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FIELD BOTANISTS
OF ONTARIO
NEWSLETTER

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President's Message

This year, for the first time ever, as far as I know, the Field Botanists of Ontario organized a workshop on botanical illustration. The workshop was led by Karen Kesteloot of the Guelph School of Art and was held at the Guelph Arboretum. I know that some of our members are adept at drawing plants, but our organization has tended to focus more on the scientific aspect of plants, their classification, how to identify plants in the field and their role in the ecosystem.

Drawing a plant accurately must start with observing the plant closely - not just whether a leaf is toothed, but how sharp are the teeth and what the proportion of one tooth is to another. Do the veins end at the tip of a tooth or do they branch and disperse before reaching the edge? Are the lobes the same size or do they vary? If you are like I, you have developed a tendency to look more at traits of the plant that are used in separating species, rather than the whole plant. Drawing is a creative, experiential right brain activity, while classifying and naming use primarily the left side of the brain. It was refreshing to just observe and draw a plant, its shape, size, proportions, texture and colour, without thinking about the scientific aspects. After some observing and drawing exercises in the classroom, we went outside to draw a plant in its natural environment and to colour the drawing with pastels, a technique that is relatively easy for beginners to learn, when compared to painting with water colours. Though colour isn't usually used in technical botanical drawings, it is appealing from an aesthetic point of view. Those of us attending the workshop thoroughly enjoyed ourselves and I suggest that you may see more events like this in our future program.

Our field program is now in full swing - thanks to Sarah Mainguy and Natalie Dunn for coordinating an excellent slate of outings.

See you in the field,

Mike McMurtry

On the cover: Top: Large patch of American Lotus (*Nelumbo lutea*). Photo by George Bryant. Bottom: Contemplating history in the making: Nate Torenvliet in his paradise. Photo by the author.

Sidebar artwork: Fringed Gentian (*Gentianopsis crinita*).

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

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Editor's Note

An interesting issue, the present one. George Bryant's and Leanne Wallis' submissions are our "regular" trip reports. The always-in-high-demand Tony Reznicek led an outing to Ontario's southwestern beaches. There, despite nutritionally poor or almost sterile habitats, a plethora of interesting and unusual species welcomed the visitors. If sedges and grasses are your favourite challenges (and I am sure they are everyone's), perhaps you should have joined the folks who attended the trip led by Steve Varga. A big bonus of Leanne's report are her high quality close-up photos of several species showing details of sedge morphology often difficult to explain in words.

For a more unconventional reading pleasure, please consider Bill McIlveen's paper on... plank roads. Our prolific contributor has rather precariously departed from what we typically publish, but we have accepted his effort because what he describes is fundamentally, well, botanical.

Finally, would you allow the Editor to check your knowledge of history and geography? Do you know these facts? They all happened long time ago, in 1501:

- ★ Martin Luther, aged 17, enters the University of Erfurt.
- ★ Cesare Borgia triumphantly returns to Rome from Romagna.
- ★ Portuguese Joao da Nova Castell discovers Ascension Island.
- ★ Nicolai Copernicus installed as canon of Frombork Cathedral.
- ★ Treaty of Trente between Maximilian of Austria and Louis XII of France.
- ★ Amerigo Vespucci discovers Baia de Todos os Santos in Brazil.
- ★ Battle of Mstislavl: Muscovite army defeats the forces of the Grand Duchy of Lithuania.
- ★ Arthur, Prince of Wales, marries Spanish princess Catherine of Aragon.
- ★ Alexander Jagiellon becomes King of Poland.
- ★ Michelangelo begins work on the statue of David.
- ★ The world has an estimated population of around 435 million.
- ★ Nine years have passed since Christopher Columbus discovered Americas' islands of Cuba and Hispaniola during his first voyage.

That year, a seedling of Black Gum started to grow in a Niagara grove. It is still there. Nate Torenvliet: you tell us the rest of the story...

