



FIELD
BOTANISTS of
ONTARIO

Newsletter

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President's Message

In the waning of the year, we think of all the tasks that need to be completed and our anxiety level rises...and the field season is coming to an end. We hope that the new look of the newsletter allows you to forget all that for a few brief moments of remembering the allure of botany in the growing season. We would like to welcome our new newsletter editors, Cheryl Hendrickson of LandSaga Biogeographical Inc., and Lesley McDonell from The Nature Conservancy of Canada. Cheryl comes to us with years of experience in design, production and editorial management of *Alternatives Journal*, so we would like to give her a fairly free hand when it comes to editorial decisions, while maintaining the same rigorous attention to detail and exactness that our readers like to see. We open our minds to new design and welcome comments and suggestions from our members.

The editors are going to try their best to put out another newsletter by the end of this year. If anyone has any material they have been thinking of writing, send it in: a trip report they feel guilty about never getting around to, some thoughts on taxonomic changes - now is the time to submit it!

I look forward to further communication as winter approaches. 🌱

Sarah Mainguy, President

Standard source for scientific names and authorities of vascular plants:

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

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Newsletter

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Field Trip Reports

Searching for *Salix*: Field Botanists of Ontario Willow Workshop, June 16th, 2007



Impressed upper leaf surface of *Salix bebbiana* – Mike McMurtry (MM)

Our group met at the farm of George and Mary Argus near Merrickville, in eastern Ontario for a workshop led by George Argus focussing on that fascinating and enigmatic genus, *Salix*. Field botanists are used to roughing it, but on this morning we were treated to cold drinks, coffee and cinnamon rolls while we discussed the sites we would visit that day. George introduced us to Ted Cormier, a seed collector and willow enthusiast from Pembroke, who collects seed for nurseries and was very helpful in locating some of the willow specimens for our workshop. George also told us about a computerized interactive key to *Salix* he has developed (available at <http://aknhp.uaa.alaska.edu/willow/>) that allows keying out of *Salix* specimens by using a variety of characters such as leaf shape, flower characteristics and form.

George Argus is Curator Emeritus, Canadian Museum of Nature, Ottawa, Canada. He received a BSc in Geology and Biology from University of Alaska, an MSc in Botany from University of Wyoming, and a PhD in Biology from Harvard University. He taught at the University of

Saskatchewan and was curator and research scientist at the Canadian Museum of Nature. George has had a long-standing interest in the taxonomy of *Salix* and has contributed treatments of *Salix* to many floras.

In Ontario, George is also well-known for the atlas of rare plants that he authored with David White and others (Argus *et al.* 1982-87). This atlas laid the foundation for subsequent publications like Riley (1989), Oldham (1999) and Newmaster *et al.* (1998) and for the conservation status ranks assigned to vascular plants by the Natural Heritage Information Centre (NHIC website: http://nhic.mnr.gov.on.ca/nhic_cfm).

Our first stop was an inauspicious roadside ditch (Lesson #1: Willows like disturbed habitats) that produced the first *Salix* of the trip, Sandbar Willow (*Salix interior*). Many of our readers will recognize this species as *Salix exigua* Nutt. (ssp. *interior* by Soper and Heimbürger 1982), and it is this name that is recognized in the Ontario Plant List (Newmaster *et al.* 1998). George is in the process of writing the section on *Salix* in *Flora of North America* and had decided to recognize *Salix interior* as a full species in that treatment. *Salix interior* is commonly found on river banks and lake shorelines. (*Editors' note: Salix exigua and S. interior have been treated either as (1) one species (in which case S. exigua is the correct name); (2) one species with two subspecies, one eastern (S. exigua ssp. interior) and one western (S. exigua ssp. exigua); or (3) two separate species, in which case only S. interior occurs in Ontario. – MJO*)

Willows are generally plants of wet open areas: roadsides, riparian areas and disturbed areas like gravel pits. They are pollinated by insects and wind – the seeds have feather-like hairs and will float on the wind or water for many kilometres. The seeds will only germinate in wet areas with adequate sunlight, but once established, they will survive even if the conditions change substantially. *Salix* seeds have a very thin seed coat and no gymnosperm, and so are adapted to germinate very quickly. Germination usually occurs within 24 hours. Willows are very prolific in seed production; George once estimated that a single Bebb's Willow (*Salix bebbiana*) produced approximately 100,000 seeds. This versatile genus can produce shoots from roots (clonal growth) and can produce secondary catkins after the first catkins have matured, thus extending the period when the plant can be fertile. Another basic characteristic about willows is that they are usually

dioecious (having male and female flowers on different plants). Separate sexes may have evolved to increase the genetic variability of the offspring. It makes selfing (fertilization of ova from pollen of same plant) impossible. *Salix* is one genus where North America has most of the species diversity.

