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FIELD BOTANISTS OF ONTARIO NEWSLETTER

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President's Message

Adele Crowder is the recipient of the 2013 John Goldie Award, an award that recognizes individuals who have made a significant contribution to the advancement of field botany in Ontario. The award was presented to Adele by Membership Chair Bill McIlveen and me at the October meeting of the Kingston Field Naturalists at Queen's University, where Adele is Professor Emeritus. Friends and colleagues from the Kingston area and further afield in Ontario joined us to recognize her contributions to botany, ecology and education.

In November, board members met to review the state of our organization and plan activities for the upcoming field season. Joining us were new board members Troy McMullen and Natalie Dunn, who have already contributed fresh ideas and assistance in planning field trips. There is still time for those of you with suggestions for future field trips and workshops to send them to our field trip coordinators.

We are a lean organization with the following objectives: to provide opportunities for people to meet and pursue their interests in field botany, to provide education in field botany, to increase knowledge and documentation of the flora of Ontario, and to provide botanical expertise to the naturalist community. It is with considerable thought then that the board has decided to make a substantial donation to the Thames Talbot Land Trust in memory of Jane Bowles, a long-standing member who recently passed away and who was remembered in our last issue. Jane was an active volunteer in the Trust, which has played an important role in the conservation of land in Carolinian Canada. Look for the notice explaining how you can add to our donation in this issue of the newsletter.

John Riley, who is well-known in the conservation community, has just published a book titled "The Once and Future Great Lakes Country". It is a carefully researched overview of historical and ecological changes in the Great Lakes basin from pre-European settlement times to the present. Descriptions of the transformations that have occurred on his home property in Mono Township are offered as a touchstone for changes in the entire basin. Botanists will be interested in his anecdotes about the journeys of Pehr Kalm and John Goldie. You will also gain new understanding about how war, disease, land grants, settlement, resource exploitation, agricultural and urban development and conservation initiatives like the Niagara Escarpment Protection Act led us to where we are today. Consider picking up a copy of the book for yourself or giving it as a gift to others. It is available for order online from McGill-Queen's University Press.

Best wishes to all of you,

Mike McMurtry

On the cover: Wild Ginger (*Asarum canadense*) flower. Photo by Leanne Wallis.
Hilton Falls trip: Vice President checks something. Photo by Jim Lane.
The pool of Hilton Falls. Photo by Jim Lane.

Sidebar artwork: White Pine (*Pinus stobus*).

The standard source for scientific names and authorities of vascular plants is:

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.

Membership forms can be found on the FBO website:
www.trentu.ca/fbo
Annual memberships are $20.00 for individuals and $25.00 for families.

Editor's Note

A diversity of features awaits you in this last Newsletter of 2013. But, as wintry weather sets in, the trip reports should warm you up by taking you back to the spring and fall, when conditions for plant growth were favourable at the many places we visited this year.

Leanne Wallis participated in the first trip of the season to Reid Conservation Area, north of Wallaceburg in Lambton County. In this great tract of woods, several rare species find refuge, including the Harbinger-of-Spring. This ephemeral is truly the harbinger of better-weather-to-come: suffice to say that as early as the beginning of May, when the trip took place, the plants had already finished blooming!

The other four submissions dutifully describe the field activities associated with our AGM in September. The trips to the Dickinson site, reported by George Bryant, and the Clemons property, by Bohdan Kowalyk, both provided the members opportunities to observe various tallgrass prairie and oak savanna habitats and species in a part of the province where these ecosystems still persist, albeit supported by appropriate management measures. Carol Brotman, whose report is accompanied by fine photographs by one Jim Lane (her relative of sorts), went with the group to explore the Hilton Falls Conservation Area. Rich flora did not disappoint, including such always interesting plants as Walking Fern. Then, there is a report by Mike McMurtry from a workshop on lichens, led by our new board member, Troy McMullin. You will find capsule biographies of Troy, and another new director - Natalie Dunn, on the last page of this issue.

So, enjoy good reading and see everyone in the New Year. Before that - we wish you all a very ...

Field Trip Reports

Mr. Ursic leads into the Wilderness

14 September, 2013

By George Bryant
(with contributions from Chris Zoladeski)

The FWR Dickson Wilderness Area is a 146 hectare conservation area situated southwest of Cambridge. Originally cleared farmland, the property now supports a diversity of habitats, including kettle lakes, tamarack swamp, Carolinian forest, tall grass prairie, marshes and thicket swamps. A figure "8" dirt trail loops through these habitats with stairs on steep slopes and boardwalks through wetland areas.

Ken Ursic, Senior Ecologist with Beacon Environmental Services was our guide on this lovely late-summer outing.

Ken began by describing the site's setting. The wilderness area is at the junction of the Horseshoe Till Moraine and the Norfolk Sand Plain, right on the border of Brant and Waterloo counties. Since abandonment of farming, the fields and pastures have succeeded to forest. The Grand River Conservation Authority has been working over the past decade to maintain some of the remnant tallgrass prairie and oak savanna habitats in the area. Extensive areas of this habitat have been managed with prescribed burns and restoration plantings.

We began our hike in a young plantation of Norway Spruce (*Picea abies*) and White Pine (*Pinus strobus*), with probably naturally established Trembling Aspen (*Populus tremuloides*), growing on a slope. Joan Crowe recalled this location as open meadow only some 30 years ago. Along the trail, we saw Heart-leaved Aster (*Symphyotrichum cordifolium*, or *Aster cordifolius*), Large-leaved Aster (*Eurybia macrophylla*, or *Aster macrophyllus*) and Sky Blue Aster (*Symphyotrichum oolentangiense*, or *Aster azureus*). Ken described the characteristics of each and noted the large open panicle as a distinguishing feature of Sky Blue Aster.

We arrived into a small, goldenrod-aster opening scented with the fragrance of crushed apples. Wild Grapes (*Vitis riparia*) were laden with fruit, one observer suggesting this was the best fruit season in years. The opening was rapidly closing in with the invasive Autumn Olive (*Elaeagnus umbellata*), Silky Dogwood (*Cornus amomum*), Red Panicled Dogwood (*Cornus foemina* ssp. *racemosa*) and both of invasive exotic Buckthorns (Common—*Rhamnus cathartica* and Glossy—*R. frangula*).

At an open sandy ridge top, Ken pointed out that it was underlain by an impermeable till layer of silt and clay which creates a perched water table. This explains the occurrence of wetland shrubs and ground mosses on high ground. Ken indicated that it was important to understand the hydrology of a site when classifying vegetation communities. He explained that many people ignore what is not visible at the surface. While fire is key driver in maintaining prairie and savannah habitats in Brant and Norfolk Counties, there are mesic prairies in other parts of the Province where hydrology is equally important in maintaining the openness of these significant ecosystems.

