



W I N T E R 2 0 1 5

FIELD BOTANISTS
OF ONTARIO

NEWSLETTER

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President's Message

At this time of year, I suspect many of us are thinking less about field botany and more about bringing nature indoors by decorating our homes with poinsettias (*Euphorbia pulcherrima*), holly (*Ilex aquifolium*) and ivy (*Hedera helix*), mistletoe (*Viscum album*), Christmas cactus (*Schlumbergera spp.*) and other traditional Christmas plants. Perhaps your most recent botanical outing was to a Christmas tree farm (*Pinus, Picea, Abies?* Take your pick) or to the field to gather some red-osier dogwood (*Cornus sericea*) stems or evergreen boughs to brighten up the house.

The FBO does not organize many events during the winter months as most plants are dead, dormant, and/or buried under snow, thus making plant identification an even greater challenge. However, even in the wintertime there are opportunities for botanizing and nature appreciation. With a bit of effort and a keen eye, most deciduous trees and shrubs, and even the brown and brittle remains of some herbaceous plants can be identified. With this in mind, we will be holding another winter twig identification workshop at the Guelph Arboretum in the new year. Without the advantage of having leaves to assist in identification, one must look closely at bark, buds and bud scales, leaf and bundle scars, and other less conspicuous parts of woody plants, so get your hand lenses ready and stay tuned for more details on our upcoming workshop.

Other ways to stay connected during the winter months can be found on-line through the FBO website (www.trentu.ca/org/fbo/) and the FBO Facebook page. We are currently in the process of updating our website to include a gallery of Ontario flora, beginning with a collection of lichens courtesy of our Vice President and lichenologist, Troy McMullen. This part of the website is a work in progress, so please check back often as we expand the gallery. If you haven't checked out the FBO Facebook page yet, please consider joining this active on-line community of botanists and conservationists. Just log into your Facebook account and do a search for "Field Botanists of Ontario". Our Facebook page offers a forum to share pictures of plants you have found or related discoveries, get help with plant identification, and discuss topics relevant to field botany and conservation. We will also periodically post announcements for upcoming FBO events.

I hope you enjoy our final newsletter for 2015, and I wish everyone a happy holiday and all the best in the New Year.

Dan Westerhof

On the cover: Top: Tentative first steps in the Slough of Despond. Photo: Charles Cecile;
Bottom: Mike McMurtry presents Mrs. Joan Crowe with her John Goldie Award.

Sidebar artwork: Small Yellow Lady's Slipper (*Cypripedium parviflorum*).

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

Field Botanists of Ontario website: www.trentu.ca/fbo

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Editor's Note

In the spirit of Christmas, when everyone expects a present that would reflect their own particular interests, the (bio)diversity of this Newsletter issue should satisfy our members' multiple desires.

Two excellent efforts, by Charles Chaffey and Nikki May, take you to either very dry habitats (alvars) or very, very wet ones (sloughs). Guided by knowledgeable leaders, the trip participants enjoyed very rich floras, and not only, as there were also encounters with birds, snakes, toads and frogs. The locations also teemed with lichens, some so rare that they incited your Vice-President to write a brief note about them.

On the other side of the wetness spectrum, Bill McIlveen alerts us to potential green invasions by certain species of algae; they may be individually very small, but they grow by the trillions and - with a bit of imagination, they just might become *The Thing* that movies are made about.

Sedges are everyone's favourite plant group, on par in terms of complexity and memory demands with grasses, right? Right: if you place two related species side by side on a table they sure look different, but to remember all these taxonomical nuances in the field ... well, that's another matter. Lots of measurement is often called for and, if you don't carry a dissecting microscope with all the time, then - perhaps - you might just as well look at the *photographs* of these various species and try to identify them on the spot. There is such a tool available now, as reported by Bill Draper. The US state of Maine, lies some distance from Ontario but shares nevertheless many common taxa of Cyperaceae. The price of acquiring a copy of this field guide is a bit hefty, but it's worth it, as amply proven by Bill in his meticulous review.

Finally, it is our editorial pleasure to report on the 2015 John Goldie Award ceremony that took place during FBO's Annual General Meeting past September in Peterborough. This year's very accomplished recipient was Joan Crowe. You will find a summary of her botanical contributions to field botany on the pages of this issue.

Have a Merry Christmas everybody!

Chris Zoladeski

Field Trip Reports

North Bear Alvar explorations

20 September, 2014

By Charles Chaffey

Dale Leadbeater, Senior Ecologist with SLR Consulting, shared the botanical riches of the North Bear Alvar with some twenty

FBO members on the last day of summer. The 318 hectare property in the north part of the City of Kawartha Lakes was acquired by the

the area for at least ten thousand years; by 1500 the Hurons had palisaded villages, but their population crashed after contact with Europeans and their diseases. Thus, humans have always dominated these ecosystems, although the area was more forested in the past. The open spaces provide habitat for interesting alvar plants, but they tend to be invaded by shrubs and trees, which have been held in check, historically by fire, and more recently by grazing. However, the nutrients added to the soil by cattle make conditions more favorable for introduced plants than for the native alvar plants.