In a nearby gravel pit, George pointed out White Willow, *Salix alba*. It is distinguished by its lanceolate leaves which when young are covered with a silky-white covering of hairs. It is an introduced willow and was found in this very hot and dry environment with other hardy species: the introduced Awnless Brome (*Bromus inermis*), and the native Canada Blue Grass (*Poa compressa*).



Introduced *Salix alba* in gravel pit – (MM)

Our next stop was Flood Road, just north of Burritts Rapids, where a gravel road had been pushed through a wetland. Several species of willows thrive in the wet conditions and in part due to the disturbance caused by the road. At the edge of the road we found the common Pussy Willow (*Salix discolor*) with its relatively wide leaves which are bright green and glabrous (smooth) above and whitish and waxy (glaucous - they can be polished with your finger) beneath. The catkins (spike containing usually unisexual flowers) of this species are described as precocious, because they flower before the leaves come out, a characteristic that can be useful in separating Pussy

Willow from other willows. This species like other willows, is extremely variable in its vegetative characteristics (Lesson #2: Willows are extremely variable; don't just look at one leaf or branch) and George suggested that the best way to thoroughly learn willows is to tag some specimens and observe them at several times throughout the growth cycle. This characteristic of the genus makes it challenging to identify some specimens.

Slender Willow (*Salix petiolaris*) was also found; it has narrow, lanceolate leaves that are hairy when young and usually glabrous when older. The margins usually, but not always, have fine teeth. The catkins are short and the branchlets become dark brown in colour. Peach-leaved Willow (*Salix amygdaloides*) was also pointed out by Ted and George. It was tree-sized and had long lance-shaped leaves with an attenuated tip and pale midrib. The first leaves don't have stipules (leaf-like projections at the base of a petiole of a leaf), a feature that along with the width of the leaves, is helpful in separating it from *Salix nigra*.

Shining Willow (*Salix lucida*) was also found. The top of the leaf of this species is indeed very shiny and the tip extends in a long tail. The first leaves all have stipules.

Bebb's Willow (*Salix bebbiana*) was also nearby. The elliptic to oval leaves of this species are not always hairy but the veins in the upper surface of the leaf are always impressed. This willow and several other species develop raised ridges under the bark after 6 or 7 years of growth. The function of these ridges isn't known.

Some participants tried to divert us with non-willow species, but for the most part we stayed focussed on willows. We found a large clump of Showy Lady's Slipper (*Cypripedium reginae*). Woody species other than willows seen in the wetland were Tamarack (*Larix laricina*), Eastern White Cedar (*Thuja occidentalis*), White Spruce (*Picea glauca*) and Speckled Alder (*Alnus incana* ssp. *rugosa*).

We observed Autumn Willow (*Salix serissima*) (shiny leaves, no long tails, no stipules anywhere) and Hoary Willow (*Salix candida*), a species that is commonly found in fens. The leaves of the latter species are white and densely woolly on the lower surface and have an in-rolled margin.

From Flood Road we drove to Britannia Park in Ottawa, along the Ottawa River, to find some willow species not present at the other sites. Never assume that botanists are a timid lot; we all parked illegally on the lawn when there were not enough regular parking spots. The swimmers and sun bathers at Britannia Beach provided some additional

interest and many stared at our group to understand why we were going to the beach clothed in khaki from head to foot and equipped with binoculars and cameras. The bank of the Ottawa River is a good environment for many willows as it provides sandy soil, fluctuating water levels, lots of sunlight and opportunities for willow fragments to root.