Back on the trail, on the valley slope we observed Round-lobed Hepatica (*Anemone americana*) and Beaked Hazel (*Corylus cornuta*). Descending down a steep slope (with steps, fortunately), we approached a boardwalk over a wetland. At the wetland fringe we observed a very large, about 10 metres tall, pendant Blue Beech (*Carpinus caroliniana*). Bill Draper commented that "something is going after our Blue Beech". Indeed, the leaves on this and other individuals were miniscule—only 2 cm long—reminiscent of Yaupon Holly (*Ilex vomitoria*) from the U.S. south-east. Let us hope we do not have another tree species in trouble.

Along the toe of slope were several large White Pines, arranged in a planted row. The understorey consisted of Beaked Hazel, Downy Arrow-wood (*Viburnum rafinesquianum*), Round-leaved Dogwood (*Cornus rugosa*) and an almost continuous

ground cover of Wild Sarsaparilla (*Aralia nudicaulis*). At the edge of wetland grew Black Ash (*Fraxinus nigra*), Winterberry (*Ilex verticillata*) and Tamarack (*Larix laricina*).

Fall colours were beginning to show well from the boardwalk which straddled the wetland. Silky Dogwood was almost at its best with vermilion leaves and porcelain-blue berries. Ken suggested the wetland would be a mass of red colour in another two weeks when Red-osier Dogwood (*Cornus stolonifera*, or *C.*

Paul Rothfels observes the disappearance of the trip leader, while George Bryant records the time. Photo: C. Zoladeski.

sericea) reached its peak. One bright red compound-leaved shrub attracted Dan Schuurman, who ventured off to inspect it. The plant was determined to be Poison Sumac (*Rhus vernix*), a life plant for many participants. It causes skin irritation similar to Poison Ivy, but Dan showed no reaction.

A multitude of species were observed in this rich shallow marsh and thicket swamp ecosystem, for example Groundnut (*Apios americana*), Water Horsetail (*Equisetum fluviatile*), Skunk-cabbage (*Symplocarpus foetidus*), and Purple-stemmed Aster (*Symphyotrichum puniceum*, or *Aster puniceus*). Mid-way on the boardwalk we saw Rough-leaved Goldenrod (*Solidago patula*), typically associated with rich organic soils and moving groundwater, while Blue-joint Grass (*Calamagrostis canadensis*), Reed Canary Grass (*Phalaris arundinacea*) and Lake-bank Sedge (*Carex lacustris*) were the dominant graminoids. A new shrub was observed–Black Chokeberry (*Aronia melanocarpa*), just next to Winterberry and Nannyberry (*Viburnum lentago*). There was also a cluster of Giant Goldenrod (*Solidago gigantea*) with its characteristic smooth waxy stems.

Out of the wetland and into a mature deciduous woodland, we were drawn to a strange White Oak (*Quercus alba*) with the trunk in the shape of an "N"—an Indian marker tree? Not likely, given that the tree was probably less than 100 years old. At the bottom of slope we observed Sassafras (*Sassafras albidum*), Bearded Short-husk (*Brachyelytrum electrum*), Wintergreen (*Gaultheria procumbens*), Low Sweet Blueberry (*Vaccinium angustifolium*), Pennsylvania Sedge (*Carex pensylvanica*) and Shinleaf (*Pyrola elliptica*).

The forest was characterized by remarkably tall trees–oaks (Red —*Quercus rubra* and White), Beech (*Fagus grandifolia*), Black Cherry (*Prunus serotina*) and one of Ken's favourites—Pignut Hickory (*Carya glabra*). On this mature individual, we guessed the first branch was15 metres above the ground while the main branches were all 25-30 metres up—well within the forest canopy. The trunk was remarkably straight, a common attribute of many hickories, according to Ken.

We had been warned at the beginning that Wood-ticks might affix themselves to us but other ticks, notably Tick-trefoil—both Canadian (*Desmodium canadense*) and Pointed-leaved (*D. glutinosum*), were the reality. In quick order Ken pointed out one bur-bearing plant, White Wild Licorice (*Galium circaezans*) and then another, Enchanter's Nightshade (*Circaea lutetiana*). "Everything here sticks to you", he joked. The rich ground flora also included Lopseed (*Phryma leptostachya*), Scouring-rush (*Equisetum hyemale*) and Large-leaved Aster.

Farther along the trail, and up a hill, the forest opened into another prairie opening, a lovely backlit view of russet Indian Grass (*Sorghastrum nutans*) overtopping a sea of Sky Blue Aster. A remarkably tall Pear (*Pyrus communis*) was a relict of an old orchard.

After lunch we visited several larger prairie patches dominated by tall grasses: Big Bluestem (*Andropogon gerardii*), Little Bluestem (*Schizachyrium scoparium*) and Indian, with patches of Butterfly-weed (*Asclepias tuberosa*), Hairy Aster (*Symphyotrichum* pilosum, or *Aster pilosus*), Grey Goldenrod (*Solidago nemoralis*), Tall Goldenrod (*S. altissima*), Canada Goldenrod (*S. canadensis*), and Round-headed Bush-clover (*Lespedeza capitata*). Black Locusts (*Robinia pseudo-acacia*) were invading in several spots. Ken noted that this species was one of the biggest management issues: between herbaceous and woody invasives, "the woody stuff is the bigger problem."

At the edge of the woods we found the always interesting, if inconspicuous, Wild Coffee (*Triosteum aurantiacum*). At a small pond completely covered by Lesser Duckweed (*Lemna minor*) and some Star Duckweed (*L. trisulca*), we noticed a small Black Oak (*Quercus velutina*) tree on the slope surrounding the pond.

The trail cut through another patch of savanna (yes, the site was a mosaic of very contrasting habitats and we were continuously jumping from dry-to-wet, upland-to-lowland and open-to-closed situations). There, we found New Jersey Tea (*Ceanothus americanus*) and Saskatoon Berry (*Amelanchier alnifolia*).

Through another forest patch and then out into perhaps 1½ acres of pure Indian Grass, the sizzle of grasshoppers throbbing in our ears. This was not a natural prairie; Ken pointed out the only reason we have any prairies left in the preserve was because they were managed for staying open through prescribed burns. At that location we noticed a typically-looking Black Oak. As there were acorns available, Ken explained the differences between this species and Northern Pin Oak (*Quercus ellipsoidalis*): acorn cups of Black's are pubescent underneath, while those of Northern Pin's are glabrous.