Exploration of the alvar began in a field next to the road giving access to the property. Non-



This time, the FBO participants are not admiring a plant, but ... see the pic on next page.
Photo: D. Leadbeater.

Nature Conservancy Canada in 2011. After the glaciation 14000 years ago, much substrate was washed away, leaving thin soils that are very wet in spring and fall but dry in summer. Plants followed migration routes from the west and south, leading to some uncommon associations. People have lived in

native species were prominent: Smooth Brome (*Bromus inermis*); Timothy (*Phleum pratense*), the pollen of which inhibits the ability of competing grasses to set seed giving it a reproductive advantage¹; White Bedstraw (*Galium mollugo*); Common Hound's-tongue (*Cynoglossum officinale*) in fruit; Mountain



... the Smooth Greensnake. Photo: D. Leadbeater.

Honeysuckle (*Lonicera dioica*); Common Mullein (*Verbascum thapsus*); Blueweed (*Echium vulgare*); the undesirable White Sweetclover (*Melilotus albus*); and Gold-moss (*Sedum acre*). But natives were thriving, too: the signature shrubs Common Juniper (*Juniperus communis*) and Fragrant Sumac (*Rhus aromatica*); Ciliolate Aster (*Symphytotrichum ciliolatum*) in bloom; the aster-like Upland White Goldenrod (*Solidago ptarmicoides*) of which only a few flowering heads remained; Grey Goldenrod (*S. nemoralis*); Field Mouse-ear Chickweed (*Cerastium arvense*); Small Skullcap (*Scutellaria parvula*) with spoon-shaped seed pods; Montane Blue-eyed Grass (*Sisyrinchium montanum*); and the western species Wild Bergamot (*Monarda fistulosa*), Hairy Beard-tongue (*Penstemon hirsutus*) with open seed pods, and Long-fruited Anemone (*Anemone cylindrica*). Rosettes of Prairie Smoke (*Geum triflorum*) were seen here and there; Dale expressed disappointment that the name “Three-flowered Avens” has been recommended for this characteristic alvar species, which is the floral emblem of the Carden Field Naturalists. Grasses included Poverty Oat Grass (*Danthonia spicata*), Canada Bluegrass (*Poa compressa*), and Little Bluestem (*Schizachyrium scoparium*), a signature species. Two lichens were noted: Iceland Moss (*Cetraria islandica*) and Reindeer Lichen (*Cladonia rangiferina*). An unusual gall at ground level on a goldenrod was cut open to find that the chambers inside had been vacated. Dale dug up a sample of the soil and tested it with 10% hydrochloric acid; the resulting effervescence showed the presence of lime. Also present in the substrate were many pebbles of chert, leading Dale to ask whether this was a resource for First Nations, since there are documented “flint workshops” on Balsam Lake, Goose Lake and Bobcaygeon.

The group continued northward along a track that passed through places with more shrubs and trees alternating with open ones. Bristle-leaved Sedge (*Carex eburnea*) was abundant, although it was not previously on the area’s plant list. An aster was tentatively

identified as Old Field Aster (*Symphytotrichum pilosum*). Other familiar composites were growing to only one-third to one-half the height they attain on deeper soils, including Tall White Aster (*S. lanceolatum*), New England Aster (*S. novae-angliae*), Tall Goldenrod (*Solidago altissima*), and Common Ragweed (*Ambrosia artemisiifolia*). Staghorn Sumac (*Rhus typhina*) was abundant; in one place several looked like they had been attacked by turkeys, or maybe by deer or bears, but the branches were boughed, not broken, suggesting a lighter protagonist. We also saw bear scat composed largely of sumac berries. A single plant of Indian Paintbrush (*Castilleja coccinea*) was spotted; Dale explained that its very intense color was due to the structure of the cells in the flower bracts, transparent on the top and coloured on the sides and bottom. Many alvar plants have dark leaves to absorb sunlight; they then put their energy into what is most important for their life cycle, seeds for annuals and roots for perennials.

A more open area that was subject to flooding had numerous characteristic species: the grasses Tufted Hairgrass (*Deschampsia cespitosa*), Hairy Panic Grass (*Dichanthelium acuminatum*), and Creeping Bent Grass (*Agrostis stolonifera*) rooting at its nodes. Sharp-eyed spotters observed the small mints Low Calamint (*Clinopodium arkansanum*) and False Pennyroyal (*Trichostema brachiatum*), which has a stronger aroma. Virginia Virgin’s-bower (*Clematis virginiana*) was abundant, and there were low-growing serviceberries (*Amelanchier*) not identifiable to species, Grass-leaved Goldenrod (*Euthamia graminifolia*), Small-fruited Bulrush (*Scirpus microcarpus*), rosettes of Balsam Groundsel (*Packera paupercula*), Jointed Rush (*Juncus articulatus*) with old fruits, Low Bindweed (*Calystegia spithamea*) and Michaux’s Stitchwort (*Sabulina michauxii*), an alpine species, in flower. A highlight was the provincially rare Cooper’s Milk-vetch (*Astragalus neglectus*), with inflated seed pods adapted to dispersal in strong winds. Many plants adapted to alvar conditions are not found in other habitats where they could grow, because other species are more competitive there.