Black Willow (*Salix nigra*) was the first willow to be seen growing along the water's edge. It is distinguished by its slender leaves, hairy branchlets (young specimens) and conspicuous stipules. The mature leaves are dark green above, only slightly less dark below and not glabrous. It is later-flowering than *Salix amygdaloides* (also present at Britannia Park). We also found Reddish Willow (*Salix x rubens*). The secondary veins on the leaves of this species are green, the branches are very brittle and the young leaves are silky, but not for long. This is the most aggressive of willows in Ontario and it is established along the Ottawa River, the Grand River and many other places. It is a cross between *Salix alba* and Crack Willow (*Salix fragilis*), but George contends that he has never observed *S. fragilis* in the wild in Ontario.



Waxy undersurface of *Salix discolor* – (MM)

There are many more willows to discover in Ontario that were not seen on this trip. For example, Upland Willow (*Salix humilis*) occurs in dry, sandy uplands. Bog Willow (*Salix pedicellaris*) has leaves that are waxy on both sides and is a resident of fens. Diamond Willow (*Salix eriocephala*) is a species of stream banks, wet ditches and swamps.

If you are driving around the Merrickville or Ottawa area and notice a car with a license plate reading “SALIX”, this will be George. The licence plate was a birthday present

from his family. Other licence plates you may know belonging to well-known botanists: “CAREX” (Anthony Reznicek), “ASTERS” (John Semple) and “ISOETES” (Daniel Brunton). Take note as this will surely be one of the questions at our next annual general meeting trivia quiz.

Next to Black Willow on the Ottawa River shoreline we observed a dense, many-branched shrub with purple flowers and compound leaves that we couldn't identify at first. Upon returning home and examining photographs, it was identified as False Indigo, *Amorpha fruticosa*. This shrub exists as a possibly native resident of Ontario in the extreme south on Pelee Island, but in the Ottawa area it is likely escaped from cultivation. Whether or not it is native or escaped, it is still provincially rare. Paul Catling has recently written an article on another Ottawa area occurrence of this species in *Trail & Landscape* (Catling 2006).

On behalf of the group, I would like to thank George for sharing his knowledge of the variable and fascinating willows with us and also thank both George and Mary for their kindness and hospitality. 🌿

Mike McMurtry

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Silver Creek Valley ANSI



Silver Lake – Walter Crowe (WC)

The field trip on July 21, led by Sean Spisani, was at the Silver Creek Valley Area of Natural and Scientific Interest (ANSI), about 7 km northwest of Goergetown in northeastern Halton Regional Municipality. This is a complex section of the Niagara Escarpment where Silver Creek runs south through a provincially significant wetland at the bottom of a narrow, steep-sided valley. The area is within a significant Life Science ANSI and is contiguous with the Caledon Mountain Wetland Complex to the north. This area has been subject to the vagaries of European settlement for nearly 200 years so the extensive forest is second growth and probably grazed in the past. Parts of the valley have obviously been cleared for farming. Over fifty years earlier, a creative landowner has made a complex of ponds between the two ANSI's. In spite of this, there is still a wide variety of plants, including some Carolinian species and there is pleasant walking along the main Bruce Trail and two side trails.

In places out-croppings of Queenston shale have created exposed clay slopes subject to slippage where forest vegetation is unable to establish, as it has done on the more moderate talus slopes. There are also more open, very steep, talus slopes. A number of provincially significant communities have been identified. We encountered one rated S2, *Hemlock-Sugar Maple Moist Limestone Talus*, and five rated S3 as follows: *Dry Herbaceous Dolostone Talus*; *White Cedar Treed Cliff*; *Mountain Maple Open Dolostone Talus Shrubland*; *Round-leaved Dogwood Open*

Dolostone Cliff Rim Shrubland; and *Sugar Maple Moist Treed Limestone Talus*. Sugar Maple (*Acer saccharum*) and Red Oak (*Quercus rubra*) were probably the dominant species in the upland forest but there was also White Birch (*Betula papyrifera*), White Ash (*Fraxinus americana*), Basswood (*Tilia americana*), Black Cherry (*Prunus serotina*), Shagbark Hickory (*Carya ovata*), Bitternut Hickory (*Carya cordiformis*), Butternut (*Juglans cinerea*), Hop Hornbeam (*Ostrya virginiana*) and American Beech (*Fagus grandifolia*). Of the conifers, Eastern White Cedar (*Thuja occidentalis*) was most common and Hemlock (*Tsuga canadensis*) was seen along the Walking Fern Trail on the eastern side of the valley. White Pine (*Pinus strobus*) was also present in the lower part of the valley.

