



FIELD
BOTANISTS of
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Newsletter

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Yellow Trout Lily (*Erythronium americanum*) Credit: C. Hendrickson

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President's Message

I spend every two weeks supervising explosives experts as they search for unexploded ordnance at Ipperwash former army base near Port Franks, making sure they don't damage the sensitive and significant flora species there. On the face of it, is there any less likely location for a botanist? But most botanists spend months of the summer prowling through swamps, forests and fields listing flora, using it to classify vegetation, and most importantly, using various indicator species to identify and delineate significant habitats.

We have to keep in mind that identifying rare plants is not just an exercise in stamp collecting: we are using the presence of rare plants to indicate sensitive and unusual habitats that support insects, birds and other taxa. We recommend plants for remediating degraded habitats, plants for treating contaminated soils and plants for restoring biodiversity. I don't think many of us realized, when we first dug into the esoteric language in botanical keys during our university days and took photographs of wildflowers, that this skill could one day become a livelihood.

A field botanist needs much more than to be able to identify the major tree species and wildflowers. The presence even of regionally and locally rare plants can indicate significant wildlife habitat that must be protected by the provincial policy statement, is always one of the criteria used to designate local and regional environmentally significant areas, and adds to the score of a wetland evaluation.

It behoves us to be able to identify the most difficult groups: grasses, sedges, asters, pondweeds, hawthorns, serviceberries, roses, ferns. We are often called upon to identify plants when their most identifiable characteristics are not yet developed, in the early spring or late fall, which requires familiarity with vegetative characters of hundreds of plant species. School doesn't teach you field botany, though courses in plant taxonomy and ecology are certainly helpful. It takes many hours of slaving over a hot microscope outside of regular working hours to develop these skills. Mentorship by experienced botanists is a big nudge along the learning curve, as is discussion on identification with other botanists. But even after you think you have nailed the characters of hundreds of species into your brain, you may find a new flora to remember every time you walk into a new habitat in a new place. Finding you have forgotten plants you thought were

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Standard source for most scientific names and authorities 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.

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

President

Sarah Mainguy
RR #3 Guelph ON N1H 6H9
mainrod@sympatico.ca
(519) 822-5221

Vice President

Bill Crowley
19 Burnham Blvd Port Hope ON L1A 4H5
(905) 885-2123

Treasurer

Bill Draper
35 Hepburne St. Toronto ON M6H 1K1
william.draper@sympatico.ca
(416) 534-2892

Secretary

Nancy Falkenberg
42 Coco Avenue Richmond Hill ON L4S 2R5
falkenburg@rogers.com
(416) 457-8031

Past President

Mary Ann Johnson
301-188 15 Ave SW Calgary AB T2R 1S4
mjohnson86@shaw.ca

Membership

Bill McIlveen
13200 Nassagaweya-Esquesing Town Line
RR1 Acton ON L7J 2L7
wmcilveen@sympatico.ca
(519) 853-3948

Field Trips

Jim Lane and Carol Brotman
583 Beresford Avenue Toronto ON M6S 3C2
fbotrips@sympatico.ca
(416) 767-4878

Newsletter Editor

Cheryl Hendrickson
6152 4th Line E, RR 1 Ariss ON N0B 1B0
hendrickson@landsaga.com
(519) 846-1255

Associate Editors

Michael J. Oldham, Natural Heritage Information Centre
MNR PO Box 7000 Peterborough ON K9L 1C8
michael.oldham@ontario.ca
(705) 755-2160

Allan Harris (807) 344-7213
aharris@tbaytel.net

Lesley McDonell
68 Steffler Drive, Guelph, ON N1G 3J9
lncampbell@sympatico.ca
(519) 780 - 0153

Contributing Editor:

W.D. McIlveen
(see Membership above)

Website

Melinda Thompson
plantgirl2002@hotmail.com



Big Bluestem (*Andropogon gerardii*) Credit: S. Spisani

Field Trip Reports

Alderville Black Oak Savanna August 23, 2008

The warm morning sun delivered a great sense of optimism to the day's group of explorers. Not only were the skies a magnificent blue (the majesty was amplified within the rain-drenched context of the season – 2008 set a number of precipitation records throughout southern Ontario), but the group assembled from such far reaching places as Waterloo, Toronto and even Owen Sound! With such time already invested, we were delighted that Mother Nature was behaving so graciously. Having just spent a full week exploring the clay plain swamps of Perth County, I was looking forward to the dry, open-canopy system, completely different flora, and complete absence of the mosquitoes I had grow to expect in massive droves.