As the track continued northward, the trees around it became larger and the ground wetter. Two berries used by First Nations as food sources were noted: Canada Buffalo-berry (*Shepherdia canadensis*), which can fix nitrogen, and Bearberry (*Arctostaphylos uva-ursi*), which has waxy leaves to conserve water. Also present were: fruiting Helleborine (*Epipactis helleborine*); flowering Giesecke’s Bellflower (*Campanula gieseckeaana*); flowering Canada Bluets (*Houstonia canadensis*), a mountain species; Downy Arrowwood (*Viburnum rafinesquianum*), with its characteristic naked buds; a Vervain (*Verbena hastata* or *simplex*); Pearly Everlasting (*Anaphalis margaritacea*), more typical of the Canadian Shield; Barren Strawberry (*Geum fragarioides*); Marginal Wood Fern (*Dryopteris marginalis*); Broad-leaved Meadow-sweet (*Spiraea latifolia*); and Bicknell’s Northern Crane’s-bill (*Geranium bicknellii*), which ejects its seeds when the temperature and humidity are just right. Then, emerging into a more open wetter area, we were delighted to see

many plants of Great Plains Ladies' Tresses (*Spiranthes magnicamporum*) in full bloom, crouching down to appreciate their fragrance and to see the yellow flush on the flower lips. Nodding Ladies' Tresses (*S. cernua*) that had finished flowering earlier was seen too. In addition, there were: Fringed Gentian (*Gentianopsis crinita*) with fading flowers; dry stems of White Camas (*Anticlea elegans*); Three-square (*Schoenoplectus pungens*); flowering Shrubby Cinquefoil (*Dasiphora fruticosa*); and fruiting Yellow Clover (*Trifolium aureum*), Star-flowered Solomon's Seal (*Maianthemum stellatum*), and Yellow Sedge (*Carex flava*) with its conspicuous orange perigynia.

The group was most appreciative of Dale showing us so many treasures of North Bear Alvar, and also explaining so much about their life history and place in the larger environment. Other aspects of nature study were not totally neglected: we saw an American Toad (*Anaxyrus americanus*), several Northern Leopard Frogs (*Lithobates pipiens*), a tiny Red-bellied Snake (*Storeria occipitomaculata*) near the road, and one Smooth Greensnake (*Opheodrys vernalis*), which is not often found. When the time came to return home, we made our way back southward, as light rain began and gradually changed to a quite heavy downpour. Back at the road, past FBO President Bill Crowley expressed the thanks of all of us to Dale for a most interesting field trip. (Much technical help from Dale in preparing this report is also gratefully acknowledged.) ❀

¹ Murphy, S.D. and L. W. Aarssen. 2011. Reduced seed set in *Elytrigia repens* caused by allelopathic pollen from *Phleum pratense*. *Canadian Journal of Botany* 73: 1417-1722

High spirits in the Slough of Despond

15 August, 2015

By Nikki May

On a hot and humid Saturday morning in the middle of August, a group of 19 eager botanists gathered at the home of our trip leader, Bob Gray. Bob laid out his plan for the day; we would head for Kemble Mountain Management Area or, as it is locally known, Kemble Rock, and spend the morning at a couple of sites. Back to the farm for some lunch, and then go out to the Slough of Despond. An intriguing name; what was in store?

Shortly, we hopped in a few cars and were heading for Kemble Rock Mountain rising out of the flat land to the north of the Gray farm.

Our first stop was at the end of a recently closed, winding mountain road; 'W' Hill, where a crevasse cave in the Escarpment is home to a variety of ferns. The highlight of this stop was the relatively rare Slender Cliffbrake (*Cryptogramma stelleri*), which grows along this narrow defile in abundance. Many of us had never seen this fern before, as it is confined to habitats that offer constant seepage on dolostone ledges and full protection from the wind and sun. Also noted were Male Fern (*Dryopteris filix-mas*), Marginal Shield Fern (*Dryopteris marginalis*), Bulblet Fern (*Cystopteris bulbifera*), Fragile Fern (*Cystopteris fragilis*), Northern Holly Fern (*Polystichum lonchitis*), and Maidenhair Spleenwort (*Asplenium trichomanes*). We also saw specimens, which were tentatively identified as Crested Shield Fern (*Dryopteris cristata*) and Rattlesnake Fern (*Botrychium virginianum*). There was lots of discussion over many of the specimens, with this author scribbling furiously to try to catch all the names.

There were also many vascular plants in the crevasse, including Red Baneberry (*Actaea rubra*), White Trillium (*Trillium grandiflorum*),



Mudholes in the heart of the Slough (where botanists disappear).
Photo: C. Cecile.

Zig-zag Goldenrod (*Solidago flexicaulis*), Arrow-leaved Aster (*Symphyotrichum urophyllum*), Prickly Gooseberry (*Ribes cynosbati*), and Red Elderberry (*Sambucus racemosa*).

Our next stop was at the head of the Nels Maher Side Trail, a branch of the main Bruce Trail where it runs across Kemble Mountain. Nels was *the* recognized fern expert in Grey and Bruce Counties and led many fern field trips in the area. He was the inspiration and main author of *A Guide to The Ferns of Grey and Bruce Counties*, published by the Owen Sound Field Naturalists. Nels was also a keen gardener, and maintained an impressive naturalised fern garden, which is still considered a destination today, ten years after his death. The side trail is one that Nels mapped out himself, and on which he led many fern walks.