The remnants of all the common spring flowers were to be seen on the forest floor. Hepatica (*Anemone acutiloba*), Wild Ginger (*Asarum canadense*) Canada Mayflower (*Maianthemum canadense*), False Solomon's Seal (*M. racemosum*) Starry False Solomon's Seal (*M. stellatum*), Red and White Trilliums (*Trillium erectum*, *T. grandiflorum*) Jack-in-the-Pulpit (*Arisaema triphyllum*) with huge leaves, Bellwort (*Uvularia grandiflora*), Violets (*Viola* spp.), Bloodroot (*Sanguinaria canadensis*), Foam Flower (*Tiarella cordifolia*) Early Meadow Rue (*Thalictrum dioicum*), Virginia Waterleaf or Cow Cabbage (*Hydrophyllum virginianum*) also both Blue Cohosh (*Caulophyllum thalictroides*) and May Apple (*Podophyllum peltatum*) in fruit. One clump of Spikenard (*Aralia racemosa*) was seen near the pond at the bottom of the valley.

There was the usual array of introductions, especially in more disturbed or open places: Coltsfoot (*Tussilago farfara*), Sow Thistle (*Sonchus* sp), Ox-eye Daisy (*Chrysanthemum leucanthemum*), Bird's Foot Trefoil (*Lotus corniculatus*), Black Medick (*Medicago lupulina*), Self Heal (*Prunella vulgaris*), Common St. Johnswort, (*Hypericum perforatum*), Common Plantain (*Plantago major*), Common Yarrow (*Achillea millefolium* ssp. *millefolium*) and Teasel (*Dipsacus fullonum* ssp. *sylvestris*). Helleborine (*Epipactis helleborine*) was present along trail edges. Tartarian Honeysuckle (*Lonicera tatarica*) was especially prolific on the forest floor. Rather surprisingly, there were large patches of a Stonecrop (*Sedum ternatum*) growing over the mossy rocks at the rim of the escarpment. This is a more southern species which is sometimes cultivated and does escape in the northern US. In the same habitat, there was also a garden escape: Peach-leaved Bellflower (*Campanula persicifolia*) with large, bright blue flowers facing up. Additionally, in the old field near the ponds were large spikes of mauve Culver's Root (*Veronicastrum virginicum*), probably a garden remnant.

Elecampane (*Inula helenium*) was spotted in the moist lower area. One of the most remarkable features were the huge spreads of Running Strawberry Bush (*Euonymus obovata*) on the forest floor with its characteristic tripartite, tuberculate fruits that look like unripe strawberries from a distance.

Two rare ferns can be seen in this area. The Walking Fern (*Asplenium rhizophyllum*), although not designated provincially rare, is very uncommon. It is generally associated with limestone or dolostone and therefore easiest to find along the Niagara Escarpment. There were some excellent colonies to be seen along the Walking Fern Side Trail. The globally rare (G4), provincially ranked (S3) Hart's Tongue Fern (*Asplenium scolopendrium* var. *americanum*) is present at one of its most southerly stations along the escarpment. It is much commoner further north. This species is of Special Concern provincially. It is almost certainly a glacial dissection as the other variety is widespread in Eurasia.

Other ferns recorded were: Bracken Fern (*Pteridium aquilinum*) – along trail edges; Marginal Shield Fern (*Dryopteris marginalis*)– rock outcrops on forest floor; Bulblet Fern (*Cystopteris bulbifera*) – shaded rock outcrops;



A mauve cultivar of Culver's Root *Veronicastrum virginicum* – (WC)

Rock Polypody (*Polypodium virginianum*) – horizontal dolostone surfaces; Evergreen (Intermediate) Wood Fern (*Dryopteris intermedia*) – forest floor.

Spinulose Wood Fern (*Dryopteris carthusiana*) was listed for the area and may be present in the wetter parts of the valley. This has been lumped with Evergreen Wood Fern in the past under *Dryopteris spinulosa*. In Spinulose Wood Fern the lowest pinnule next to the stalk is distinctly longer than the one next to it. This was not the case in the plants we saw.

