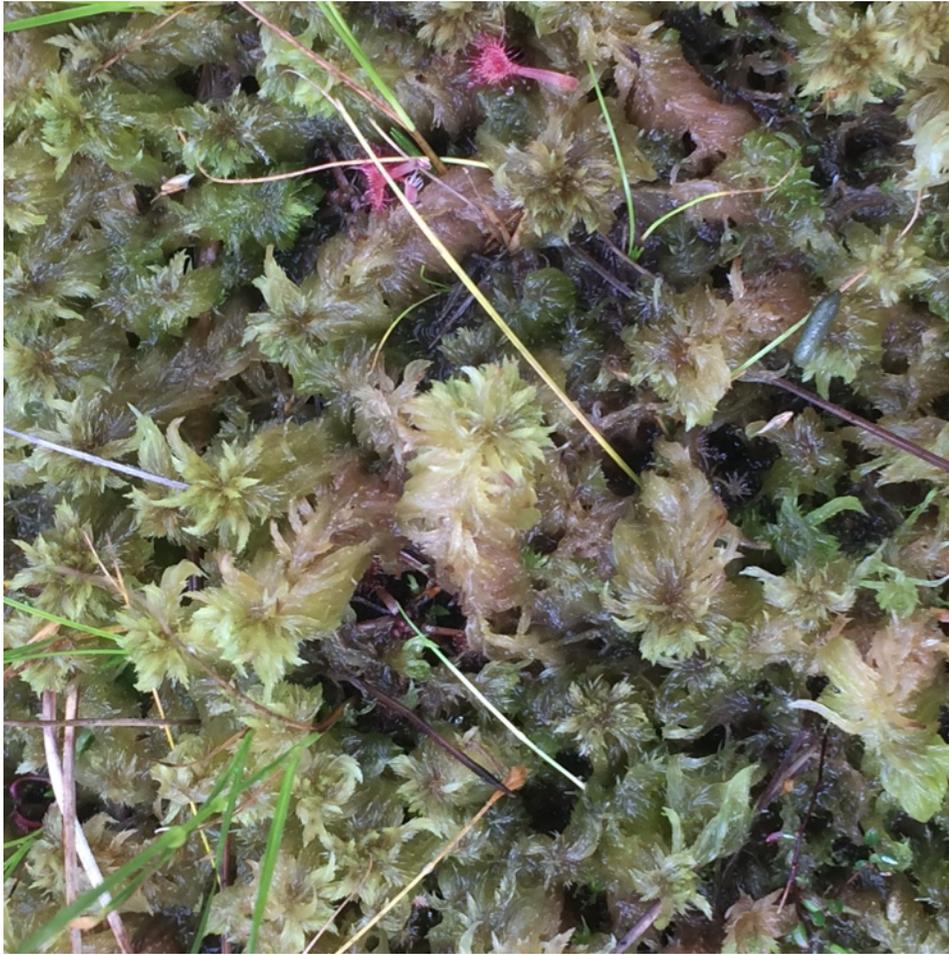
Diagram showing *Sphagnum* locations on hummocks. Photo: L. Wallis.

species in total). And despite their reputation as being quite difficult to identify, the famous bryologist Howard Crum encourages us in his *Mosses of the Great Lakes Forest* by saying:

“Our species are not that difficult, by any means. If one takes into account the habitat and obvious characteristics of the sections of the genus, each species can be recognized by a few key characters, both macroscopic and microscopic. With some practice, most of our species can be recognized even in the field” (Crum, 2004, p. 27).

But first, how can we tell a *Sphagnum* moss from other mosses? *Sphagna* are distinct from other mosses morphologically. Here are a few clues that you are looking at a *Sphagnum*:

- 1) It is growing in a wetland (bog, fen, swamp, sometimes marshes), often dominant in the ground cover and forming mats or cushions.
- 2) When you pull up a handful of *Sphagnum*, it comes up easily, and each stem can easily be separated from the rest. There is no mass of rhizoids (“roots”) binding the stems together and to the substrate. In fact, the lower stems are constantly decomposing and turning into peat.
- 3) There is a little tuft of short branches forming a capitulum (“head”) at the top of each stem. Below that are both spreading and dangling branches.
- 4) If you give the stems a squeeze, you will wring out a fair amount of water because *Sphagna* have large water-holding cells.
- 5) The spore capsule and its pseudopodium (“stalk”) look different than other mosses: the stalk is thick, and the capsule is globose and reddish-brown. Instead of the capsule having “teeth” that open and close to let out the spores, the capsule instead has a little lid. The capsule functions like a pressure-cooker: on a nice sunny day it heats up and the lid pops off with a bang!