The first fern we came across on the trail was a Male Fern, a species that had often been described by Nels as a coarse fern having 'hairy legs'. Another easily recognized characteristic feature is its square stem. A little further along, we came upon Hart's-Tongue Fern (*Asplenium scolopendrium* var. *americanum*). This species is rare (S3) in Ontario, but is plentiful in Grey County and also found in some parts of the Bruce Peninsula. It prefers moist dolostone habitats and is frequently found in crevices in the bedrock along the Bruce Trail in shady upland hardwood forest. The strap-like fronds were considered to resemble the tongues of male Red Deer in England where the typical variety was first named.

The Northern Lady Fern (*Athyrium filix-femina*) was found a little further along the trail. A typical character of this dainty fern is its messy appearance by the end of the summer, after it has suffered much insect damage. It is a difficult fern to identify because it has many variations in form and colouring, but one unique feature is the curved sori, which look like crescents or commas when young and often mature to a horseshoe or chevron shape. A little further on, we stopped to admire a specimen of Intermediate Wood Fern (*Dryopteris intermedia*) with its graceful vase-like arrangement of tall curly fronds. This fern is hard to differentiate from Spinulose Wood Fern (*Dryopteris carthusiana*), but if you look carefully at the bottom pair of pinnae, you will notice that the lower pinnule next to the stalk is shorter than the one next to it, unlike all other wood ferns.

Several beautiful clumps of Maidenhair Fern (*Adiantum pedatum*) can be found along the trail. These looked particularly lush for this time of year, indicating the richness of the soil in this upland forest. Patches of Sensitive Fern (*Onoclea sensibilis*) stand here and there along the trail, in moist shady spots. The fertile fronds, with their rolled pinnae, give the appearance of two parallel rows of green beads, which is why this fern is sometimes called Bead Fern.

At the end of a loop that follows the main trail back to the trailhead, was an open wet area where Ostrich Fern (*Matteuccia struthiopteris*) rises majestically out of the verdant ground cover. This fern is very common in Grey and Bruce Counties, and has a fertile frond that is quite different - shorter and more bronzed in colour - from the towering, broad, green, sterile fronds.

A selection of the wide variety of vascular plants that were seen in the Maple-Beech forest along this trail include; White Baneberry (*Actaea pachypoda*), Foamflower (*Tiarella cordifolia*), White Snakeroot (*Ageratina altissima*), Bottlebrush Grass (*Elymus hystrix*), Peduncled

Sedge (*Carex pedunculata*), Nipplewort (*Lapsana communis*), Wild Lettuce (*Prenanthes altissima*), Sharp-lobed Hepatica (*Anemone acutiloba*), White-grained Mountain-ricegrass (*Oryzopsis asperifolia*), Wild Sarsaparilla (*Aralia nudicaulis*), Plantain-leaved Sedge (*Carex plantaginea*) and the comparable but larger-leaved bracted White Bear Sedge (*Carex albursina*), and Bush Honeysuckle (*Diervilla lonicera*).

The group had split up into two parts and each half went around the trail in opposite directions. We met up again at the trailhead, to find that we were running an hour and a half late. We returned to Bob's farm for much needed rest and lunch, then took a vote - did we still want to investigate the Slough of Despond, despite the late hour? Bob spent a few moments giving us some background; taken from John Bunyan's *The Pilgrim's Progress*, the name of the place recalls the deep bog into which the pilgrim sinks under the weight of his sins and his sense of guilt. Bob described the Grey County Slough as being wet and muddy, with places where the mud would come up over our knees. Despite this discouraging news, there was a resounding 'Yes!' from the group, and so we donned rubber boots, or old running shoes and set out for the Slough.

Parking the cars at the side of the road, we had to slog across a cow-pasture (fortunately now empty of ruminants) for a kilometre or so before we reached the edge of the Slough. This by itself was a challenge, as the ground was covered in tall grasses and forbs, while underneath it was all hillocks and ruts. Once we reached the edge of the woods, we started penetrating the swamp which, as promised, quickly became a series of muddy holes, winding muddy streams, roots, and stumps. As we made our way through the swamp toward the lake at the centre, we found Cardinal Flower (*Lobelia cardinalis*) glowing in the shade of the trees. Further on we came upon a couple of orchids in seed; Loesel's Twayblade (*Liparis loeselii*) and Purple Fringed Orchid (*Platanthera psychodes*). Water Horehound or Northern Bugleweed (*Lycopus uniflorus*), Marsh Marigold (*Caltha palustris*), and Blue Flag (*Iris versicolor*), were dotted here and there, with Red-osier Dogwood (*Cornus stolonifera*), and Winterberry (*Ilex verticillata*) offering branches to hang onto and/or step on as we tried to stay out of the frequent potholes. Several sedges were identified, among them Hop Sedge (*Carex lupulina*), Retrorsed Sedge (*C. retrorsa*), Fringed Sedge (*C. crinita*) and Tuckerman's Sedge (*C. tuckermanii*). We came across Water Parsnip (*Sium suave*) and Bulb-bearing Water-hemlock (*Cicuta bulbifera*), both comfortable in this wet and muddy setting. Once we reached the edge of the open water, the dominant plants were Sweet Gale (*Myrica gale*), Red-osier Dogwood, and finally a solid wall of Broad-leaved Cattail (*Typha latifolia*) right at the edge of the central lake.