Less common on the forest floor were Rattlesnake Fern (*Botrychium virginianum*), Christmas Fern (*Polystichum acrostichoides*), Maidenhair Fern (*Adiantum pedatum*), and Sensitive Fern (*Onoclea sensibilis*) in moister, more open areas. Holly Fern (*Polystichum lonchitis*) was reported from the rocky forest but this needs confirmation as it is not listed for this area

The only other pteridophytes were the ubiquitous Field Horsetail (*Equisetum arvense*) and, surprisingly large patches of Scouring Rush (*Equisetum hyemale* ssp. *affine*) in seeps on the forested talus slopes.

Grasses specifically recorded were: Bottle-brush Grass (*Elymus hystrix*), Fowl Manna Grass (*Glyceria striata*) and Mountain Rice Grass *Oryzopsis* sp. There were also numerous sedges but only White Bear Sedge (*Carex albursina*) was identified!

Other plants recorded along the upland forest trail: Agrimony (*Agrimonia gryposepala*), Large-leaved Aster (*Eurybia macrophylla*), Yellow Avens (*Geum aleppicum*), White Baneberry (*Actaea pachypoda*), Red Baneberry (*A. rubra*), Wild Basil (*Clinopodium vulgare*), Wild Bergamot or Bee Balm *Monarda fistulosa*, Sweet Cicely (*Osmorhiza claytonii*), Spreading Dogbane (*Apocynum androsaemifolium*), Enchanter's Nightshade (*Circaea lutetiana*), Wild White Licorice (*Galium circaezans*), Yellow Fringed Loosetrife (*Lysimachia ciliata*), Lopseed (*Phryma leptostachya*), Thimbleweed (*Anemone virginiana*), and Pointed-leaved Tick-trefoil (*Desmodium glutinosum*). A well developed patch of Squawroot (*Conopholis americana*) was a lucky find.

Plants recorded from the moister and more open lower levels: Black-eyed Susan (*Rudbeckia hirta*), Jewelweed (*Impatiens capensis*), and White Snakeroot (*Eupatorium rugosum*).

Shrubs recorded from forest floor: Red-berried Elder (*Sambucus racemosa*) in fruit; Wild Honeysuckle

(*Lonicera dioica*), Leatherwood or Wicopy (*Dirca palustris*) an early invader of regenerating forest and Maple-leaved Viburnum (*Viburnum acerifolium*).

Shrubs in lower more open areas: Common Elder (*Sambucus canadensis*), Round-leaved Dogwood (*Cornus rugosa*) Red Osier Dogwood (*Cornus stolonifera*), Bittersweet Nightshade (*Solanum dulcamara*), Purple Flowering Raspberry (*Rubus odoratus*), Smooth Wild Rose (*Rosa blanda*), and Staghorn Sumac (*Rhus typhina*).

Vines found were Moonseed (*Menispermum canadense*) and Wild (Riverbank) Grape (*Vitis riparia*).

This was an interesting area with a diversity of habitats. Thanks to Sean for an interesting and challenging walk, and to Bill McIlveen (WM) for assistance with identification, for some photos and for checking this

report. This was “home territory” for him! Other photos were contributed by Walter Crowe (WRC). ❄️

Joan Crowe

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Botanical Roots

Unsung Heroine Saves First Experimental Farm in Canada

Parts of this story are well enough known in the history of agriculture in North America. Some of the details need to be retold though to place some perspective on the present story. It involves the development of wheat varieties suitable for the early wheat industry in Ontario.

Wheat was the primary agricultural crop grown in Southern Ontario after the land was cleared of forest. Huge quantities of wheat were shipped from ports along Lake Ontario, for example. Problems became evident though as the industry grew, and these were that the varieties used at the time were susceptible to the wheat rust disease and to cold weather. To find out if there were better varieties of wheat available, David Fife acquired some wheat seed from a friend in Scotland. That seed was obtained from a ship in Glasgow in transit from Gdansk, Poland. In 1842, David Fife grew that sample of seed on his farm in Otonabee Township near Peterborough, Ontario. This



Historical Marker near Peterborough – B. McIlveen



Pedigreed Red Fife Wheat, Snipe Lake District, Saskatchewan, 1915. Yield: 49 bushels per acre. Courtesy Saskatchewan Archives Board, R-A99-9.

experiment at growing different kinds of wheat unwittingly made the Fife farm the first, though highly informal, experimental farm in Canada.