Cheers, all.
Chris Zoladeski

Field Trip Reports

Lake Erie beaches: a botanical opportunity

6 September, 2014

By George Bryant

Well-known to Ontario botanists, Anton Reznicek is the co-author of the *Field Manual of Michigan Flora* (2012), an encyclopaedic work so significant that no self-respecting Ontario botanist can afford to be without. FBOers were fortunate to have Tony as our guide on this day to some of his favourite locales. Despite the intensive shoreline development, there are still a few areas of Essex County outside of Point Pelee that offer good Lake Erie shore habitat. Ontario's Lake Erie shoreline flora is not sufficiently distinct to be botanically recognized like "Carolinian" or "Atlantic Coastal" but it does include a number of characteristic plant species (below denoted as LE).

From Windsor we car-pooled to Willow Beach near Amherstburg, a private beach with undeveloped shoreline to which we had been permitted access. A hiking trail over a buried gas line easement provides a route to the barrier beach shoreline and later to the filled marsh behind the beach. First plant up was a "wild-type" Jerusalem-Artichoke (*Helianthus tuberosus*) a coarse, weedy perennial which occurs in Ontario up to Georgian Bay. Here also, Day-flower (*Commelina communis*) and escaped Hedge Maple (*Acer campestre*), Marsh Mallow (*Hibiscus moscheutos* LE, still in flower), a patch of chewed-up Purple Loosestrife (*Lythrum salicaria*, proof of the success of the introduced beetle predator), "reptilian-barked" Drummond's Dogwood (*Cornus drummondii* LE), growing up to five metres—much larger than similar Grey Dogwood. As an aside, Tony commented on the decline of orchids throughout southern Ontario. He agreed that deer herbivory was a

big factor, but not the only one. Nitrogen levels are changing and not in their favour. Introduced earthworms continue to spread and periodic flooding drowns many populations.

Reaching the shoreline we noted Cocklebur (*Xanthium strumarium* LE), behaving like a non-native plant but first collected in the 1830s in Michigan, so possibly native. Over the lake, a resident adult Bald Eagle harried a resident Osprey until the latter released its still-writhing Carp.

Picking up various bits of greenery in the shoreline drift strand, we examined the unique seedpod of American Lotus (*Nelumbo lutea*) and a huge underground bulb which turned out to be River Bulrush (*Bolboschoenus fluviatilis*). We also saw Tape-grass (*Vallisneria americana*) which fruits at the bottom of the water. At the back of the beach we saw several native plants, including Sea-rocket (*Cakile edentula* LE) and Peach-leaved Willow (*Salix amygdaloides*) with distinctive red petioles and pendulous leaves, plus Nodding Smartweed (*Persicaria lapathifolia*). Non-natives included escaped Honey-locust (*Gleditsia triacanthos*) and rare in Ontario Northern Catalpa (*Catalpa speciosa*), "a bare soil germinator like Platanus".

We admired more Lake Erie specialties. Seaside Spurge (*Euphorbia polygonifolia* LE) is a beautiful little plant with purple branches. Sand Grass (*Triplasis purpurea* LE) is beach-adapted—when mature it breaks up readily into pieces, each panicle having cleistogamous flowers. Nicely displayed, Wild Bean (*Strophostyles helvula* LE) has woolly seeds unlike almost every legume which produce dry beans. Tony took a photo for his Michigan flora website.

A stand of Black Alder (*Alnus glutinosa*) allowed Tony to speculate: Why is it that this plant and others like Spiked Sedge (*Carex spicata*) and Mezer's Daphne (*Daphne mezereum*) are rare in Michigan but not so in Ontario? Did the United Empire Loyalists import these plants here?



American Lotus (*Nelumbo lutea*). Photo: G. Bryant.

Onto a sandy stretch where we observed a nice indigenous plant—American Beach Grass (*Ammophila breviligulata* LE). This species slows down the wind velocity thereby creating sand dunes. Also, Field Sandbur (*Cenchrus longispinus* LE) – another interesting native grass with nasty barbed prickles.

The Lake Erie water levels were relatively high at this time. Gabion walls had been erected to prevent sand movement and encourage beach deposition. Tony pointed out that sand movements are a real issue—everybody wants deposition, nobody wants erosion.