*Sphagnum cuspidatum*. Photo: L. Wallis.

The shape of the stem leaves, as well as the habitat, are key features in identifying *Sphagna*.

The *Sphagna* we see in the field are: *S. fuscum*, *S. rubellum*, *S. magellanicum*, *S. fallax*, *S. cuspidatum*, *S. papillosum*, *S. capillifolium*, and *S. fimbriatum*. *S. pulchrum* grows in the deeper water, unreachable during our visit. *S. girgensohnii* is also reportedly present, but not seen.

We first look at *S. fuscum*, a brown *Sphagnum* growing on the top of hummocks.

Next we look at *S. rubellum*, a slender red *Sphagnum* that grows lower down on the hummocks. It has pointed, tongue-shaped stem leaves. In the lab later, we look at the similar *S. warnstorfi*, which can be differentiated by its fen habitat.

Next we look at *S. magellanicum*, a robust red *Sphagnum*. Its branch leaves are distinct because they are cucullate (“hood-shaped”). It has a nice rich bordeaux wine red colour when growing in the sun, but is a green colour when growing in the shade.

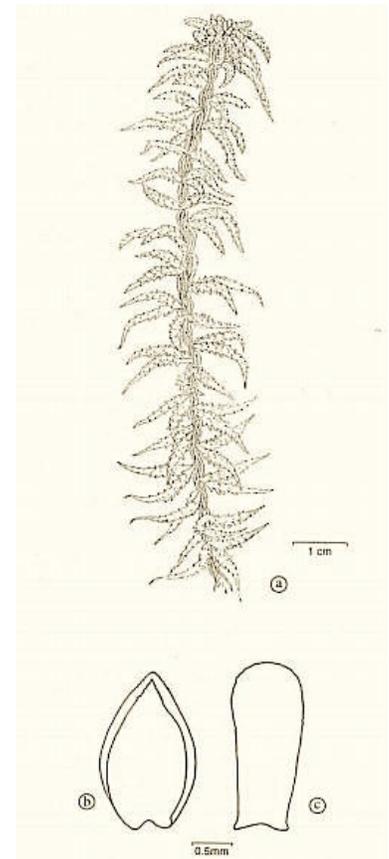


Figure 13. *S. magellanicum* Brid.: a) general habit, b) cucullate branch leaf, and c) long, rectangular stem leaf.

*Sphagnum magellanicum* (Sims and Baldwin 1996).  
Photo: L. Wallis.

Next we look at *S. fallax*. It has small triangular stem leaves that are hard to find. It grows on flatter parts of the moss mat (the “lawn”) just above the water table.

Next we look at *S. cuspidatum*, a moss apparently known in Britain by the unfortunate but descriptive name of “Drowned Kitten Peat Moss.” This *Sphagnum* grows in the standing water of the pools and does indeed have a “wet matted fur” look to it. Give it a squeeze to wring it out and it looks quite different. It has long branch leaves and short stem leaves.

Then we look at *S. papillosum*, that looks like a brownish *S. magellanicum*. It is much bigger than the brown *S. fuscum*. Microscopic examination of this species is necessary to confirm the papillose (“pimple”) cells, to differentiate it from similar species.

Next we look at *S. capillifolium*, which is similar to *S. rubellum*. *S. rubellum* is more of a southern species, *S. capillifolium* is more northern. In the Sudbury area both are present. Some books lump these two species together as *S. acutifolium*. Like *S. magellanicum*, *S. capillifolium* is red when growing in sunny sites, and green when growing in shady sites.

Our last *Sphagnum* of the day is a bit of a surprise: a small patch of *S. fimbriatum* is found in swampy habitat by the roadside. This species has distinctive spathulate (“spoon-shaped”) stem leaves that are ragged all around the border. The stem leaves of *S. girgensohnii* are similar, but are lingulate (“tongue-shaped”) and ragged only along the top.

Later in the lab, we will also see *S. squarrosum*, which is probably the easiest Ontario *Sphagnum* to identify. It is found in swamps and has squarrose (“widely-spreading”) stem leaves.