As far as experiments go, the test crop was a failure. The bulk of the seed turned out to be fall wheat that was not at all suitable. All the plants grew but rusted badly, except one plant with five heads. This one remained rust free and eventually proved to be of superior quality. From this single seed came the variety Red Fife that was to go on and have a spectacular history. This is the point where the heroine mentioned in the title enters the picture.

The heroine is Jane Beckett, the wife of David Fife. In A.H. Reginald Buller's *Essays on Wheat*, he cites C.C. James who provides the story. By fortuitous circumstance, Mrs. Fife came upon the family cow (or oxen in some versions of the story) eating the grain in the experimental planting. She was in time to rescue part of the planting but not before the cow had destroyed two out of the five heads on the prize wheat plant. Had she not been there to drive off the cow, undoubtedly, the whole plant would have suffered the same fate. Had those few seed stalks not been saved by Mrs. Fife, the whole of the wheat industry across North America would likely be very different today. Red Fife was the prevailing variety for over 50 years in Western Canada.

For quite some time, it was assumed that the single grain from which the three heads grew was an accidental hybrid. It turns out that the single seed was in fact likely accidentally mixed in from a larger shipment of grain coming from the Ukraine. It was a variety called 'Halychanka' and had evolved through selection over hundreds of years of wheat growing in that region. Perhaps over time, that variety would have eventually made its way into the wheat breeding programs, but the luck of the Fifes definitely saw to it that such a process was much accelerated.

The history of wheat development in North America is convoluted but the short version is that Sir Charles Saunders crossed Red Fife with the variety "Hard Red Calcutta", itself a swarm of varieties, at the Central Experimental Station in Ottawa in 1903. From that cross came a single seed that was to become the dominant variety of wheat called "Marquis". Marquis changed wheat production in North America ever since and it soon largely replaced its parent variety. Of course wheat breeding has continued in quest of even better varieties and something like 200,000 bread making wheat varieties are known.

Red Fife wheat has recently caught the attention of the Slow Food and organic food movements owing to its high quality characteristics. While the qualities may be high, the genetic characteristics of the variety actually changes very slightly each time it is planted so that crops of Red Fife planted today are not quite the same as the original variety that shaped the early wheat industry. However, the quality of that existing form of Red Fife remains very high.

So C.C. James wrote “Mrs. Fife is entitled to share in her husband's honor”. We can only add a hearty “Hear! Hear!” to that statement. He goes on to note that a photograph of Mr. and Mrs. Fife had been taken and was to be published in several newspapers. I have not located that photograph;

however, a portrait of David Fife hangs in the Canadian Agricultural Hall of Fame after he was inducted there in 1963. The commemorative plaque that once stood at the side of Highway 7 east of Peterborough was moved to the Lang Pioneer Village in 1977. That plaque does mention Jane Fife but does not provide details of her contribution to agriculture. Space on the plaque may have been too limited to give the details. It is hoped that this short article will partially make up for that shortcoming. ❁

W.D. McIlveen

Some Facts about the 2007 Goldie Award Recipient: Dr. Donald M. Britton

Dr. Britton's early studies foreshadowed his taste for impossible plant taxa with research into the family Boraginaceae (the subject of his PhD thesis in 1950) as well as the genus *Rubus*. He published his first paper on ferns in 1953, and has since become an internationally recognized expert in pteridophytes, with over 90 publications spanning six decades of research. Dr. Britton became a Professor in the Botany and Genetics Department at the University of Guelph in 1971. He continued his association with the University of Guelph after his retirement and up to the present. As noted by Dr. Paul Catling of Agriculture Canada (2003):

He was one of the pioneers in the use of cytogenetic techniques to reveal relationships, the use of the scanning electron microscope in systematics and the use of cytological data in the systematics of ferns. Dr. Britton was also a rather early biosystematist in that he integrated micromorphology, morphology, cytology, chemistry and phytogeography in his work.