Many grasses have edible fruit – but sedges are rarely edible. Yellow Nut-grass (*Cyperus esculentus*) is an exception—it is an important food plant world-wide. Our native populations have 2 mm thick tubers, the African cultivated form has 2 cm tubers. Tony challenged the participants to name the edible sedge which doubtless we all had eaten – Water-chestnut (*Eleocharis dulcis*). Another aside, the sedge family includes the “world’s worst weed” the Java Nut Grass (*Cyperus rotundus*), which infests over fifty crops in ninety countries. It occurs as far north as New York State, but apparently has not made it over the border yet.

Other beach plants were Toothed Spurge (*Euphorbia davidii*) with Poinsettia-like bracts in a pseudo-whorl, native farther south but adventive here. Also, Clammyweed (*Polanisia dodecandra*, named so for its twelve anthers), a native sand and dune plant, often mistaken by

people as Leguminosae because of the leguminous pods; rather it belongs to the Spider-plant family Cleomaceae.

Schweinitz’ Sedge (*Cyperus schweinitzii* LE), another plant virtually confined to the Great Lakes shores in Ontario is a big, coarse, cool season umbrella sedge, maturing in July, common on sandy areas on the Great Plains but relatively uncommon in Ontario. It is distinguished by long awns on the spikelet and a hard corm-like root adaptation to drought.

Sand Dropseed (*Sporobolus cryptandrus*) is a very common large grass on the upper part of beaches but is now mainly dispersed along road

shoulders. The upper part of the plant is like a sickle—it is the cleistogamous part of the cryptandry—open it up and it is full of mature fruit. (Tony observed that grasses have open panicles making them hard to photograph, unlike sedges.) Another interesting generalization: fertile shoots of sedges always have stem tissue whereas almost all vegetative shoots lack stem tissue. Nearby we noted tumbleweed, Winged Pigweed (*Cycloloma atripicifolia*) a chenopod (Beet family) turning beet-red in the fall. Also, two interesting horsetails: Smooth Scouring-rush (*Equisetum laevigatum*) and *Equisetum × nelsonii*, the latter very widespread but still a hybrid. Behind the beach, Tony pointed out a fine Hop-tree (*Ptelea trifoliata* LE) bearing lovely samaras, which he said was “as good as it gets”.

On to Holiday Beach Conservation Authority for lunch, where we dined under a huge Eastern Cottonwood (*Populus deltoides*), doubtless planted and, despite its size, probably only 70-80 years old. Here we noted Groundnut (*Apios americana*) with a fascinating palette of flower colours. Apparently, most plants are sterile triploids with large underground tubers—the only means of spreading is via rhizomes. Common in gardens and a Lake Erie specialty, Obedient Plant (*Physostegia virginiana* LE) is unique. If you move a flower a quarter or half turn, it says there! There was also Autumn Olive (*Elaeagnus umbellata*), a terrible invasive shrub with red juicy fruit. Two grasses were noted: lots of Quack Grass (*Elymus repens*) and Leafy Satin Grass (*Muhlenbergia frondosa*), so finely scabrous it is best felt with your tongue.

From the Hawk Tower which is surrounded by the Big Creek marsh, hawk-watchers pointed out early migrant Red-tailed Hawks, American Kestrel and Broad-winged Hawk. Looking below, we enjoyed views of dozens of Great Egrets plus two Snowy Egrets – rare strays from the south. Tony suggested these freshwater marshes on the north shore are one of Lake Erie’s treasures. With our macroscopic view we identified water lilies: Large Yellow Pond-lily (*Nuphar advena*) and white-flowered American Water-lily (*Nymphaea odorata*). Not a water-lily but sometimes somisidentified, American Lotus dominated large patches of open water. This remarkable plant is found in only a few locations in Canada, most of them in Essex County. The large peltate leaves either float on the water like a dinner plate or emerge like an umbrella. (You should read more about this fascinating plant in *Michigan Flora*.)