The group engaged in the usual application of sun screen and shade hats – a naturalist's ritual, a preparation of sorts as if pasty-white noses and shaded brows eased the retention of

new multi-syllable Latin names! Suitably protected from the sun, the group set off to join our *other* gracious hosts at the office of the Alderville First Nation Black Oak Savanna. Natural heritage staff members Alison Clark and Heather Francis welcomed us as our friendly and knowledgeable guides. A third natural heritage staff member Janine McLeod couldn't keep herself from the fun, and joined us part way through the tour – Janine was equally friendly and knowledgeable.

The Alderville site is managed as the largest remnant prairie in central Ontario, at approximately 50 ha in area. The site is located to the immediate south of Rice Lake, within the Oak Ridges Moraine and is generally characterized by rolling hills of rapidly drained sand and sandy loam. The site includes a diverse mix of old field, remnant tallgrass prairie, savanna, wet prairie and dry upland forest habitats.

It was evident early in our discussions that management of the site is an ambitious undertaking lead by the Alderville First Nation and supported by a large number of partners, including (don't hold your breath): The Habitat Stewardship



Prairie Cinquefoil (*Potentilla arguta*), and Slender Wheatgrass (*Elymus trachycaulus* ssp. *trachycaulus*).
Credit: S. Spisani

Program of Environment Canada, The Nature Conservancy of Canada, The Willow Beach Field Naturalists, The Federation of Ontario Naturalists, The Nature Legacy Foundation, Ministry of Natural Resources, Ducks Unlimited, and the Oak Ridges Moraine Foundation, to name a few. Within our first few steps from the office building, we entered an old field system that transitioned gradually from the access road to higher quality remnant prairie toward central areas of the site. The old field contained a number of interesting native prairie flora including: Big Bluestem (*Andropogon gerardii*), Indian Grass (*Sorghastrum nutans*), Hairy Beard-tongue (*Penstemon hirsutus*), Sunflower (*Helianthus divaricatus*), White Heath Aster (*Symphotrichum ericoides*), Gray Goldenrod (*Solidago nemoralis* ssp. *nemoralis*), and Common Milkweed (*Asclepias syriaca*). We learned that the native assemblage resulted as a mix of natural seeding from adjacent areas (and suitable droughty conditions to promote prairie flora) and restoration efforts that included local seed collection and broadcasts. However, native species were not alone, it was quite apparent that White Sweet-clover (*Melilotus alba*) and Spotted Knapweed (*Centaurea maculosa*) posed serious barriers to prairie development. On cue, our guides moved the conversation to post crop-farming succession and related topics, including succession management and invasive species control. Such old fields typically support high concentrations of nitrogen-fixing flora (particularly taxa of

Fabaceae, White Sweet-clover for example) which use rhizobia (symbiotic bacteria) within nodules of their root systems to produce nitrogen compounds from atmospheric nitrogen, a process that promotes growth and allows nitrogen fixers to outcompete their neighbours. When a nitrogen fixer decomposes, nitrogen is released, fertilizing the soil and making it available to other plants. It sounds like a nice story, unless you're a prairie plant, which can't compete in high nitrogen, high nutrient environments. So what's the management solution? Burn it, of course. However, even fire has failed to produce instantly satisfying results to date, and according to our guides, both Spotted Knapweed and White Sweet-clover have proven uncooperative. The best management solution appears to be adaptive management. Stayed tuned for results from on-going management efforts.

Our discussion of fire evolved to include control of native prairie invaders and succession of native woody species. Particularly threatening native species at this location include Riverbank Grape (*Vitis riparia*), Staghorn Sumac (*Rhus typhina*) and Gray Dogwood (*Cornus foemina* ssp. *racemosa*). Our guides emphasized the importance of understanding all the natural heritage attributes of a given site before initiating management, and offered the Gray Dogwood thickets of the Alderville site as an example. Gray Dogwood is an aggressive invader of prairie habitat, however, it also provides breeding habitat for a variety of bird species,



Rolling prairie landscape. Credit: S. Spisani

including Golden-winged Warbler (*Vermivora chrysoptera*), a provincial species of Special Concern. The lesson here may be that fire is not always the cure-all management and requires clearly defined objectives and prescriptions in order to balance all the attributes of a given site.

As the group moved through the old field and into tallgrass prairie (defined that day as having less than 10 percent tree cover – our guides provided 1-3 trees per acre as a rough field clue) and savanna (10-30 percent tree cover) habitat, we returned our attention to the flora and added new species to our list, to name a few: Black Oak (*Quercus velutina*), Thin-leaved Sunflower (*Helianthus decapetalus*), Wild Bergamot (*Monarda fistulosa*), New Jersey Tea (*Ceanothus americanus*) – noted as the host plant for the Mottled Dusky-wing Butterfly (*Erynnis martialis*) – Thimbleweed (*Anemone virginiana* var. *virginiana*), Herbaceous Carrion Flower (*Smilax herbacea*), Common Evening-primrose (*Oenothera biennis*), Heart-leaved Aster (*Symphyotrichum cordifolium*), Arrow-leaved Aster (*Symphyotrichum urophyllum*) Spreading Dogbane (*Apocynum androsaemifolium* ssp. *androsaemifolium*), Round-headed Bush-clover (*Lespedeza capitata*), New England Aster (*Symphyotrichum novae-angliae*), Showy Tick-trefoil (*Desmodium canadense*), Indian Hemp (*Apocynum cannabinum*) – noted for its strong stalk fibers and use as rope by First Nations – Lesser Daisy Fleabane (*Erigeron strigosus*), Field Milkwort (*Polygala*