Returning to the parking lot, Ken held one more trick up his sleeve. About one kilometre down the road there was a hedgerow of mixed oak species—White, Red and Northern Pin, the latter also known as Hill's Oak a.k.a. Jack Oak, confined in Ontario to this small area and Lake-of-the-Woods. The species is characterized by ellipsoid acorns, persistent lower branches (creating "pins") and microscopic features much-loved by the quercophiles in our midst. After an intensive search of the ground we finally found one or two small acorn cups which were indeed glabrous underneath.

A great day and a great location; we were fortunate to have Ken Ursic provide his insights during another wonderful FBO field outing.

Graham Buck, our trip leader, distributed a list of species and described the White Oak-White Pine savanna as well as the management including fire that has been undertaken for its stewardship. A total of 53 native species of savanna affinity were listed and many of these were seen. Possibly most noteworthy was the endangered American Columbo (*Frasera carolinensis*), visible both as green rosettes and as dry flowering spikes that come at the end of the plant's life.

Among the less common tree species were Pignut Hickory (*Carya glabra*), Northern Pin Oak (*Quercus ellipsoidalis*) and Black Oak (*Quercus velutina*). The latter two species can be differentiated by lower leaf-surface hairiness on Black Oak and persistence of dead drooping branches on Northern Pin Oak, although sometimes they may be confused due to hybridization. American Hazel (*Corylus americana*) was seen and photographed with fruit.

Prescribed burning has reduced the proportion of non-native grasses and increased the native warm-season grasses such as Big Bluestem (*Andropogon gerardii*).

Stately oaks. Photo: B. Kowalyk.

In the Oak Savannas of Brant County

15 September 2013

By Bohdan Kowalyk

On a pleasant Sunday, we met on Blue Lake Road and proceeded northward onto the Clemons property adjoining the south and west sides of Blue Lake. The lake has apparently had a history of marl (calcium-rich clay mud) extraction during the 1875-1915 period. Since then, the north and east sides have been subdivided into lots. The Clemons property has remained approximately half natural and half agricultural field.

Species of high coefficient of conservatism included Hoary Puccoon (*Lithospermum canescens*), Sky Blue Aster (*Aster oolentangiensis*), Early Buttercup (*Ranunculus fascicularis*), Hispid Buttercup (*Ranunculus hispidus*), Yellow Pimpernel (*Taenidia integerrima*), Poke Milkweed (*Asclepias exaltata*), Nodding Wild Rye (*Elymus canadensis*), Whorled Loosestrife (*Lysimachia quadrifolia*), Virginia Mountain-mint (*Pycnanthemum virginianum*) and Indian Grass (*Sorghastrum nutans*). Some species were more showy than others as the season could not be the most appropriate for all.

After lunch we proceeded into Brantford's Glenhyrst Gardens and the Hardy Road Railway Prairies along the rail trail following the Grand River. Rare grasses included Side-oats Gramma (*Bouteloua curtipendula*), Northern Dropseed (*Sporobolus heterolepis*) and Porcupine Bunch Grass (*Stipa spartea*). Rare forbs were Green Milkweed (*Asclepias viridiflora*) and Hoary Tick-trefoil (*Desmodium canescens*). Upland White Aster (*Solidago ptarmicoides*) was rediscovered apparently after not having been seen in the area for several years.

American Columbo rosettes and spike. Photo: B. Kowalyk.

A portion of the treed area experienced a tornado blowdown several years ago. After timber salvage by Mennonites, this has resulted in a sizeable open area.

An extended area along the edge of a field had been revegetated with a prairie seed mix in 2009. Among the lessons learned, was that seed mixes may contain surprises such as, in this case, a hybrid sunflower (*Helianthus divaricatus* x *giganteus*). Also, beware of Canada Tick-trefoil (*Desmodium canadense*) in September as it can cover certain clothes with sticky seeds.

We walked back along a former railway which is the route of what is known as the Blue Lake Railway Prairie. Bur Oak (*Quercus macrocarpa*) was more prominent here along with the other oaks. Noteworthy new plants reported from this area included Taprooted Valerian (*Valeriana edulis* ssp. *ciliata*) which is a very rare (S1) wetland species and Purple Vetch (*Vicia americana*). A patch of Hackberry (*Celtis occidentalis*) was seen growing on the slope.

The rare Dwarf Chinquapin Oak (*Quercus prinoides*) was found growing as a low suckering shrub with acorns and also in single-stemmed upright tree form that appeared more like the true Chinquapin Oak (*Quercus muehlenbergii*). Smooth Sumac (*Rhus glabra*) was seen growing next to and lower than the more common Staghorn Sumac (*Rhus typhina*).

Relocating a distance away along Hardy Road, we came out on a slope of Porcupine Bunch Grass above a well-established tall grass prairie that had been seeded and had established well on appropriate soils. It included some Stiff Goldenrod (*Solidago rigida*). A walk through an alfalfa hayfield led us to Soft Gromwell (*Lithospermum molle*, formerly *Onosmodium molle*) growing in the vicinity of tufa, a variety of limestone.

As we returned to our vehicles, we walked though an interesting forest community dominated by Black Maple (*Acer saccharum* ssp. *nigrum*), with other species including Hackberry.

Overall, a very satisfying outing for all.

A Lesson in Lichens

14 September 2013

By Mike McMurtry

I find myself inspecting little granules, as it were, on the bark of trees, little shields or apothecia springing from a thallus, such is the mood of my mind, and I call it studying lichens.
–Henry David Thoreau's *Journals*

While they are not plants, lichens are the subject of study of many botanists, as they occur in most the same habitats, they are fascinating in their diversity, and they are beautiful. Troy McMullin, who completed his Ph.D. at the University of Guelph and is now working there, led a workshop on lichens as part of the 2013 FBO Annual General Meeting. Participants met at the Biodiversity Institute of Ontario, a relatively new building at the university dedicated to biodiversity research, particularly on the genetic signatures of species carried in their DNA. We saw the DNA preparation and analysis labs and the university's herbarium (known as OAC, an acronym derived from the Ontario Agricultural College), which holds a collection of vascular plants, and now, of lichens, collected and compiled by Troy and his colleagues. It is a wonderful facility and one available to our members upon appointment. Following the tour, we moved to a lab in another science building where we heard a presentation introducing the lichens, their classification, morphology, value to society and the use of taxonomic keys.