Driving back home, I can’t help thinking of how blessed northern Ontario is to have so many wetlands, including bogs and fens. Bogs and fens are a rarity for those of us that make southern Ontario our home. I thought about the anthropogenic influences at work on Cartier Wetland. A busy highway on one flank, a railway on the other, and a hydro corridor cutting right through the middle of it. I couldn’t help thinking about peat extraction, and the debate about whether it is a renewable resource or not. I thought about its use as a garden soil amendment, in the florist trade, and the craft trade. Would I feel comfortable personally digging up *Sphagna* here to add to my garden beds back home? No, of course not. I like my bog mosses just where they are, thank you very much.

And thank you Peter for the informative and entertaining visit to Cartier Peatland. Your intimate knowledge of the *Sphagna* made this trip very worthwhile for all of us participants. ✨

Care to learn more about Sphagnum mosses? Here are some resources to help you:

#### PDF Resources

Bastien D.F. and M. Carneau. 1997. *Macroscopic Identification Key of 36 Sphagnum Species in Eastern Canada*. Geological Survey of Canada. Miscellaneous Report 61. PDF available free online: [http://ftp.geogratis.gc.ca/pub/nrcan\\_rncan/publications/ess\\_sst/209/209147/mr\\_61\\_e.pdf](http://ftp.geogratis.gc.ca/pub/nrcan_rncan/publications/ess_sst/209/209147/mr_61_e.pdf)

Haavisto V.F. 1974. *Sphagnum Mosses of Ontario: Identification by Macroscopic Features*. Canadian Forestry Service. Department of the Environment. PDF available free online: <http://cfs.nrcan.gc.ca/pubwarehouse/pdfs/8893.pdf>

Ireland R.R. and Linda Ley. 1992. *Atlas of Ontario Mosses*. Syllogeus No. 70. Canadian Museum of Nature, Ottawa. PDF available free online: <https://ia600701.us.archive.org/21/items/syllogeus70nati/syllogeus70nati.pdf>

Sims R. A. and K.A. Baldwin. 1996. *Sphagnum Species in Northwestern Ontario: A Field Guide to their Identification*. NODA/NFP Technical Report; TR-30. PDF available free online: <http://cfs.nrcan.gc.ca/pubwarehouse/pdfs/9563.pdf>

#### Book Resources

Crum, Howard. 2004. *Mosses of the Great Lakes Forest*. 4<sup>th</sup> Ed. The University of Michigan, Ann Arbor.

#### ONTARIO NATURE Annual General Meeting

I was pleased to attend the 2017 AGM of Ontario Nature in June. I try to attend every year but on occasion have a conflict and cannot participate.

I enjoyed the speaker program but skipped my planned outing because of rain. However, the real highlight from my perspective was that two FBO members received this year’s Ontario Nature Conservation Awards.

The *W.E. Saunders Natural History Award* was presented to Dorothy Tiedje. It is presented to an individual or group who has achieved a significant goal related to an aspect of natural history or natural science research, raising public awareness of natural history, demonstrating local leadership, saving a natural area, or generating conservation funds or publications.

The *W.W.H. Gunn Conservation Award* was presented to Bill McIlveen. It is given to an individual who has demonstrated outstanding personal service and a strong commitment to nature conservation over a number of years with exceptional results.

You may remember that Dorothy was presented with the FBO Goldie Award in recognition of her significant contribution to field botany and the Ontario Nature Award only confirms our judgement.

I think most of our members know Bill. He has served as the FBO membership secretary since the beginning of time, has led many FBO field trips and contributed numerous articles to the FBO Newsletter: indeed, it was mentioned during the presentation that he had only written over 300 scientific and popular papers.

Our congratulations are in order to both Dorothy and Bill!

Bill Crowley

April 04, 2017

To: The President and Members, Field Botanists of Ontario

#### Financial Review (Unaudited) Field Botanists of Ontario

I have reviewed the financial statements and books of record of the Field Botanists of Ontario, as prepared by your Treasurer Bill Draper, for the year ending 31 December 2016.

In the course of this review, I examined the bank statements, bank deposit records, donated cheques, board expenses and all receipts.

My conclusion is that the accounts balance with the bank statements and are properly described in the Revenues and Expense Statement for 2016. All questions arising from my review have been explained by the Treasurer to my complete satisfaction.

I have verified the accounts and am satisfied that the statements as presented do accurately reflect the financial position of the Club for the year ending 31 December 2016.

FBO has been fortunate to have the exemplary services of Bill Draper as Treasurer for the past twelve years. He leaves the finances in excellent shape.

George Bryant,  
1343 Dundas Street West,  
Toronto, M6J 1Y3  
[g.bryant@sympatico.ca](mailto:g.bryant@sympatico.ca)