sanguinea), Early Saxifrage (*Saxifraga virginensis*), Prairie Buttercup (*Ranunculus rhomboideus*), Smooth Wild Rose (*Rosa blanda*), Black Snakeroot (*Sanicula marilandica*), Wood Lily (*Lilium philadelphicum*), Bastard Toadflax (*Comandra umbellata*) and Butterfly Milkweed (*Asclepias tuberosa*).

Our guides led us off the path so we could see a few basal rosettes of Wild Lupines (*Lupinus perennis*) introduced in 2003 as part of the prairie restoration program. The introduction was noted as a somewhat controversial because there is no clear evidence that Wild Lupine occurred at the Alderville prairie site. There are however, two natural populations within 15 km of the park and historical records suggesting the Lupine was once widespread throughout the area (hence an “introduction program” and not, as the purist might prefer, a “re-introduction program”). Wild Blue Lupine was noted as the host plant for the provincially extirpated Karner Blue butterfly (*Lycaeides melissa samuelis*), leading the group to ponder the possibilities of future Karner Blue release programs at the Alderville site.

Our guides then led us to an area of groundwater seepage at the base of hog’s back, an aptly named esker traversing the site in a north-south direction. The seepage conditions facilitated the development of a wet prairie community with concentrated pockets of Closed Gentian (*Gentiana*

andrewsii), and a stunning mix of Tall Cinquefoil (*Potentilla arguta*), and Slender Wheat Grass (*Elymus trachycaulus* ssp. *trachycaulus*) in drier areas around the edges. As the group turn to ascend hog's back, our guides parted a small opening in the groundcover to reveal what may be the highlight of the day – a single ascending culm measuring approximately 25cm in height the open inflorescence, appearing somewhere between flower and seed, clearly resembled *Panicum*. Careful observation revealed long white hairs (up to approximately 5 mm) over the entire plant, a characteristic our guides were using to identify Hairy Panic Grass (*Dichanthelium ovale* ssp. *praecocius*)¹. It is easy to imagine how such a plant could be overlooked amongst the showy displays of more robust prairie species and indeed closer inspection exposed many more specimens hiding beneath the groundcover.

We continued to climb the sandy esker, noting new species along the way. Poverty Oat Grass (*Danthonia spicata*),

¹ The long hair character is consistent with the treatment of *Panicum lanuginosum* var. *praecocius* by *Grasses of Ontario* (Dore and McNeill; 1980). *P. lanuginosum* var. *praecocius* is a synonym of *Dichanthelium ovale* ssp. *praecocius* according to the *Flora of North America* (FNA), Vol. 25 (2003). *Grasses of Ontario* consider *Dichanthelium* to be a subgenus of *Panicum*, though it is elevated to generic status by most recent treatments including FNA.



Upright pods of Butterfly Milkweed (*Asclepias tuberosa*). Credit: S. Spisani



Field Thistle (*Cirsium discolor*). Credit: S. Spisani

Prairie Brome (*Bromus kalmii*), Upland Willow (*Salix humilis*), Canada Blue Grass (*Poa compressa*), Early Goldenrod (*Solidago juncea*), Snowberry (*Symphoricarpos albus*), Bush Honeysuckle (*Diervilla lonicera*), Round-leaved Dogwood (*Cornus rugosa*), Glaucous King Devil (*Hieracium piloselloides*), Low Serviceberry (*Amelanchier stolonifera*), Pointed-leaved Tick-trefoil (*Desmodium glutinosum*) until we again resumed our interpretation at the crest. It was there among a patch of Bearberry (*Arctostaphylos uva-ursi*.) that our guides described a limestone leaching process that neutralizes acidic soils at the crest of the esker, and promotes alkaline soils where accumulation occurs further downslope.

We soon withdrew for lunch and continued our discussions from the shade of a mature open-grown oak (*Quercus*) tree. We returned to topics of restoration: seed collection, processing (cleaning, scarifying and stratifying); sowing and prescribed burning (wind breaks, water breaks and water packs). We shared success stories and stories full of failure, all the while maintaining one eye on the flora around us – rumours of a nearby Sharp-leaved Goldenrod (*Solidago arguta* var. *arguta*) population filled the air. In the end, this species remained elusive, however our search for a young White Birch (*Betula papyrifera*) -Gray Dogwood grove was rewarded with a single Robin's Plantain (*Erigeron pulchellus*).