We threaded our way along a narrow causeway bisecting the marsh. Invasive European Frog’s-bit (*Hydrocharus morsus-ranae*) had arrived. The cattail was the Lake Erie hybrid (*Typha x glauca* LE), more tolerant of the conditions. In quick order we noted Water Smartweed (*Persicaria amphibia*), Flowering-rush (*Butomus umbellatus*), Canada Tick-trefoil (*Desmodium canadense*), Small-flowered Agalinis (*Agalinis paupercula*), European Water-horehound (*Lycopus europaeus*), Bristly Sedge (*Carex comosa*), Greater Duckweed (*Spirodela polyrhiza*), Pickerel-weed (*Pontederia cordata*), Star Duckweed (*Lemna trisulca*) (“the one duckweed that does not float”), Canada Blue-joint (*Calamagrostis canadensis*), Bulb-bearing Water-hemlock (*Cicuta bulbifera*), Swamp Milkweed (*Asclepias incarnata*), and Small-flowered Agrimonia (*Agrimonia parviflora*).

Most big Muhly grasses have “thick scaly reptilian rhizomes”. We studied Shreber’s Satin-grass (*Muhlenbergia shreberi*), another one of Tony’s plants with diagnostic thin bases and no rhizomes. The leaves and upper stem of Water Loosestrife (*Decodon verticillatus*) had turned a vibrant red. Tony pulled one out of the water to show us the change in the stem tissue. Where it enters the water it swells, forming a huge woody root mass. We all added a word to our vocabulary: “aerenchyma” refers to spaces or air channels in the leaves, stems and roots of some plants, which allows exchange of gases between the shoot and the root.

Umbrella Sedge (*Cyperus bipartitus*) and Straw-coloured Umbrella Sedge (*Cyperus strigosus* – no tubers but a perennial corm) were growing close to Fragrant Umbrella Sedge (*Cyperus odoratus*), an annual. Tony words: “Lake Erie marshes are noted for 6-8-10 species of *Cyperus*”.

In the open water we noted wide-leaved Southern Wild-rice (*Zizania aquatica*). But some clumps seemed to bear the narrow leaves characteristic of Northern Wild-rice (*Zizania palustris*). Did both species occur here? Michigan Flora is completely on-line and when Tristan Knight googled it within seconds it was confirmed we had the two species.

Water Stargrass (*Heteranthus dubia*) has stipules fused to the leaves with no conspicuous mid-veins. Dale Leadbetter opined it was

overlooked often and misidentified as Flat-stemmed Pondweed (*Potamogeton zosteriformis*).

At the end of the afternoon Tony contrasted our surroundings—Holiday Beach with much disturbance and many vigorous aggressive non-native species to our morning location—isolated Willow Beach. That private beach with no protection provided a much better habitat for native species and little evidence of disturbance. Tony believes Willow Beach has great potential for protection. He is optimistic it will eventually be managed for its natural features. Let us hope he is right. 🌱

Varga on sedges and grasses

8 June, 2014

By Leanne Wallis

On a warm and cloudy June day, Steve Varga, a biologist with the Ontario Ministry of Natural Resources and Forestry (OMNRF), led 11 enthusiastic naturalists on a terrestrial sedges and grasses hike. Steve chose the Hollidge Tract, an 83 ha parcel of York Regional Forest east of Newmarket for the hike, noting it was a top spot for upland sedge diversity. Most of the hike was along a flat wide trail suitable for a group of this size, ensuring that everyone could see and hear the trip leader. Steve offered to lead this special graminoid hike in response to member interest.

He started the hike by handing out two regional keys, one for *Carex* sedges and one for grasses, both specific to Metropolitan Toronto and York Regions. Then he illustrated the important parts of each group, by drawing them (upside down as he stood before us!) on a sheet of paper.



In general, sedge stems (the Cyperaceae family) are three-sided, hence “sedges have edges”, whereas grass stems (the Poaceae family) are round. *Carex* is our most abundant genus of the Cyperaceae, and is distinguished by having its “seed” (achene) in a sac (perigynium). Further, in *Carex* flowers are unisexual (all male or all female) and subtended by a single scale. The flowers are often, but not always, clustered into spikelets of all male or all female flowers. Grasses, on the other hand, almost always have spikelets with both male and female flowers. They are almost always subtended by two scales: the lemma and the palea. A good trick to remember what scale is which is to remember that the lemma is the lower, and the palea is the upper. The fruit of a grass is almost always a grain (like in rice or wheat).