By this time, this author had given up trying to record the plants that were identified along the way, and with the others, wearily trudged back through the swamp, then the bumpy field. We were all hot and very tired, but felt that we had had a full, botanically satisfying day. Some final pictures of the wet and muddy group were taken, we all thanked Bob for a wonderful day, and set off for home. ❁

Botanical roots

An illustrated (photographic) field guide for identifying Cyperaceae

A review

By William Draper

Sedges of Maine, A Field Guide to Cyperaceae by M. Arsenault, G.H. Mittlehauser, D. Cameron, A.C. Dibble, A. Haines, S.C. Rooney and J.E. Weber. The University of Maine Press. 126A College Avenue, Orono, Maine, 2013. \$29.95 US + shipping and handling.

The sedge family is often a challenging group of plants to study. Rare is the outing when I return from the field without one or more sedges in my collecting scroll. Seated at my work bench, I turn on the illuminator for my stereo microscope and reach for my “tools”. These days this kit includes: A 7X Peak scale loupe with a measuring graticule (0.1mm resolution) for taking measurements; the dichotomous keys and notes in the *Field Manual of Michigan Flora* (Voss and Reznicek 2012); the keys, descriptions and drawings in the *Flora of North America* (Vol. 23, 2002); the photographs in the Michigan Flora online (www.michiganflora.net/home.aspx); and reference specimens in my own collection or at the Green Plant Herbarium at the Royal Ontario Museum. When I am really stuck, or wish to be certain of an I.D. of a species of conservation concern, I will send a note to the NHIC to see if I might send a specimen for identification.

For me, at least, the drawings and illustrations in my tool kit are essential aids to identification and I look to them to ensure that I have interpreted the technical terms and descriptions correctly. Ideally, this includes both a clear illustration of the technical characters required for identification, and, an overall view of the plant. The former is typically provided in technical manuals, the latter not so often. Over the years, I have also consulted (and continue to use) the many excellent drawings in the floras from Illinois (Mohlenbrock 1999), Ohio (Braun 1965) and Michigan (Voss 1972).

But often there is no illustration at hand, or photograph online, that clarifies the one or two details that must be discerned to make an accurate identification and to be confident that one has done so.

If you too have faced these challenges then you will be delighted to learn that the University of Maine Press has recently published a

remarkable new guide that is certain to become an essential part of your tool kit for identifying species of *Carex*, *Bolboschoenus*, *Bulbostylis*, *Cyperus*, *Dulichium*, *Eleocharis*, *Eriophorum*, *Fimbriostylis*, *Lypocarpa*, *Schoenoplectus*, *Scirpus*, *Scleria*, *Rhynchospora*, and *Trichophorum*.

I received news of the *Sedges of Maine* in a recent email from Wasyl Bakowsky (NHIC): “*Over the years, I’ve been asked countless times if there is a good book for IDing sedges, the answer has always been ‘Sadly, no...’. Until now. This book is absolutely fantastic!*”.

I ordered the book sight unseen and I am happy to report that Wasyl has not overstated the virtues of this book.

The strengths of the *Sedges of Maine* are many but it is the stunning, high resolution, fine scale, colour photography of inflorescences, spikelets, perigynia, sheaths, tubercles, achenes, bristles, anthers, whole plants, and whole plants in the context of habitat, that makes this book extraordinary. As important as these images are (2 to 7 photographs per species) are the comparative images of perigynia and inflorescences of similar species; the photographs of species associated with each contrasting couplet in the taxonomic keys; the compilation of photographs in plates that illustrate all of the species in each Section of *Carex*; and the comparison of the achenes of each species of *Eleocharis*.

Many photographers contributed images for this guide, including Mike Oldham (*Carex rariflora*) and Susan Aiken (*Carex rariflora*) from Ontario and Sean Blaney (several images) from Nova Scotia. They and their American counterparts warrant our thunderous applause and admiration.

Another strength of this guide is the discussion of similar species that is included on each species page. The following text from the species page for *Carex brevior*, one of our less common section Ovales sedges (S4S5), is quoted in its entirety for purposes of illustration.

“*Carex brevior* is similar to *C. cumulata*, *C. merritt-feraldii*, *C. bicknellii* and *C. festucea*. Compared with *C. festucea* and *C. bicknellii*, *C. brevior* lacks conspicuous veins on the outer perigynium face. Compared with *C. cumulata*, the stem of *C. brevior* is not as stiff and glaucous, and the spikes are more separated. *C. brevior* also has broad-ovate to rounded perigynia that are widest at or below the middle compared with the broadly obovate perigynia of *C. cumulata*. Compared with *C. merritt-feraldii* as well as *C. bicknellii*, *C. brevior* lacks papillae on the leaf sheath opposite the blade and even serrations on the upper portion of the perigynium wing margin.”