The group emerged from beneath our Oak tree and immediately stumbled upon a single flowering Field Thistle

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the duff layer

Looking for *Cystopteris*/*Gymnocarpium* specimens

As a displaced Ontarian marooned deep in the US, I find myself missing not only Ontario, but also Ontario ferns. *Cystopteris* and *Gymnocarpium*, in particular! My dissertation project here in North Carolina involves investigating the relationship between chromosome changes (in this case, the doubling or tripling of chromosomes) and speciation/extinction in these ferns. To do that, I need to try to sort out the confusing web of taxa within *Cystopteris*, and to do that I need lots of specimens. If any FBO members are able to help me out in this regard, I would be very grateful. Of particular interest are:

- *Cystopteris fragilis* (Common Fragile Fern). This is the widespread variable species that is the source of much of the confusion in *Cystopteris*. In Ontario it is mostly known as a tetraploid (it has four complete sets of chromosomes), although hexaploid populations (six sets) are known from Ontario, too. One hypothesis is that it originated as a hybrid between *C. reevesiana* (of the US southwest) and a hypothetical extinct diploid "*C. hemifragilis*."
- *Cystopteris tenuis* (Mackay's Fragile Fern). This is another tetraploid, possibly the result of hybridization between "*C. hemifragilis*" and the eastern *C. protrusa* (which barely extends into Ontario). *Cystopteris tenuis* is a bit more southern in its Ontario distribution, compared with *C. fragilis*, and is more likely to be found on soil rather than just in rock cracks.
- *Cystopteris montana* (Mountain Fragile Fern). This is a gorgeous species, strongly reminiscent of a *Gymnocarpium* (similar leaf shape, and similar long creeping rhizome). Ontario botanists would be lucky to find it—in the province it is limited to a few stations on the north shore of Lake Superior. If you're heading that way, let me know!
- *Cystopteris laurentiana* (Laurentian Fragile Fern). This is another real goodie, and a species I'd love to get—perhaps the majority of the global population of this species occurs in Ontario. It's a hexaploid (six sets of chromosomes): four sets from *C. fragilis* and two from *C. bulbifera*.
- I should be able to get *C. bulbifera* (Bulblet Fern) on my own, but if you see it at the edge of its range (north of Georgian Bay, say), that could be helpful, too.
- *Gymnocarpium jessoense* (Nahanni Oak Fern). It is another Superior North Shore fern (in Ontario), of cool habitats, and is another species that I'll have trouble finding.

Gymnocarpium robertianum (Limestone Oak Fern). In Ontario, this is mostly a species of the Bruce and Manitoulin (and not common there, either). There are also records scattered from near Ottawa across to the Lake of Woods area. If you might be able to help me out, please *email me*, and we

can make arrangements. For collections to be useful, I need complete herbarium specimens (i.e., with rhizomes and mature spores), with full label data (not that I need to tell FBO members that!), and maybe a small bit of leaf dried quickly that I can use for DNA study. I recognize that to get me this sort of material is a big undertaking—any volunteers get a free BBQ dinner when they come down to visit! My great thanks. 🌿

Carl Rothfels
crothfels@yahoo.ca

Royal Oaks

I was interested to see the article on the Royal Oak at Speyside. It reminded me that I was at a Bruce Trail meeting a few years ago when someone mentioned a Royal Oak growing on a farm in the Beaver Valley. He told the tale of how his father and uncle, as young boys, had made the trip from their farm in Grey County, to the nearest main-line railway station in order to see the Royal Train pass, during the Royal Tour in 1939. As the king and queen appeared and waved to the crowd, attendants were busy handing out acorns from the Royal Oaks of Windsor Great Park. The boys brought them back home and a tree was born.

I suspect that some of the specimens of *Quercus robur* around Owen Sound may have a similar origin as they appear to be the same age. I have noticed that they, also, are showing signs of die-back in the crown. Incidentally, in their native habitat, oaks are a long-lived tree. The old saying about the oak goes something like this "One hundred years she grows, one hundred years she stays, one hundred years she fades away."