In the academic world, Dr. Britton is best known for elucidating the taxonomy of some of the most intractable (in Dr. Catling's words) groups of pteridophytes, including *Dryopteris*, *Woodsia* and *Isoetes*. It is worth noting that American populations of *Dryopteris filix-mas* have

recently been designated ssp. *brittoniana* in his honour. He provided critical information for classification of a “hybrid subspecies” of *Gymnocarpium dryopteris*; known also in his honour as *G. d. ssp. x brittonianum*. He has always been able and willing to provide an authoritative view on any aspect of fern taxonomy, without pretentiousness or academic “one-upmanship”.

But Dr. Britton is also an outstanding field botanist. His collection numbers exceed 13,000, with collections in most major herbaria in Canada. Dr. Britton co-authored *Ferns and Fern Allies of Canada* with W. J. Cody (published by Agriculture Canada in 1984). This guide is an essential tool for field botanists. It takes the guesswork out of fern identification, providing robust keys that include many vegetative characters that can be applied to young specimens, and including comments on habit and habitat that can only come from many years of field experience. Fellow botanists describe his extraordinary energy in the field, his dry sense of humour (essential for anyone thrashing through Ontario's swamps) and his willingness and enthusiasm to help anyone who needed a chat about the intricacies of *Dryopteris* hybrids or the convoluted changes in names for club mosses. Students particularly remember exhausting field trips with Dr. Britton even after his retirement: their youthful arrogance totally destroyed as they struggled to keep up so they could hear his

explanation of distinguishing characters for each fern they encountered.

Less-often pointed out is that Dr. Britton was also deeply interested in broader issues such as phytogeography and floristics of the Great Lakes region generally. As written by Dr. Anton Reznicek of the University of Michigan (2003):

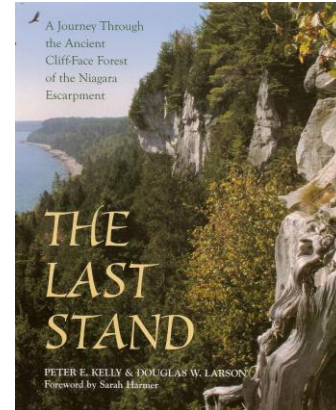
To a young undergraduate keenly interested in the flora, it was fascinating to hear about the arctic disjuncts on Lake Superior, and the even more remarkable disjuncts from the far west. But Don was also interested in (with Craig Campbell), regional floristics (the Waterloo region, with a history of study dating back into the late 1800's), and in the distribution of rare plants. He told me about the legendary and long known disjunct station of Woodsia scopulina in Algonquin Park, Ontario We went out in the field a number of times, and it was always a huge learning experience listening to Don's commentary on the distribution of this or that plant, what similar things to look for, and where to look for them and why fuelled my interest greatly in research on floristics and phytogeography

Dr. Britton mentored some of the best known field botanists in Ontario, many of whom have passed along that knowledge by leading trips for the FBO. Dr. Britton led, and apparently infected with his enthusiasm, then-young and impressionable professional and amateur botanists such as Anton Reznicek, Paul Catling, Dan Brunton, Kathleen Pryor, Nels Maher, Carole Ann Lacroix and Allan Anderson in their early field studies. Dr. Britton has also contributed his own time and energy to the FBO, leading new generations of field botanists through the intricacies of life within the cool fissures of the Niagara Escarpment as recently as 1996, when he was in his mid-seventies.

John Goldie, one of the most energetic and dedicated field botanists of his time, would have been proud to see the tradition carried on by one so committed to furthering enthusiasm and interest in some of Canada's most primitive plant species.

By Sarah Mainguy, with information by Dr. Paul Catling, Dr. Anton Reznicek, Dr. Kathleen Pryer and Daniel Brunton from Botanical Electronic News 304 and 305, March 6 and March 11, 2003 (quotations used with permission):www.ou.edu/cas/botany-micro/ben/2003.shtml, and correspondence with Dan Brunton, Carole Anne Lacroix, Paul Catling and Anton Reznicek. 🌿

Book Review



The Last Stand by Peter E. Kelly and Douglas Larson, 162 pp.

I was really excited to be given the opportunity to review this book. Having heard Peter Kelly speak at the Annual General Meeting of the Field Botanists of Ontario, I knew I would be in for a great read. This book did not let me down. It is well laid out and has some of Peter's fantastic photos. Peter also includes some of his great ancient cedar sketches as the background to text. The book is easy to read and is not overly heavy on facts or too scientific with the information it presents. It provides a great history on Doug Larson's research and how he came to form the Cliff Ecology Research Group.