Each species page in the *Sedges of Maine* contains the following elements: the scientific name and common name of the species, key features, a description of the plant, its distribution and habitat, similar species, comments, and other names. The header for each *Carex* page identifies the genus (*Carex*), the common name of the genus (sedge), and the section of the species (e.g.,

Section Cyperoideae). The headers for the remaining genera identify the genus and common name of the genus.

The guide is organized alphabetically by genera, and within genera, except for *Carex* which is arranged alphabetically by Section.

In the absence of a technical manual devoted to the Cyperaceae of Ontario, we are obligated to turn to the *Flora of North America* (FNA) to ensure that the key we are using includes all of the species that grow in our province. These keys are often more challenging than the keys in a regional flora owing to the greater number of species to parse. However, even manuals as comprehensive as the *Field Manual of Michigan Flora* do not include all of our taxa and we must be alert to the possibility that the species we are trying to identify does not grow within the geographic limits of the flora we are using.

In this respect, it is helpful to be aware that the keys to the Cyperaceae in Maine include all of our species of *Bolboschoenus* (3) (the number of Ontario species in brackets), *Bulbostylis* (1), *Cladium* (1), *Dulichium* (1), *Lipocarpa* (1), *Rhynchospora* (4), and *Trichophorum* (4). The authority for the number of species in Ontario is the file “Ontario_Vascular_Plants (MJO).xlsx” published online by Michael J. Oldham (NHIC), accessed 2 February 2015.

The distribution of the remaining genera, however, is more restricted geographically and the keys, if used at all, must be used with care: *Carex* (141 of 247 Ontario species are present in Maine), *Cyperus* (8 of 14 species), *Eleocharis* (14 of 22 species), *Eriophorum* (5 of 10 species), *Fimbristylis* (1 of 2 species), *Schoenoplectus* (6 of 10 species), *Scleria* (0 of 3 species), and *Scirpus* (9 of 10 species). Again, the authority for the counts of the number of species in Ontario is the file “Ontario_Vascular_Plants (MJO).xlsx” published online by Michael J. Oldham (NHIC), accessed 2 February 2015. The count of the number of *Carex* species in Ontario (246) does not include 24 recognized hybrid species.

In spite of the differences in our floras, the *Sedges of Maine* does provide illustrations and descriptions for three species of *Carex*, one species of *Cyperus*, and two species of *Eleocharis* that are not included in the dichotomous keys published in the *Field Manual of Michigan Flora*: *Carex appalachica* (S2S3 in Ontario), *C. rariflora* (S5), *C. recta* (S4?), *C. saxatilis* (S5), *Cyperus dentatus* (S1), *Eleocharis diandra* (S1), and, *E. uniglumis* (S3?).

Helpfully, the *Sedges of Maine* also provides excellent photographs for 28 species that are rare in Ontario (S1-S3): *Carex albicans* var. *albicans* (S3), *C. albicans* var. *emmonsii* (S2), *C. amphibola* (S2), *C. annectens* (S2), *C. appalachica* (S2S3), *C. argyrantha* (S2?), *C. atlantica* (S1), *C. atratiformis* (S2), *C. bicknellii* (S2), *C. bigelowii* (S1), *C. conoidea* (S3), *C. festucacea* (S1), *C. folliculata* (S3), *C. hirsutella* (S3), *C. longii* (SH), *C. muhlenbergii* var. *inervis* (S1S2), *C. praticola* (S2), *C. tinca* (S1), *C. virescens* (S3), *C. wiegandii* (S1), *Eleocharis diandra* (S1), *E. englemannii* (S1), *E. parvula* (S1), *Schoenoplectus heterochaetus* (S3), *S. purshianus* (S1?), *S. smithii* (S3), *Scirpus expansus* (S1), and *S. georgianus* (S1?).

I ordered my copy through the Maine Natural History Observatory (www.mainenaturalhistory.org). The price is \$29.95 US + \$20.00 US for shipping to an address in Canada.

If you decide to add this book to your tool kit, you may wish to send a note of thanks to Wasył Bakowsky and Mike Oldham at the NHIC for the “heads up” on this wonderful resource.

End Note: Mike Oldham has kindly advised that he has also found the high quality illustrations and photographs in the following guides to be helpful for identifying *Carex* and non-*Carex* sedges in Ontario: **Hipp 2008** (colour illustrations) for Midwestern *Carex* species that occur in Ontario and that are not covered in the Maine Guide; **Rothrock 2009** (colour photographs) of the non-*Carex* sedges that occur in Ontario; and, **Wilson et al. 2008** (colour photographs) for *Carex* sedges from the Pacific northwest (≈ 50% of the species covered in the guide occur in Ontario). ✱



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was built on the collections made by Claude Garton starting with his collections that began as early as 1933. In time, Joan assumed the role of Acting Curator in 1990 and held that position until 1993. During that period, she began the process of digitizing the collection and maintained high standards for the collection. She also taught some courses on "Bryophytes and Lichens", "Pteridophytes" and "Vascular Plant Identification" at the University where her students held her in high regard.