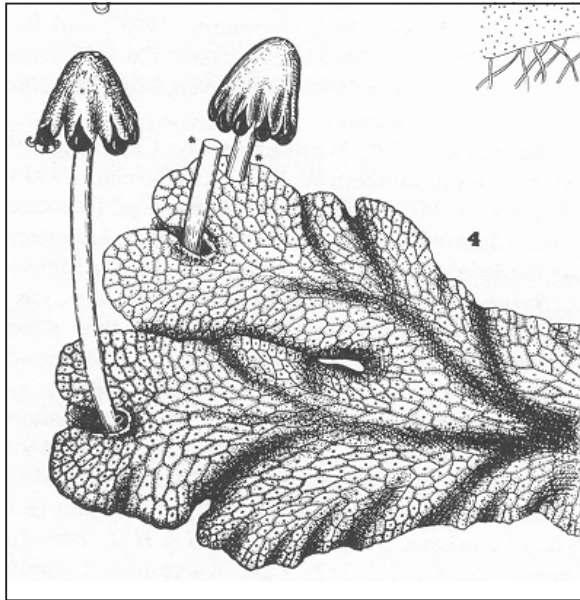
Some of the participants in a Field Botanists' trip a few years ago noticed that the English Oak is establishing itself on the West Rocks (Niagara Escarpment) in Owen Sound, where there are quite a few comparatively young trees. Probably thanks to the local squirrels! There are also some excellent specimens in Harrison Park.

Anyone interested in the mix of native and introduced trees in an urban setting might find useful the book that the Plant Committee of the Owen Sound Field Naturalists produced recently. It is entitled *Exploring an Urban Forest - Owen Sound's Heritage of Trees* and describes and illustrates 87 species, which would include all the species likely to be found planted in any eastern Canadian city. They cost \$14.50 plus shipping. They are available from the Ginger Press in Owen Sound (maryann@gingerpress.com) or you can e-mail me at (crowe@log.on.ca) and I will mail you one and you can send me a cheque when you receive it. 🌿

Joan Crowe

Conocephalum conicum - Cone Headed Liverwort

I noticed a mention of *Conocephalum conicum* in the article on the Altberg Nature Reserve field trip. I was very surprised



Cone Headed Liverwort (*Conocephalum conicum*)
 Reprinted from Schuster (1992) Vol. 6.

to see it referred to as Snakeskin Liverwort. I cannot imagine where that name came from. I have been studying liverworts since I did an undergraduate thesis on them in 1970, I did a post-graduate thesis in 1975, I have a complete set of Rudolf Schuster's definitive 6-volume work on the Hepaticae and Anthocerotae of Eastern North American and numerous other books, both North American and European, and I have never seen that name before. Generally, bryologists do not use English names for the simple reason that most people do not even notice liverworts so there are no common names. The only one for this species that I have heard used occasionally is Cone Headed Liverwort which is a direct translation of the Latin name and makes some sense as the sporophyte is a neat little cone, rather like a miniature mushroom. Unfortunately, the sporophytes are rarely seen because the species is dioecious and forms large clones of one sex which are generally too widely dispersed for fertilization to occur. I was lucky enough to spot a healthy stand recently, in very early spring, in a wet area beside the Sydenham River, near the Grey-Sauble Conservation Authority headquarters near Owen Sound.

This liverwort is probably the commonest thallose liverwort that most people actually notice. The thalli are large and usually yellow-green, although occasionally bluish green on limestone or dolostone. It is found throughout the boreal and temperate zones around the northern hemisphere, most often associated with substrates with high calcium content. I remember seeing it on limestone at Monte Cassino in Italy and it is frequent along the Niagara escarpment. Ironically, it is far commoner than *Marchantia polymorpha*, which is the one species of liverwort studied in basic Biology courses. *Marchantia* is always a greener green and often has gemmae cups on the surface of the thallus, sporophytes are also commoner. However, the easiest way of telling them apart, is to take a small piece of the thallus, pinch it and smell. If it has a pleasant aromatic odor it is *Conocephalum*.

Even more ironically, the thallose liverworts make up less than 25 percent of the list of liverworts in Ontario. The leafy liverworts are far commoner but, generally, far smaller and harder to spot. Moist, decorticated rotting logs are a good place to look. If it looks like red velvet, it is *Nowellia curvifolia*. *Radula complanata* is frequent on moist tree bases. It is rather a bright green, flat and somewhat translucent. The two main distinguishing features of leafy liverworts are that they are bilaterally symmetrical, so appear flatter than mosses; they also have larger cells than mosses which makes them more translucent. Although this is not so true of the *Frullania* species which grow high up on tree trunks and have thick-walled cells which are specially adapted to arid conditions.

If you are interested in learning more about liverworts, Linda Ley and I co-authored a book in 1999, *The Liverworts and Hornworts of Ontario*, which should still be available from the Claude Garton Herbarium at Lakehead University. The curator, Erika North, (enorth@lakeheadu.ca) can give you the information as to how to obtain it. I am not sure of the price but I think it is around \$15.00. 🌿