Lichens are "not a single entity, but a composite of a fungus and an organism capable of producing food by photosynthesis" (Brodo *et al.* 2001). This organism, or photobiont, can be either an alga, or a cyanobacterium, or in a few cases, both. Most lichens in Ontario are a combination of a fungus and an alga. The lichen cannot exist in the wild unless the fungus and the photobiont exist independently in the same environment. Given that lichens are a composite of species living symbiotically, it could be argued that the various types of lichens are not actually species, but the consensus of biological opinion seems to be that they are. Lichen species are

Hooded Rosette Lichen (*Physcia adscendens*). Photo: M. McMurtry.

named after the fungal constituent. For example, *Xanthoria elegans* is a symbiosis between the fungus *Xanthoria elegans* and an alga. While there are a great many species of lichens in the world, approximately 17 500 at last estimate (McMullin pers. comm.), with a little study of the basic forms and associated terminology, it is possible for a novice to identify many species.

Lichens can be grouped into three general categories: fruticose, foliose and crustose. Fruticose lichens have a thallus, or body, that is stalked and can be branched, and has no clearly distinguishable sides. Foliose lichens are leaf-like in structure, with a top and a bottom. Crustose lichens are generally in close contact with the substrate and cannot be removed without removing the substrate (Brodo *et al.* 2001). The type of substrate that the lichen is found on (tree, rock or soil) is an important further clue to the species. Troy McMullin, together with Steve Newmaster and other colleagues have produced a book that illustrates the common species, including lichens, of southern Ontario woodlots, and provides a key to identification (Newmaster *et al.* 2013). The bible on North American lichens is still the weighty *Lichens of North America* (Brodo *et al.* 2001), but as Troy pointed out, though it provides a broad overview of lichens, many of the less-common species are not included.

A basic knowledge of the structure of lichens is indispensable to identifying them. Such terms as thallus, soredium, apothecium, isidium and rhizine should not be foreign to those wishing to identify lichens. Further, it is generally necessary to obtain samples of lichens so that they may be studied under a microscope until you are familiar with the common species in an area. Chemicals such as potassium hydroxide and chlorine are sometimes used to perform basic tests on the chemistry of lichens to separate otherwise similar species.

The workshop participants were able to take advantage of the lichen collection to key out some of the species of southern Ontario that we would be likely to encounter. In Troy's words, the "big six" lichen species of southern Ontario woodlots that one should know are: Candleflame Lichen (*Candellaria concolor*), Hooded Rosette Lichen (*Physcia adscendens*), Mealy Rosette Lichen (*Physcia millegrana*), Star Rosette Lichen (*Physcia stellaris*), Hammered Shield Lichen (*Parmelia sulcata*) and Orange-cored Shadow Lichen (*Phaeophyscia rubropulchra*).

Other lichen species that are familiar to us are the bright orange *Xanthoria* lichens, such as Elegant Sunburst Lichen (*Xanthoria elegans*), reindeer lichens, such as Gray Reindeer Lichen (*Cladina rangerifera*), British Soldiers (*Cladonia cristatella*), and the hairlike *Bryoria* lichens. *Cladina* lichens are an essential food of Caribou and have been used to imitate miniature trees in model railroading. Many of the bright-coloured lichens have been used to make dyes. The large, plate-like foliose lichens of the genus *Umbilicaria*, the rock tripes, all produce a beautiful purple colour since they contain the chemical gyrophoric acid. Two lichens that occur in Ontario are currently the focus of field inventories as their at-risk status is reviewed: Flooded Jellyskin (*Leptogium rivulare*) and Golden-Eye Lichen (*Teloschistes chrysophthalmus*). There are many species in Ontario and around the world for which knowledge about the range and number of occurrences is very limited.

We spent about an hour walking in the Arboretum grounds to see some lichens in a more natural setting. A plank of the notice board next to the parking lot had about 10 species on it, almost a tenth of the known species in the Arboretum. This was a good start, but we also found lichens growing on trees lining the promenade, on an old cedar rail fence and on rocks in the Japanese garden. We realized the value of our lab exercise as Troy pointed out species that were hard for us to differentiate based on a superficial view. A hand lens was useful to see some of the finer structures. We thank Troy for passing on his enthusiasm for lichens and providing us with some of the tools needed to further explore this interesting and beautiful group.

References

Newmaster, S.G., C. Early, A.J. Fazekas, C.A. Lacroix, Richard Troy McMullin, B. Lacey, Thomas Henry, Jose R. Maloles, S. Ragupathy, Kevan Berg and P. Williams. 2013. Woodlot Biodiversity, 2nd Edition. Friesens Press.

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Hilton Falls Plant List... Dunn by McIlveen

15 September 2013

By Carol Brotman

On the Sunday of the 2013 AGM, a cool, cloudy day - threatening rain that never quite happened - a small group of six gathered in the busy parking lot of Hilton Falls Conservation Area (HFCA) to be greeted by our leader for the day, Julia Marko Dunn.

HFCA is situated within the watershed of Sixteen Mile Creek and consists primarily of escarpment plain forest. It was established in 1971 to allow development of a dam and reservoir providing flow augmentation and flood protection on Sixteen Mile Creek. The Conservation Area, 648 hectares in size, is one of the largest remaining publicly-owned natural areas in Southern Ontario.

The flora of HFCA is not only diverse with 1445 taxa recorded, of which 948 (65.5%) are native species, but also interesting – 306 (32.3%) taxa are listed as rare and 220 (23.2%) as uncommon within Halton Region.[1]

The sight of an old Ontario Hydro transmission line crossing in front of us, within view of the parking lot, prompted Bill Draper to remember a story. The line was planned in 1977 only for it to be discovered that the intended route would destroy the single known locality in Ontario (at that time) of the butterfly *Pieris virginiensis* (West Virginia White). Since the butterfly had been listed as an endangered species a year earlier, Hydro was obliged to divert its power line around the area of concern with the happy result that the West Virginia White is still present at HFCA.[2]

We spent our day covering about 7 km of trails in the southern part of the CA passing though a good variety of habitat types, mostly forested.

Walking Fern (*Asplenium rhizophyllum*). Photo: J. Lane.

In an area of upland rocky maple forest we studied the differences between *Picea glauca* (White Spruce) and *Picea abies* (Norway Spruce). The latter has very long cones and the former smaller cones. The soil here is very thin with areas of exposed bedrock. We also examined *Prenanthes alba* (White Lettuce) observing the deep red-brown pappus (the hairs beneath the bracts of the flower head). We learned that *Asarum canadense* (Wild Ginger) has its seeds dispersed by ants. *Euonymus obovatus* (Running Strawberry Bush) was in fruit and very common along the trail.

No trip in fall would be complete without asters cropping up as a problem. This time it was *Aster lateriflorus* (Calico Aster) versus *Aster ontarionis* (Ontario Aster). Pardon me. I guess that's *Symphyotrichum lateriflorum* versus *Symphyotrichum ontarione*. Fortunately, having the likes of Bill Draper and Bill McIlveen in attendance takes all the difficulty out of a dilemma like that. In *lateriflorum* the mid-vein on the underside of the leaf is hairy whereas *ontarione* has hairs on the upper side of the leaf. Got that?