While she was living in Thunder Bay, she continued to produce publications dealing with bryophytes:

1975 - *An Hepatic Flora of Southwest Thunder Bay District Ontario*

1992 - *The Liverworts of the Southwest Thunder Bay District: A Concise Hepatic Flora*

1994 - *The lichens of Thunder Bay District Ontario, Canada*. *Evansia* 11: 62-75

1995 - Ahti, T. & J. Crowe. *Additions to the lichens of Thunder Bay District, Ontario*. *Evansia* 12: 21-23

Those were followed by the 1993 release of *Checklist Vascular Plants of Thunder Bay District* along Claude Garton. The first version of that list was originally prepared in 1968 by Walter Hartley and updated by Garton in 1984, then revised to 1993. The most recent revision was completed in 2003.

In 1993, Walter and Joan moved to Owen Sound. Joan soon became active with the Owen Sound Field Naturalists. In particular, she became the Chair of the Plants Committee. That group has been very productive, and under her guidance, published several books on botany and relevant topics:

1995 - *Checklist of the Vascular Plants for Bruce and Grey Counties* (4th edition in 2010)

1999 - *The Asters, Goldenrods and Fleabanes of Grey and Bruce Counties*

John Goldie Award - 2015

Bill McIlveen

The 2015 edition of the John Goldie Award was presented to Joan Crowe at the FBO AGM held in Peterborough on September 12, 2015. This was the ninth time the Goldie Award has been given to recognize an individual's contribution to field botany in Ontario. Like those before her, Joan is a highly deserving recipient.

Joan comes to us from England where she was already a qualified teacher. In 1966, Joan and her husband Walter moved to Thunder Bay where Walter had taken a faculty position at Lakehead University. Joan later obtained an Honors B.Sc. from Lakehead University in 1970 followed by a Masters degree from the University of Manitoba in 1975 with a specialization in bryophytes. In the meantime, she started on a course towards career in botany accompanied by a long list of botanical publications. The first of these was *A Checklist of the Hepatics in the Area Adjacent to the Canadian Lakehead* with co-author Paul Barclay-Estrup in 1971.

Joan began to volunteer at the Claude Garton Herbarium at Lakehead University. The Herbarium



A "brown alga" (*Macrocyctis integrifolia*) and a "red alga" (*Polyneura latissima*).
Photo: B. McIlveen.

2002 - *The Orchids of Bruce and Grey*

2001 - *The Rare and Endangered Species of Grey and Bruce Counties*

2004 - *The Geology and Landforms of Grey & Bruce*

2007 - *Exploring an Urban Forest*

Not content to limit her literary output to these books with the Owen Sound Club, she produced two other books on her own. One of these was *An Enthusiast's Guide to the Liverworts and Hornworts of Ontario* along with Linda Ley in 1999. In 2004, she self-published the *First Book of Ontario Wildflowers*.

Joan has always been a strong advocate for the environment. As an example, Joan and Walter with OSFN donated their property at Long Swamp located west of Owen Sound to the Nature Conservancy of Canada. This donation helps to preserve a large portion of this important wetland to ensure that it would remain natural and undeveloped.

Joan and Walter have been long-time members of the FBO. They have attended many FBO field and AGM events over the years. Joan has led at least 9 field trips and workshops for FBO. As well, she has performed a similar role for the Owen Sound Field Naturalists. For all her fine contributions, Joan was presented with a Lifetime Membership Award from the Owen Sound Field Naturalists at the December 2006 meeting. It is now the turn for the Field Botanists to recognize all of the contributions that Joan has made in the field of botany in Ontario. Congratulations, Joan!

Algae as invaders

By Bill McIlveen

The latest issue of the New York Flora Association's Quarterly Newsletter [Winter 2015, Vol. 26 (1)] includes a summary of the plants that are subject to the New York States Invasive Species Regulations. The regulations come into effect on March 10, 2015. They have two categories under the regulations. Those deemed 'Prohibited' cannot be sold, imported, purchased, transported or introduced anywhere. Those deemed 'Regulated' may be possessed but cannot be introduced into public lands or water.

Many of the plant species that are included on the New York State list are ones that we would recognize as unwelcome in Ontario. There are others that we have yet to see in this province

though we probably should be wary of their possible appearance at some future date. At the head of the list, though were five species that caught my eye. These were algae, three of which are prohibited and two that are regulated. I am not sure that we have given much attention to any regulations against algae in Ontario though there are a couple of species that may warrant consideration.

In Ontario, there is a recurring problem along the shores of Lakes Ontario and Erie and occasionally on other water bodies as well. Most of the excessive growth is by *Cladophora glomerata* which responds vigorously to even tiny increments of phosphorus in the water. The biology and ecology is complex but, depending upon the growing season and local water currents, large amounts of the algae breaks free from its rocky substrate and piles up on the shore or forms a soupy mass just off shore (see photograph). The algae then decays and causes rather noticeable foul odors and many complaints from local residents.

Another concern is excessive growth of cyanobacteria. Although not technically algae, they are generally treated as algae for they occupy the same general niches and conduct photosynthesis. A number of species may be involved but *Microcystis aeruginosa* and *Aphanizomenon flos-aquae* are prime culprits forming the toxin microcystin. They impart undesirable tastes to drinking water and their decaying biomass depletes oxygen in the water column with lethal consequences for fish.