Despite sedges being intimidating to many naturalists, Steve explained that they really are as different as a White Trillium from a Red Trillium. Some characteristics used to differentiate *Carex* species include: whether the female (pistillate) spikelets are stalked or sessile, erect or drooping; whether the perigynia are beaked or not, hairy or not, nerved or not; the colour of the scales, etc.

The hike begins with us looking at grass growing along the roadside. Steve explains that many grasses found in this habitat will be exotic. Here we find the non-native *Bromus inermis* (Smooth Brome), a tall grass (up to 1 m) with leaves over 1 cm wide. It has two un-awned rounded glumes, the big glume having three green stripes and the small glume with one green stripe. We also see the non-native *Dactylis glomerata* (Orchard Grass). It has a long membranous ligule, hairy glumes, and a short awn on the lemma. We also see Kentucky Bluegrass (*Poa pratensis*), a common lawn grass. When not mown, it can grow to 1 m tall. Steve explains that this species, like many Poas, has an upwards curved leaf-tip (like the bottom of a boat) and a cobwebby tuft of hairs at the base of the lemma. *Poa pratensis* has three or more florets. Most of the glumes and lemmas are green with a white edge. The ligule is membranous.

Hidden amongst the grasses, and only about a foot tall, we find the short and inconspicuous *Carex aurea*, an excellent beginner sedge. Its perigynia are almost perfectly round and, as they mature, change colour from green to orange. This orange colour is unique amongst our sedges. Steve explains that the perigynia are actually edible and taste like nuts.

Heading away from the road and into the forest, Steve points out three species of the challenging *Montanae* (now called *Acrocystis*) group of *Carex*. These are *Carex peckii* (Peck’s Sedge), *C. pensylvanica* (Pennsylvania Sedge) and *C. communis* (Fibrous Rooted Sedge).

These sedges have all spikelets clustered at the tip of the stem, with a few female spikelets underneath one male spikelet. The perigynia are fuzzy and often the scales are chestnut brown. They flower in the spring and all of them have red plant bases. *Carex peckii* is the most dainty of the three, with narrow leaves, small female spikelets, and a small (under 1cm tall) male spikelet. Steve jokes that one way to



remember this sedge is that it has a small “pecker”. *Carex pensylvanica* has a longer (about 2cm) male spikelet that is thick and chestnut brown. It has thick rhizomes and the plants can appear to carpet the forest floor. It likes dry forests, especially under oaks. *Carex communis* also has a long male spikelet, but it is thinner and pale coloured. It grows in tufts, connected by thin rhizomes. It is a more southern species.

As we head further along the trail, Steve explains that we are walking through a conifer plantation and that the land was once farmed. The Red Pines (*Pinus resinosa*) are being selectively logged out and the forest will eventually become deciduous.

Next we see *Carex pedunculata* (Long-stalked Sedge), a common forest species with a red base and growing in tufts. It flowers early in the spring and the careful botanist will search for its long droopy flowering stems hidden amongst the leaf litter. It has interesting long-tapered perigynia bases, and awned red pistillate scales.

Next we see two more common forest sedges that are very similar to each other: *Carex arctata* (Drooping Wood Sedge) and *C. gracillima* (Graceful Sedge). These two species can be found growing in the same patch, although *C. gracillima* is more tolerant of wetter areas. *Carex arctata* has beaked perigynia and an all-male terminal spikelet. *Carex gracillima*, on the other hand, has unbeaked perigynia and its



terminal spikelet almost always has a few perigynia at the tip of the male spikelets. The author's trick to remember this is that *C. gracillima* has "girls" on top. Also, when a spikelet has "girls" (female flowers/perigynia) a b o v e "boys" (male flowers) the spikelet is called gynecandrous.