Another item from the "God forbid anything should ever be simple" department came next – Blue Cohosh. Apparently they aren't all *Caulophyllum thalictroides*. There's also *Caulophyllum giganteum* to worry about. *Giganteum* has dark purple/red flowers which open with or before the leaves and *thalictroides* has lighter greenish flowers which bloom after the leaves have opened. I'm not sure where that leaves fall botanists other than confused.

How different plants manage to scrape a living out of every possible habitat never ceases to amaze. We did manage to recognize a small group of *Conopholis americana* (Squaw-root) that were a bit past their best-before date. Looking like nothing quite so much as pine cones dropped on end, these little plants are parasites on tree roots, especially oaks. Apparently parasitism isn't an all-or-nothing proposition. Later in the day, we found a fine display of *Pedicularis canadensis* (Wood Betony or Canada Lousewort) which is a hemi-parasite deriving some, but not all, of its nourishment from a wide range of host plants.

A new discovery, on our field trip for HFCA, was *Pilea pumila* (Clearweed).

Even the commonest species can be grist for the mill of controversy. Is that *Acer saccharum* (Sugar Maple) or *Acer nigrum* (Black Maple)? The discussion took several minutes because, wouldn't you know it, they hybridize! In *saccharum* the stalks are longer than the keys whereas in *nigrum* the stalks and keys are about the same length. Variability of the genus *Acer* causes problems beyond the narrow confines of Field Botany. Apparently there was a public controversy over the shape of the maple leaf on the newest of those plastic bank notes. Although everybody knows what a maple leaf looks like, "everybody" can't agree on it.

Common names of plants may be common but they're not much help. On a side trail over to the falls of HFCA we discovered *Zanthoxylum americanum* (Prickly Ash) which is certainly prickly enough but isn't an ash at all. Its other common name is the Toothache Tree for its use in herbal medicine. It is also the host plant of the butterfly *Papilio cresphontes* (Giant Swallowtail) and uncommon in the GTA.

We took our lunch in a picnic area at the falls for which the Conservation Area is named. The Hilton in HFCA remembers Edward Hilton, the first in a series of operators who built sawmills at the falls in the mid-19th Century. A steel stairway led down into the gorge below the falls where we could look up at cedars clinging perilously to cliff edges. The wetter rock faces near the falls were covered with liverworts too far away to see properly.

On the way back to the main trail loop, a moss-covered boulder was crowned with a large patch of *Asplenium rhizophyllum* (Walking Fern). This species is one of those ferns that doesn't look to the untutored eye anything like a fern. It's also quite rare and HFCA is only the 3rd place we've ever seen it. Bill Crowley eat your heart out! Bill often laments his bad luck in not finding Walking Fern.

Near the end of the trail Bill Draper led us through a discussion of the characters used to distinguish *Juglans cinerea* (Butternut) from *Juglans ailantifolia* (Japanese Walnut) and the all too prevalent hybrids between the two. The question is sufficiently vexed that different authorities are evidently using different methods to decide the issue. Butternut is in danger due to its susceptibility to Butternut canker disease.

The list of plant species for the day was expertly recorded by Bill III McIlveen.

HFCA is a large and interestingly diverse natural area within earshot of the busy 401. I must have driven past it unknowingly hundreds of times over the years. It's definitely well worth a return visit.

Latin Binomial	**Common Name**	**Rank**
Apiosporina morbosa	Black Knot	
Lentinus strigosus	Hairy Panus	
Lycoperdon perlatum	Gem-studded Puffball	
Ophiognomonia clavigignenti-juglandacearum	Butternut Canker	
Trametes versicolor	Turkey-tail	
Acer saccharum ssp. saccharum	Sugar Maple	S5
Acer spicatum	Mountain Maple	S5
Actaea pachypoda	Doll's Eyes	S5
Adiantum pedatum	Northern Maidenhair Fern	S5
Ageratina altissima	White Snakeroot	S5
Agrimonia gryposepala	Tall Hairy Groovebur	S5
Aletris farinosa	Colicroot	S2
Alliaria petiolata	Garlic Mustard	SNA
Allium tricoccum	Small White Leek	S5
Amphicarpaea bracteata	American Hog-peanut	S5
Anemone acutiloba	Sharp-lobed Hepatica	S5
Anemone virginiana var. virginiana	Virginia Anemone	S5
Apocynum androsemifolium	Spreading Dogbane	S5
Aquilegia canadensis	Wild Columbine	S5
Aralia nudicaulis	Wild Sarsaparilla	S5
Aralia racemosa	American Spikenard	S5
Arisaema triphyllum	Jack-in-the-pulpit	S5
Asarum canadense	Canada Wild-ginger	S5
Asclepias exaltata	Poke Milkweed	S4
Asclepias sullivantii	Prairie Milkweed	S3
Asclepias syriaca	Common Milkweed	S5
Asplenium rhizophyllum	Walking-fern Spleenwort	S4
Berberis vulgaris	European Barberry	SNA
Betula papyrifera	Paper Birch	S5
Botrychium virginianum	Rattlesnake Fern	S5
Brachyelytrum erectum	Bearded Short-husk	S4S5
Bromus latiglumis	Broad-glumed Brome	S4
Carex blanda	Woodland Sedge	S5
Carex hitchcockiana	Hitchcock's Sedge	S5
Carex platyphylla	Broad-leaved Sedge	S5
Carex rosea	Rosy Sedge	S5
Carya cordiformis	Bitternut Hickory	S5
Caulophyllum giganteum	Blue Cohosh	S4?
Chelone glabra	White Turtlehead	S5
Circaea canadensis	Broadleaf Enchanter's Nightshade	S5
Clinopodium vulgare	Wild Basil	S5
Conopholis americana	Squawroot	S4?
Cornus alternifolia	Alternate-leaf Dogwood	S5
Cornus rugosa	Round-leaved Dogwood	S5
Corylus cornuta	Beaked Hazelnut	S5
Crataegus phaenopyrum	Washington Hawthorn	zz
Cuscuta gronovii	Gronovius' Dodder	S5
Cystopteris bulbifera	Bulblet Fern	S5
Desmodium glutinosum	Pointed-leaved Tick-trefoil	S4
Dianthus armeria	Deptford Pink	SNA
Diervilla lonicera	Northern Bush-honeysuckle	S5
Dirca palustris	Eastern Leatherwood	S4?
Dryopteris marginalis	Marginal Wood-fern	S5
Elymus hystrix	Bottlebrush Grass	S5
Epipactis helleborine	Helleborine	SNA
Eurybia macrophylla	Large-leaf Wood-aster	S5
Fagus grandifolia	American Beech	S4
Festuca subverticillata	Nodding Fescue	S4
Fraxinus americana	White Ash	S5
Galium circaezans	Wild White Licorice	S5
Galium triflorum	Sweet-scented Bedstraw	S5
Geranium robertianum	Herb-Robert	SNA
Impatiens capensis	Spotted Jewel-weed	S5
Impatiens pallida	Pale Jewel-weed	S5
Juglans cinerea	Butternut	S3?
Juncus tenuis	Path Rush	S5
Laportea canadensis	Wood Nettle	S5
Ligustrum vulgare	European Privet	SNA
Lobelia inflata	Indian-tobacco	S5
Lonicera canadensis	American Fly-honeysuckle	S5
Lonicera tatarica	Tartarian Honeysuckle	SNA
Maianthemum canadense	Wild Lily-of-the-valley	S5
Maianthemum stellatum	Starflower False Solomon's-seal	S5
Malus pumila	Common Apple	SNA
Milium effusum	Tall Millet-grass	S4S5
Monarda fistulosa	Wild Bergamot Bee-balm	S5