Joan Crowe

Fourth Edition of Rare Vascular Plants of Ontario Released by NHIC

The Ontario Natural Heritage Information Centre (NHIC) is pleased to announce the release of the 4th edition of its "Rare Vascular Plants of Ontario" list. This document, which can be downloaded at:

http://publicdocs.mnr.gov.on.ca/View.asp?Document_ID=15769&Attachment_ID=33301, lists all vascular plants currently considered to be of provincial conservation concern and tracked by NHIC (726 taxa). We welcome comments on the species and ranks included and are actively gathering information on the location and status of Ontario populations of listed species to help inform conservation actions. If you have any problems downloading the document, please let us know and we can send you the pdf as an email attachment (6 MB). You may also be interested reading the most recent NHIC newsletter which is posted on our web page and can be downloaded at:

http://publicdocs.mnr.gov.on.ca/View.asp?Document_ID=15811&Attachment_ID=33302. This revision to the NHIC rare plant list has involved a complete overhaul of the taxonomy and nomenclature of Ontario's rare vascular plants to bring the names in line with the Flora of North America (FNA) project and other recent sources. There are several hundred additions, deletions, and name changes since the previous edition (1999) of the NHIC rare vascular plants of Ontario list. Included in the revised list is a synonymy column which will allow users to find a particular species using older or alternate scientific names. Several other features are included in the new list which we hope will be useful to users, e.g. a listing of counties with records for each species; notes and literature references relating to distribution, taxonomy,

identification, habitat, conservation of each species; inclusion of Global Conservation Status Rank (GRANK), Committee on the Status of Endangered Wildlife in Canada (COSEWIC) status, Ontario Ministry of Natural Resources (MNR) status, and Provincial Conservation Status Rank (SRANK) for each species; a list of excluded species (i.e. species included in the previous version of the NHIC list but not in this version); and an appendix of 96 images of selected rare Ontario vascular plants. The revised list and Sranks have benefited from input and review from a large number Ontario botanists (see Acknowledgements) and we thank those who provided input. 🌿

Mike Oldham & Sam Brinker

... cont'd from p. 4

(*Cirsium discolor*), standing an impressive 2m in height. We paused momentarily to note the velvety white under-surface of the deeply-cut leaves, and quickly continued towards the dry woodlands of the Alderville site. The canopy provided shade from the afternoon sun, and more importantly, the new habitat provided an opportunity to add new species to our list. Abundant woodland species noted included: White Oak (*Quercus alba*), Black Oak, Red Oak (*Quercus rubra*), Eastern White Pine (*Pinus strobus*), Red Pine (*Pinus resinosa*), Trembling Aspen (*Populus tremuloides*), Balsam Poplar (*Populus balsamifera*), White Birch, Black Cherry (*Prunus serotina*), Red Maple (*Acer rubrum*), Gray Dogwood, New Jersey Tea, Beaked Hazel (*Corylus cornuta*), Round-leaved Dogwood, Downy Arrow-wood (*Viburnum rafinesquianum*), False Solomon's Seal (*Maianthemum racemosum* ssp. *racemosum*), Blue-stem Goldenrod (*Solidago caesia*), Daisy Fleabane (*Erigeron annuus*), Arrow-leaved Aster, and Flat-topped White Aster (*Doellingeria umbellata*).

Finally satisfied we had explored all habitat types, the group again crossed the rolling prairie, this time back toward the office where our day began. As we crunched our way along the desiccated and brittle ground, a few particularly observant members spotted lichens thriving in the barren patches between the vascular plants. We marvelled at the tiny complexities through a hand lens for a few minutes, before concluding we had found a species of *Cladonia*.

After arriving at the office, the group couldn't help but mull about for a just a little longer – we flipped through the natural heritage resources, signed-up for volunteer outings, and exchanged contact information – as if we weren't quite ready for the adventure to end – a true testament to the success of the day. Thank-you everyone for participating - I enjoyed re-connecting with some of you, and meeting others for the first time. On behalf of the group, I would like to extend a special thank-you to Alison, Heather and Janine, our knowledgeable and friendly hosts. Their passion for this extraordinary place made for an absolutely perfect day! 🌿

Sean Spisani

Book Reviews

The Natural Treasures of Carolinian Canada

The Carolinian Canada Coalition.
Edited by Lorraine Johnson

This is a beautiful book, filled with gorgeous photographs of the various flora and fauna of Carolinian Canada, everything from mussels and insects to birds and plants. Upon reviewing the table of contents I was impressed by the well-known naturalists' names that dot the landscape throughout this book - many known to field naturalists as experts in their various disciplines. This made me very excited to start reading and learn more. A good map is provided that defines Carolinian Canada (a zone in the southernmost part of Ontario below an imaginary line from Toronto to Goderich) and indicates where the thirty-eight Carolinian Canada Signature sites are located.

Part I is an overview of the plants of this region, including those that inhabit the forests, prairies and wetlands. The chapter starts with a review of Carolinian plant species and communities such as the Tulip Tree (*Liriodendron tulipifera*) and Carolinian Swamp Forests such as the Pin Oak (*Quercus palustris*) Swamp. Some interesting facts include that 80 to 90 percent of the original woodland cover has been lost from this zone and that virtually no unaltered old growth forest stands remain in this region.