The book begins with an introduction to the Niagara Escarpment, its formation and human history. It then delves into the biology of the Eastern White Cedar (*Thuja occidentalis*). It was interesting to discover that this species only reaches extreme ages (> 500 years) in the hostile cliff environment, even though it is at home in a variety of other habitats.

The native peoples of North America used the Eastern White Cedar for a variety of purposes, from canoes to houses to medicine. The Eastern White Cedar also saved early European explorers from scurvy when the Native people showed them how to make a tea from the tree.

The work of the Cliff Ecology Research Group is highlighted next in the book and includes interesting facts about the group's development. What started as an innocent look at hiking trails and their impact on cliff edge cedars

became a fascinating look into the Eastern White Cedars growing on the Niagara Escarpment.

Doug Larson's research did not end at the Niagara Escarpment in Ontario. He also conducted research on cliffs in the USA, France, Wales, England and New Zealand. He found different tree species such as the Phoenician juniper (*Juniperus phoenicea*) in France and the English Yew (*Taxus baccata*) in Wales also grew extremely old, 1,025 years and 700 years respectively.

Midway through this book, the authors dive into the ecology of these trees. How do these ancient cedars continue to grow, in what are obviously extremely harsh conditions? What makes the Eastern White Cedar particularly adapted to the cliff environment and achieving extreme age? I found this section really interesting, as these trees have some interesting adaptations that allow them to survive the harsh environment of the cliff.

Peter Kelly then walks the reader through a day in the life of a cliff ecology researcher and the search for the Niagara Escarpments oldest Eastern White Cedar. Chapter nine is a review of twelve of the ancient cedars discovered along the Niagara Escarpment. The tales of these trees are very interesting. Each of these twelve trees has been named by the authors for its unique structure, shape or tenacity.

The last chapter focuses in on the main impacts to the ancient cedars of the Niagara Escarpment – rock climbing. It also discusses our opportunities to protect the ancient forests for further impacts and the benefits of global conservation of wild habitats.

I thoroughly enjoyed this book. It's easy to read and provides a great review of the research completed by the Cliff Ecology Research Group. 🌲

Lesley McDonell

Editors' Corner

There's only one way to become a field botanist, and that's by getting outside and learning the names of plants in the places where they grow. One of the greatest things about FBO field trips is being in the company of others who proceed at a snail's pace, nose to the ground, saying the names of plants as they see them. I've always felt that knowing the names of plants is like learning to read – it transforms undifferentiated green into a story. And so having this *Newsletter* dedicated to reporting on botanical field trips is a natural extension of the literacy of plants.

Plants are portals into so many other areas of learning. They tell us about human history and the history of the land. They teach us about medicine and culture. They bring us peace through the awesome presence of a forest. They delight us with their incredible shapes, colour and fragrance. Magnification provides yet another level of amazement for their geometry and organization. For FBO members, they are a medium for conversation and camaraderie in what otherwise may be a solitary pursuit.

I have always valued this *Newsletter* as an unpretentious, content-rich medium dedicated to field botany in Ontario. Before becoming a professional field botanist – biogeographer actually - I spent six great years doing production, design and editorial management for a quarterly environmental publication. I am excited about taking on the editorship of this invaluable publication, and I hope the membership will be pleased with the design changes debuting in this issue.

Thanks to everyone who has contributed to this issue and especially to Sarah Mainguy, Sarah Piett, Bill McIlveen, Lesley McDonell, Bill Draper, Mike Oldham and Al Harris for guiding me through my inaugural issue. 🌲

Cheryl Hendrickson, Editor

I have been interested in the natural world since childhood. Roaming the back woods and ravines of my childhood home fostered an interest in the identification of and appreciation for flora and fauna. Since graduating from the University of Guelph with a degree in Environmental Science, I have worked in a variety of organizations - from the federal government to consulting to currently employment with the Nature Conservancy of Canada. I have been a member of the FBO for a few years and thought I might be time to give back and volunteer some time to this great group! 🌲

Lesley McDonell, Associate Editor

Next issue deadline is November 30!

Send your Field Trip Reports and other articles to:
hendrickson@landsaga.com