The Ontario species noted above are likely not amenable to the types of legislation introduced in New York. They are already here in abundance so attempts to prevent their release into water bodies would serve little purpose. Controlling water quality is probably the only way to reduce their impact. We may, however, benefit from observing the results achieved in New York. We are fortunate to some degree in that we have little to concern ourselves with when it comes to the marine algae issues.



Cladophora mass on beach at Jack Darling Park, Mississauga, September 7, 2011.
Photo: B. McIlveen.

Summary of Algae and Cyanobacteria included in New York State Invasive Species Regulations*				
Latin Binomial	Common Name	Type	Habitat	Concern
<i>Caulerpa taxifolia</i>	Killer Green Alga	Green Alga	Marine	Reduces biodiversity; produces caulerpicin toxic to fish; one of two algae on 100 worst globally invasive species IUCN
<i>Didymosphenia geminata</i>	Didymo	Diatom	Freshwater streams	Aesthetics, disrupts fish habitat and food
<i>Prymnesium parvum</i>	Golden Alga	Flagellated Alga	Freshwater	Produces fish toxin prymnesin
<i>Cylindrospermopsis raciborskii</i>	Cylindro	Cyanobacterium	Freshwater	Produces several human toxins
<i>Grateloupia turutura</i>	Asian Red Seaweed	Red Alga	Marine	Crowding out of <i>Chondrus crispus</i>

*First three are prohibited, last two are regulated.

somewhat round branches that are the same colour on all sides (i.e., not dorsiventral).

Punctelia caseana is a relatively large lichen with a foliose growth form. It is an Appalachian species that reaches its northern limit in Ontario. Six scattered localities have been reported in the province between Hastings County and the north shore of Lake Superior

Uncommon lichens of Kemble Mountain and the Slough of Despond

By Troy McMullin

During the FBO field trip to Kemble Mountain and the Slough of Despond on August 15, 2015 three lichens rarely reported in Ontario were discovered (see Nikki May's article in this issue of the newsletter for a detailed account of the trip). One species was on Kemble Mountain, *Trypethelium virens*, and two species were in the Slough of Despond, *Evernia prunastri* and *Punctelia caseana*. Descriptions of each species along with their provincial distributions and images are provided below.

Evernia prunastri is a charismatic lichen with a fruticose growth form. In North America, it is a bicoastal species with small populations in the Great Lakes region (Brodo et al. 2001). In Ontario, it was collected by John Macoun over a century ago and thought to be extirpated in the province until the next collections were made in the Thunder Bay area in 1974 and 1994 (McMullin and Lewis 2013). It was believed to remain extirpated in southern Ontario, where Macoun's collection was made, until a single individual was located at the Bruce Peninsula National Park (Brodo et al. 2013) and three small individuals were located in the Arboretum at the University of Guelph (McMullin et al. 2014).

The discovery of *E. prunastri* in the Slough of Despond was particularly remarkable because of its abundance. Dozens of mature and healthy individuals were observed in a small area of the swamp, which suggests that the population there may be larger still. Even now, it is the largest known population of *E. prunastri* in Ontario. It can be distinguished from the much more common *Evernia* species in Ontario, *E. mesomorpha*, by its flatter dorsiventral branches that are whitish below and pale green above instead of darker green with



Evernia prunastri (top), *E. mesomorpha* (bottom) and *Parmelia sulcata* (background). Photo: T. McMullin.

(Lendemer and Hodkinson 2010, Brodo et al. 2013). The Bruce Peninsula National Park is the closest known locality to the new discovery at the Slough of Despond (Brodo et al. 2013). A single well developed individual was found in the swamp. *Punctelia caseana* differs from *P. rudecta*, a very common species in Ontario, by its powdery vegetative propagules (soredia) on the upper surface instead of minute cylindrical vegetative propagules (isidia), which have a granular appearance.

Trypethelium is a large tropical genus with one species that reaches Ontario, *T. virens*, which is a distinctive lichen with a crustose growth form (Brodo et al. 2001). It is known from approximately a dozen localities in southern Ontario where it inhabits old-growth deciduous forests and lives on the trunks of large American Beech (*Fagus grandifolia*) (Wong and Brodo 1992, McMullin and Lewis 2013). The limited amount of old-growth forest left in southern Ontario combined with the recent introduction of beech bark disease (*Nectina coccinea* var. *faginata*) are threatening the future of *T. virens* in the province. Dozens of fertile individuals were observed on the trees at Kemble Mountain, which is uncommon among the Ontario populations. The only other locality that I have observed this species occurring as abundantly and as fertile is at the Nature Conservancy of Canada's Backus Woods property.

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Punctelia caseana. Photo: T. McMullin.

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Correspondence from Joan Crowe:

I would like to thank everybody for honouring me with the John Goldie Award 2015. I joined the FBO in the 1980s, shortly after it was founded. We were still living in Thunder Bay and a friend told me about it. I enjoyed the newsletter but was not able to take part in many activities until we moved to Owen Sound in 1993. Living on the Bruce Peninsula opened a whole new botanical world to me which I

have been happy to share by leading field trips. It has been a pleasure and a privilege to visit many other interesting places in southern Ontario and to meet so many enthusiastic and knowledgeable botanists since we came here. Thank you all so much.

Joan Crowe