Monotropa uniflora	Indian-pipe	S5
Nasturtium officinale	True Watercress	SNA
Oryzopsis asperifolia	White-grained Mountain-ricegrass	S5
Osmorhiza longistylis	Smoother Sweet-cicely	S5
Ostrya virginiana	Ironwood	S5
Oxalis stricta	Upright Yellow Wood-sorrel	S5
Parthenocissus vitacea	Thicket Creeper	S5
Pedicularis canadensis	Early Wood Lousewort	S5
Phalaris arundinacea	Reed Canary Grass	S5
Phryma leptostachya	Lopseed	S4S5
Pilea pumila	Canada Clearweed	S5
Pinus resinosa	Red Pine	S5
Piptatherum racemosum	Black-fruit Mountain-ricegrass	S4
Plantago lanceolata	English Plantain	SNA
Plantago rugelii	Black-seed Plantain	S5
Poa compressa	Canada Blue Grass	SNA
Polygonatum pubescens	Hairy Solomon Seal	S5
Polymnia canadensis	Small-flowered Leaf-cup	S4
Polypodium virginianum	Rock Polypody Fern	S5
Polystichum acrostichoides	Christmas Fern	S5
Populus grandidentata	Large-toothed Aspen	S5
Populus tremuloides	Trembling Aspen	S5
Prenanthes alba	White Rattlesnake-root	S5
Prunella vulgaris ssp. vulgaris	Selfheal	SNA
Pteridium aquilinum	Bracken Fern	S5
Quercus rubra	Red Oak	S5
Rhamnus cathartica	European Buckthorn	SNA
Rhus typhina	Staghorn Sumac	S5
Rosa blanda	Smooth Rose	S5
Rubus allegheniensis	Allegheny Blackberry	S5
Rubus odoratus	Purple Flowering Raspberry	S5
Rubus sachalinensis var. sachalinensis	Wild Red Raspberry	S5
Sambucus nigra ssp. canadensis	Common Elderberry	S5
Sanguinaria canadensis	Bloodroot	S5
Sanicula marilandica	Black Snakeroot	S5
Securigera varia	Common Crown-vetch	SNA
Sium sauve	Hemlock Water-parsnip	S5
Solanum dulcamara	Climbing Nightshade	SNA
Solidago altissima var. altissima	Tall Goldenrod	S5
Solidago caesia	Blue-stem Goldenrod	S5
Solidago flexicaulis	Zig-zag Goldenrod	S5
Solidago nemoralis ssp. nemoralis	Gray Golderod	S5
Symphoriocarpus albus var. albus	Snowberry	S4S5
Symphyotrichum cordifolium	Heart-leaved Aster	S5
Symphyotrichum novae-angliae	New England Aster	S5
Symphyotrichum urophyllum	Arrow-leaved Aster	S4
Syringa vulgaris	Common Lilac	SNA
Thalictrum dioicum	Early Meadow-rue	S5
Thuja occidentalis	Eastern White Cedar	S5
Tiarella cordifolia	Heart-leaved Foam-flower	S5
Tilia americana	American Basswood	S5
Toxicodendron rydbergii	Western Poison Ivy	S5
Tsuga canadensis	Eastern Hemlock	S5
Ulmus americana	American Elm	S5
Ulmus pumila	Siberian Elm	SNA
Urtica dioica ssp. gracilis	American Stinging Nettle	S5
Uvularia grandiflora	Large-flowered Bellwort	S5
Verbena urticifolia	White Vervain	S5
Veronica officinalis	Gypsy-weed	SNA
Viburnum acerifolium	Maple-leaved Viburnum	S5
Viburnum lentago	Nannyberry	S5
Viola canadensis	Canada Violet	S5
Zanthoxylum americanum	American Prickly-ash	S5

References

[1] Crins, W.J., W.D. McIlveen, A.G. Goodban, P.G. O'Hara. 2006. The Vascular Plants of Halton Region, Ontario. Chapter 1 in Halton Natural Areas Inventory Vol. 2. Species Checklists.

[2] Master Plan for Hilton Falls Conservation Area Inventory and Analysis: Stage One Report. April 2010.

Botanical Explorations in the Reid Tract

11 May 2013

By Leanne Wallis

On a cool, cloudy mid-May morning, 15 hearty naturalists joined esteemed trip leaders Sarah Mainguy and Leah Lefler for the first field trip of the 2013 season: a hike around Reid Conservation Area in Lambton County. This 170 acre property along the banks of the Sydenham River was donated to St. Clair Conservation Authority in 2006 by Lena Reid and Jean Reid-Lye. As a new conservation area, it is not yet marked on most maps, so if you intend to visit, drive to nearby Duthill, Ontario, and then follow Duthill Road south. The conservation area is signed, and is on the west side of the road between Tulloch Line and Kerr Line.

Sarah and Leah are consultants working for North-South Environmental and they prepared a draft Management Plan

for the property after completing ELC and other field work on the property. To date, 373 plant species have been recorded, including some that are provincially and regionally rare. The property contains forest, wetlands and farmland. Two provincially significant vegetation community types are present: Fresh-Moist Black Maple Lowland Forest and Bur Oak Mineral Swamp.

Northern Prickly-Ash flowers and young leaves. Photo: L. Wallis.