Part II reviews the animals of Carolinian Canada, including mammals, birds, amphibians, reptiles, fishes, mussels, butterflies and other insects. What I found most interesting about this section were the facts and figures. Each section within Part II details the number of species of each group found within this region. For the majority of these taxa Carolinian Canada is the richest zone for them in all of Canada. Some interesting facts include, that the Turkey Vulture was not seen in Ontario one hundred years ago. It is a recent addition to the bird life of this province as it expands its range northward. In terms of fish, more than half of all fish species found in Canada are found in this region. Lake Erie is a fall staging ground for migratory insects, particularly dragonflies (Odonata). Surprisingly, researchers have no idea where dragonflies go for the winter.


Both Part I and II discuss the threats to various species, from loss of habitat and water pollution to changing climatic conditions. Stewardship groups are highlighted in each section in regards to how they are assisting in the recovery and management of Carolinian Canada's diverse plant and animal life.

The final section of this book, Part III, discusses caring for nature on the edge. It provides three chapters which discuss the human impacts to Carolinian Canada and the current stewardship efforts to save the flora and fauna of the region. The historical perspective of the human impacts is interesting

showing how both the perspective and the impacts have changed over time as communities have become more prosperous.

Various conservation organizations and individuals are profiled in Chapter 10, Stewardship in Action. This was a great chapter, helping to clarify what is possible with the dedicated work of volunteers and groups. The authors point out that in recent years conservation science has become a large part of conservation efforts within Carolinian Canada. For example, the Big Picture project developed by Carolinian Canada with multiple partners helped to identify core areas within Carolinian Canada that could be linked with corridors to provide connected habitat. Large areas of habitat (Cores) offer the best chance for viable populations of a wide variety of species to survive, migrate and propagate. Cores also need to be linked together by wide habitat corridors that allow plants and animals to disperse or migrate between them. The Big Picture analysis used conservation science and state-of-the-art information management technology to identify Cores, other significant natural areas, potential habitat corridors and restoration areas to link the natural areas together. Doing so indicated where conservation action was needed in terms of land securement and private land stewardship to help the Big Picture come together.


The final few pages of this book provide a helpful glossary for those unfamiliar with some of the more technical words used throughout. Also a list of Carolinian places to visit is provided with web addresses so locations can be easily found.

All in all, this book is an interesting read, but may be more suited to those new to the Carolinian Canada rather than someone already familiar with it. While it does have little-known facts, the majority of the content is familiar to Carolinian Canada enthusiasts. The Parts also become a bit repetitious throughout the book, as their structure is the same. In the end it is the pictures that make this book; they are stunning and make me want to go hiking to see some of the fantastic species and vegetation communities featured. 

Lesley McDonell

...President's Message cont'd from inside front cover

written in stone is challenging, fun and frustrating. You have to keep learning.

Where else but on field trips with the FBO could we have those nerdy discussions about ligules and bracts, learn new plant species in new places and see the plants that indicate significant habitats? With the new field trip list just sent out, we can look forward to a better understanding of the flora patterns that shape the landscape, and to better protecting habitats that would, if not for our expertise, go unnoticed under the bulldozer. 

Sarah Mainguy
President

Flowering Plant Families of the World


V.H. Heywood *et al.*,

Firefly books, 2007, 424 pages, \$59.95

Charles Darwin in his conclusion to *The Voyage of the Beagle* suggested that “a traveler should be a botanist, for in all views, plants form the chief embellishment”. Easily said, this admonition had been difficult to follow because of the lack of a book which encapsulates all of the world’s plant families in an easily digestible form.

Finally the book has arrived. In recent years, Canada’s own Firefly Books has become a trend-setter in publishing quality natural history books. It still came as a shock to me when I discovered this book and realized what an absolute treasure it is. In one large volume, all of the world’s 500 plant families are described, mapped and meticulously illustrated.


It is difficult to appreciate a flowering plant without knowing the plant family and it is perhaps more difficult to appreciate a plant family without knowing some of the species, world distribution and relationship to other families. In one gorgeous text, this book allows you to come to grips with plants and their families and obtain a further appreciation of their relationships.

This book has already become one of my most loved natural history books. 

George Bryant

Editor's Corner

The 2009 field season has begun and I am thrilled, as I am every year at this time, to reaffirm that I have one of the greatest jobs in the world. Sarah’s editorial speaks not only to the importance of knowing the names of plants, but also to the other reason we are botanists. It’s about discovery: of new plants, new ecosystems, new towns and regions. I would say there is an explorer in most of us – that includes microscopic realms as well. Plants are a way of measuring the uniqueness of and the difference between places, even as big box stores make sameness and uniformity standard.

With any luck, this newsletter will be back from the printers tomorrow, Sunday, and will be folded, and stuffed into envelopes in transit, and dropped into post boxes between Ariss and Port Dover, as another field season unfolds before us. 

Cheryl Hendrickson
Editor

Botanical Roots

The King's Pines

W.D. McIlveen

On May 1, 1984, Royal Assent was given to legislation; the Arboreal Emblem Act was passed in the Ontario Legislature. By that Act, the Eastern White Pine (*Pinus strobus*) was declared the official tree of the Province. It is now almost 25 years since the species was designated to this level of distinction. There is much that can be written about the importance of the species in the cultural and economic affairs of the Province. This article only looks at one part of the association between White Pines and the people of Ontario and how that came to be so important.

The importance of White Pine in the history of world affairs is directly related to the rise of the British Empire through the clout of the British Navy. It is rather obvious that a good navy should have good ships and good ships should be constructed of the finest materials. For many years, the powerful British Navy had relied on suitable timber being supplied by Baltic area countries including Russia. In 1807, the terms of the Treaties of Tilsit signed by the victorious French under Napoleon and Russia caused supplies of timber to Britain to be cut off. The upstart Napoleon had his greatest enemy at a considerable disadvantage if their navy could not maintain the condition of their fleet. As a consequence, Britain increasingly relied on her colonies to supply the needed timber.

Although the superior qualities of North American White Pine for masts, spars and other uses had been known for over a hundred years, the distances involved and other technical difficulties meant that the lumber trade across the Atlantic had not been fully developed



**White Pine (*Pinus strobus*) Algoma Mills, Algoma.
Credit: W.D McIlveen**

earlier. It is understandable that Britain declared that no matter who owned or cleared the land in the new colonies, the White Pines belonged to the King of England. In 1772 the British Parliament and King George III made a law protecting “any White Pine tree of the growth of twelve inches in diameter”. In some ways, this made some sense but in others, it was not strategically astute. There was already a law protecting the larger White Pine trees. All of these laws meant that the settlers could not cut any White Pines unless they had the Deputy Surveyor come to check and mark the trees with the broad arrow, saving them for masts. Then the settlers

had to pay a tidy sum of money to get a royal license to cut the rest of the White Pines from their own land. Such a situation did not sit well with settlers in the colonies in what was to become the United States. In fact, such a system was as welcome as the Tea Tax which is often credited as the final straw that incited the American Revolution. A large number of trees marked

with the King's Broad Arrow were cut down in defiance. In truth, the declaration was frequently disregarded and the colonists cut the trees for their own purposes without permission because enforcement of the law was very lax at best.

As a consequence of the American Revolution, Britain could no longer obtain the needed naval supplies of masts and other timber. She could hardly expect the new and free colonies to supply her military needs. Instead, she was forced to turn to more friendly territory in Canada. Some of the requirements could be obtained from the New Brunswick and Nova Scotia forests but these were not nearly adequate and supplies were sought further and further up the St. Lawrence River. Eventually, much of the superior timber was being obtained from the forests of the Ottawa River valley.

The requirements for ship main masts were straight clear logs, 1 meter across the base and 36 meters tall. Smaller trees could supply the bowsprits but these still required trees of 27 meters and 76 cm diameter. For shipment, the logs were squared to accommodate stacking.

Over time, the British had realized that the imposed system for obtaining the needed trees was not very effective. Instead, they obtained those trees by purchasing their needs from various suppliers. As well as the naval needs, there was now a strong commercial demand developing for construction material. Certain individuals were able to establish themselves as

suppliers of the required timber and made huge fortunes in the process. People like Philamon Wright and J.R. Booth became the lumber barons. They operated lumber camps, railroads and shipped logs via the local rivers. Thanks to brute force, cheap labour, and favourable taxing arrangements and permits, certain people became very wealthy. In the process, the extensive cutting severely changed huge tracts of forest that had been deemed inexhaustible. The demand for only certain high quality wood meant only the very finest trees were used and trees found to have defects such as small amounts of heart decay were left to rot where they fell. As well, squaring off the logs in the woods meant huge amounts of good wood were left in the forest though the use of waney (logs still with some round corners) timber reduced the amount of such waste.

Although the Ottawa Valley originally contributed a huge part of the pine cut for timber, many other areas of Ontario were soon exploited for their natural resources. In part, the arrival of the railway helped to spread the industry further from the oceanic shipping ports. In time, relationships with the United States and other political and economic factors came to play different but important roles. There is no doubt though that the White Pine played a very important role in the economy of the Province of Ontario. Taxes and other profits from the industry paid a significant part of the income for the Province for a long period. Owing to the historical, cultural, ecological, and economic relevance of the species, it is very fitting indeed that the species was declared the Provincial Tree. ❀



White Trout Lily (*Erythronium albidum*) Credit: C. Hendrickson