As the trip commenced, we stopped to observe Spring Avens (*Geum vernum*). Our earliest flowering avens, some of its flower buds had just opened to reveal small yellow petals, each 1-2mm long. If we had come later in the season, we would have observed that the fruiting heads are conspicuously stalked, unlike our other avens which have fruits sessile or nearly so. This species is at the northern end of its range in southern Ontario and is believed to be increasing in numbers here.

Next, in a wet depression, we encountered Lakebank Sedge (*Carex lacustris*) in flower, with its yellow anthers and white stigmas visible. Below the sedge was a carpet of non-native Moneywort (*Lysimachia nummularia*). Nearby we found little mud chimneys built by a Chimney Crayfish species (*Fallicambarus fodiens* or *Cambarus diogenes*). Other sedges seen elsewhere included Pennsylvania Sedge (*Carex pensylvanica*), Graceful Sedge (*Carex gracillima*), Pubescent Sedge (*Carex hirtifolia*) and the provincially rare Muskingum Sedge (*Carex muskingumensis*).

While peeking under snakeboards we were delighted to find a Blue-spotted Salamander (*Ambystoma laterale*). Farther along we found Wild Blue Phlox (*Phlox divaricata*) just starting to unfurl its bluish-purple flowers.

Photographic mayhem ensued when the trip leaders pointed out False Mermaid-weed (*Floerkea proserpinacoides*), a small, delicate plant of rich woods and one that many of us had never seen. This species is Ontario's only representative of the Limnanthaceae Family (False Mermaid Family) and at first glance it resembles a Bedstraw (*Galium*), however, unlike the Bedstraws which have whorled leaves, False Mermaid-weed has alternate highly dissected leaves. Also, its flowers have 3 green sepals and 3 white petals. Other notable plants in flower included Wood Anemone (*Anemone quinquefolia*), Yellow Pimpernel (*Taenidia integerrima*), Coffee Tinker's-weed (*Triosteum aurantiacum*), Wild Crane's-bill (*Geranium maculatum*), Dwarf Ginseng (Panax trifolius), and Cut-leaf Toothwort (*Cardamine laciniata*). The provincially rare Harbinger-of-spring (*Erigenia bulbosa*) had already finished flowering.

Another highlight was seeing Wood Rush (*Luzula acuminata*). This lesser known genus of the Juncaceae differs from *Juncus* by its terrestrial habitat and more or less hairy leaves. Our species bloom in the early spring.

Northern Prickly-Ash (*Zanthoxylum americanum*) shrubs were observed growing near the edge of a wetland. This shrub is in the Rutaceae Family (Citrus Family) and is one of the two native Ontario hosts for Giant Swallowtail (*Papilio cresphontes*) larvae (the other being Common Hop Tree, *Ptelea trifoliata*). Giant Swallowtails, a provincially rare species have been found on this property. We were pleased to find this shrub's inconspicuous flowers and its first leaves coming out.

Blue Ash square twig. Photo L. Wallis.

Dissected leaves of Harbinger-of-spring. Photo: L. Wallis.

Another highlight of the trip was observing Blue Ash (*Fraxinus quadrangulata*). Blue Ash is a species of Special Concern both nationally and provincially. In Ontario its range includes only the Carolinian zone. Its distinctive four-angled twigs give it its species epithet of *quadrangulata.* Its common name of Blue Ash comes from the reputed blue dye that can be extracted from its inner bark.

As we continued walking, someone pointed out a small dainty plant with withered flowers. Leah dug up its base and identified it as Squirrel Corn (*Dicentra canadensis*) which gets its name from small orange tubers that are about the size of a corn kernel.

Participant Walter Muma then quipped that perhaps it should be called Squirrel Corm!

Other treats included Bladdernut (*Staphylea trifolia*), Tower Mustard (*Arabis glabra*), Clustered and Maryland Sanicle (*Sanicula odorata* and *S. marilandica*), Buttonbush (*Cephalanthus occidentalis*), Pale Vetchling (*Lathyrus ochroleucus*), Moonseed (*Menispermum canadense*), Twinleaf (*Jeffersonia diphylla*) and some huge Freeman's Maples (*Acer x freemanii*) about 1 metre in diameter.

In a marshy area, Sarah pointed out Sweetflag (*Acorus americanus*), which at this time of the year was in a vegetative state lacking any flowers or fruits. She introduced us to the sweet smell of its broken leaves and rhizomes. She also mentioned that it had a reddish base and an off-centre midrib.

Due to an abundance of unauthorized trails on the property, the group got slightly off course while walking back to the cars, but thankfully, Sarah was prepared with a GPS and led us safely back.

As anyone who has been on an FBO trip before knows, one of the benefits is the exchange of information between group members. Hike participant Prachi Patel found what appeared to be Wild Crab Apple (*Malus coronaria*) which would have been new to the species list. Along the way we encountered some unhealthy Beech (*Fagus grandifolia*) trees which prompted a discussion on Beech Bark disease and its range in Ontario. We also noted that the Blue-beech (*Carpinus caroliniana*) also looked unhealthy, having small discolored leaves from some unknown insect or disease. A Hawthorn tree, tentatively identified as *Crataegus mollis* sparked an exchange of Hawthorn identification tips picked up at the FBO's recent Hawthorn ID workshops.

Overall, everyone enjoyed themselves and learned lots. We were all very appreciative of the wealth of knowledge that both Sarah and Leah have acquired and their willingness to share it with us.

The Duff Layer

"The Academic Decline: How to Train the Next Generation of Botanists"

You may want to check for yourself: this article demonstrates the need for organizations such as the FBO. Although it describes the troubling trends in botanical education in the U.S., a very similar situation exists in Canada, and perhaps elsewhere in the world.

http://www.usnews.com/news/articles/2013/11/12/the-academic-decline-how-to-train-the-next-generation-of-botanists

Early Trip Alert for 2014!

The FBO is offering a Winter Woody Plant ID workshop at the University of Guelph Arboretum Taylor Centre in Guelph on Sunday, February 2nd, 2014. Anyone interested should please check our Blog for a description of the trip and the trip registration form.

http://fieldbotanistsofontario.blogspot.ca/

If you would prefer not to go the electronic route you may call Sarah Mainguy at 519 822-5221.

The University of Guelph offers online courses in Sustainable Urban Agriculture and Horticulture. Four courses are offered this Winter starting on January 13, 2014 including:

- ***Ecology of Gardens and Landscapes in an Urban Environment*** - Learn the principles of ecology in a natural system and apply these principles to analyze an urban environment, comparing and contrasting it to a natural system. Assess the current status of your urban environment. Find creative ways to share and apply your understanding of urban ecology.

Individual courses can be taken for general interest or work towards one or both certificates. Program and course descriptions are posted on the website www.UrbanHort.ca or contact info@OpenEd.uoguelph.ca or 519-767-5000.

Our correspondent, Mr. Paul Rothfels, like many of us, wondered why Newcomb's Field Guide was never updated or expanded. In the spring of this year, he tried to get in touch with the publishers but to no avail. On a whim, he googled the illustrator's name, picked a likely suspect and... lo and behold:

Dear curious Paul and son,
Yes! I am the illustrator of Newcomb's Wildflower Guide.

I am so pleased to know how much you and your son like the book and that you use it extensively. It seems your amateur botanizing has given the two of you a strong connection. Congratulations on the PhD in botany from Duke.

In the early seventies Larry (Lawrence Newcomb) and I lived in the same town, only a few miles from each other, and became acquainted through our mutual support of a local Mass Audubon Society property. We worked on the illustrations for two years. I drew more than 1200 of the plants from life, with the remaining 100 drawn from pressed specimens from Harvard Universities collections.

I'm sorry to say Larry passed away a couple years after the book was published. I think that was in 1979. If Larry had lived there may well have been a follow up expanded edition, if not a complimentary edition. I wish he could have known how successful his book has been.

The book is still very much in circulation in soft cover edition - selling well as I understand it.

About 8 years ago, with the approach of the twenty fifth anniversary of the publication of Newcomb's, and the 100 anniversary of the founding of the New England Wild Flower Society (of which Larry was a long time supporter as well as their treasurer), the Exec Director of the Society and I approached Little Brown & Co, the publisher, with the idea of expanding the coverage and up-dating the nomenclature. I would have hand-colored all the black and white art, making it a full color edition. The Society would have taken on the project, and guaranteed Little Brown the purchase of 5000 copies from the first run. Little Brown would publish and distribute the work.

Little Brown & Co showed a great deal of interest. But, as it turned out, the person representing Little Brown turned out to be impossible to get correspondence, of any kind, from. After two years of trying, and with the dual anniversary deadlines upon us, we were no where, so we gave up. We just stopped trying to communicate and never heard a word from anyone at Little Brown..?

The one complaint I have ever heard towards the book was the lack of more color- especially from experts in other fields of natural history. Even though they owned the book they would not have hesitated to purchase it again - if it were in full color. Little Brown blew an opportunity to rejuvenate and dramatically increase sales of the guide.

I finish here with a story the two of you may find interesting. As far as I know Larry did not have a degree in botany. In fact he had just retired from the vice presidency at Bank of Boston when we started working on the book. During our many hikes and travels, drawing and collecting specimens, Larry and I became rather close, and one of the stories he told me was how, when he was very young, his father gave him a book on botany and told him to use it and share what he learned from it with his brother and sister. The father gave each of the other children a book on different nature subjects and told them to do the same. Share what they learned with each other. Apparently they did just that - because through all our outdoor ventures together Larry impressed me, not only with his knowledge and passion for plants, but with his knowledge of nature, and of birds in particular.

I hope this gives you a little insight into Larry and his guide...

Wishing you happy botanizing...

Gordon -
Artist/Naturalist/Author
Presentations for all ages

Donation to Thames Talbot Land Trust

The Field Botanists of Ontario will be donating $1000.00 to the Thames Talbot Land Trust in memory of our late member Jane Bowles. A tribute to Jane appeared in our last issue. Jane was Chair of the Property Management Committee at the land trust. This organization has been involved in the conservation of such properties as the Tanager Tract, Joany's Woods, Newport Forest, McTavish Tract, Skunk's Misery and more. We encourage members to add to this amount with your personal donations. You can mail a cheque to: Thames Talbot Land Trust, P.O Box 25054, London, ON N6C 6A8.

More information about this organization is available at its website

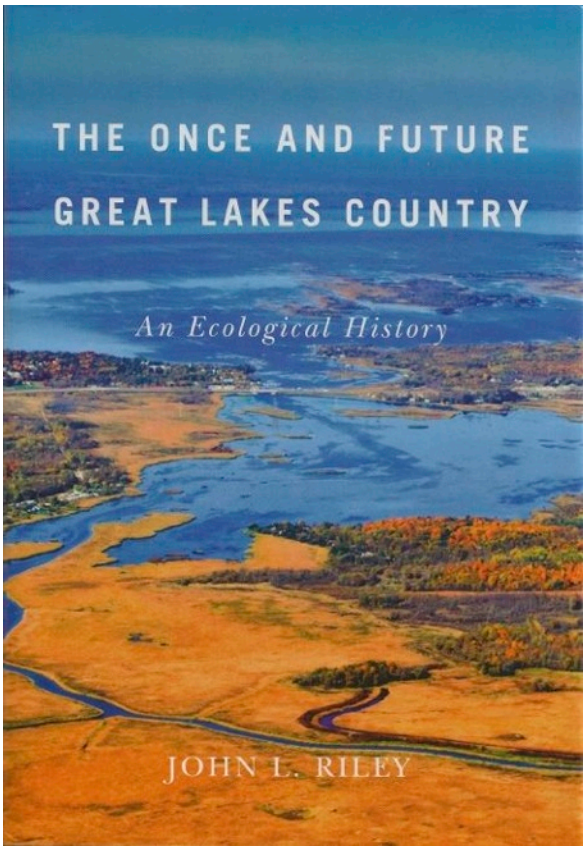
(http://www.thamestalbotlandtrust.ca/).

The land trust matches each donation, dollar for dollar.

We welcome these two New Board Members:

Natalie Dunn has a B.Sc. in Plant Biotechnology from the University of Guelph and has recently completed a post-graduate certificate at Niagara College in Ecosystem Restoration. Natalie has experience with tree inventories, botanical inventories, vegetation monitoring, amphibian call surveys and road mortality surveys.

Troy McMullin from the University of Guelph joined the FBO executive board in November, 2013. He is a lichenologist and forest ecologist. Troy has been a field trip leader for the FBO for the last five years..



From an email sent by Wasyl Bakowsky, of NHIC:

"John Riley has exhaustively researched the earliest accounts and descriptions of Great Lakes landscapes, many from the 1600s. These very early accounts paint a picture of very open landscapes, rich with nut trees, vines, plums, and abundant game. These descriptions differ from later accounts from the mid-1700s and 1800s. With the aboriginal population crash brought on by disease, the land reverted to much more of a forested condition."

And, from the book's dust jacket:

"North America's Great Lakes country has experienced centuries of upheaval, its landscapes utterly changed from what they were five hundred years ago. The region's abundant fish and wildlife and its magnificent forests and prairies astonished European newcomers who called it an earthly paradise but then ushered in an era of disease, warfare, resource depletion, and land development that transformed it forever."