Along the trail we observe two more species of *Poa*: *P. alsodes* (Grove Meadow Grass) and *P. compressa* (C a n a d a Bluegrass). *Poa alsodes* is an u n c o m m o n

woodland grass, while *P. compressa* has a flattened stem. *Milium effusum* (Wood Millet) is a thigh-high grass that grows scattered through moist woodlands. It has wide bluish-green leaves with a bloom that can be rubbed off. We also see *Brachyelytrum erectum* (Bearded Short-husk), a grass that is rarely seen flowering. It grows in patches and has green leaves about 1cm wide. Later, Steve points out *Festuca subverticillata* (syn. *F. obtusa*, Nodding Fescue), which is a native woodland species. He explains that many of the other *Festucas* are non-native species that can be found growing along roadsides. We also observe *Schizachne purpurascens* (Purple Melic Grass), one of my favorite springtime forest grasses. This thigh-high grass has long awns on its lemmas and when fresh, bright purple glumes and plant bases.

As we walk along, we encounter a large patch of *C. sprengelii* (Long-beaked Sedge). This is another good beginner's sedge. It has extremely fibrous plant bases, and unique perigynia that look like a ball with a long stick coming out. We also observe *C. hitchcockiana* (Hitchcock's Sedge), a sedge with hairy bract sheaths, and multiple-nerved perigynia.

Also along the trail side, we observe a fairly distinct sedge called *C. sparganioides* (Bur-reed Sedge). This is a robust sedge that grows up to 1 m tall and has numerous spikelets spiralling around the stem. Its common name comes from its very slight resemblance to Bur-reed. This sedge has a thick, triangular fleshy stem. At the plant base, the

stem is white with distinct green stripes. Its leaves are over 1 cm wide.

Next, Steve moves on to compare two sedges which are my nemesis: *Carex rosea* (Rosy Sedge) and *C. radiata* (Stellate Sedge). If only the taxonomic powers-that-be would lump these two very, very similar species into one, they would make multitudes of botanists happy. In fact, every new plant discovered and described would probably be named in their honour. It doesn't help that these pretty sedges with their star-like spikelets of perigynia radiating in all directions are quite common, and that they share the same habitat. The best way to differentiate them is by looking at the stigmas: in *Carex rosea* they are thick and tightly coiled and in *C. radiata* they are thinner and straight to wavy. Jocelyn Webber and Peter Ball wrote a paper about these two sedges called *The Taxonomy of the Carex rosea group (Section Phaestoglochün) in Canada* which has some additional information on differentiating the two.

Another challenging group that Steve discusses are certain members of the *Laxiflorae* including: *Carex blanda*, *C. leptonevia*, and *C. laxiflora*. Steve explains that *Carex blanda* (Woodland Sedge) is not found in this forest tract, but instead farther south of the moraine where it is more common than *C. leptonevia* (Finely-nerved Sedge). *Carex blanda* has many prominent nerves on its perigynia and a short, strongly-curved beak. *Carex leptonevia* has two prominent green veins and a few weaker veins. *Carex laxiflora* (Loose-flowered Sedge) has a smooth and white bract sheath.

One of my personal highlights from the trip was seeing *Carex backii* (Back's Sedge). I had never seen this uncommon sedge before, and if it hadn't been pointed out, I probably would have walked right by it, as it is very short and incredibly "leafy." Its flowering stems are overtopped by the long leaves, and unusual in our sedges, its pistillate scales are also leaf-like and thus conceal the perigynia.

Other sedges we see are *Carex deweyana* (Dewey's Sedge) and *C. cephalophora* (Oval-headed Sedge).



As we are walking out, I spot *Carex albursina* (White Bear Sedge) growing on the edge of the trail. Steve exclaims that this is a new addition to the sedge flora of this tract. As the trip winds down, and we dodge Poison Ivy and raindrops on the walk out, all around us we can hear forest birds giving their breeding calls: the Ovenbird, Black-throated Green Warbler, Red-eyed Vireo, and Wood Thrush, and we can dream fondly of the long field season before us, and all the opportunities we will have to put Steve's knowledge to use identifying sedges and grasses. Thank you Steve for another great trip! 🌿

Image Note: All photos in this article were created by the author, by scanning plant specimens on a flatbed scanner and editing using Adobe Photoshop.

🌿 Botanical roots 🌿

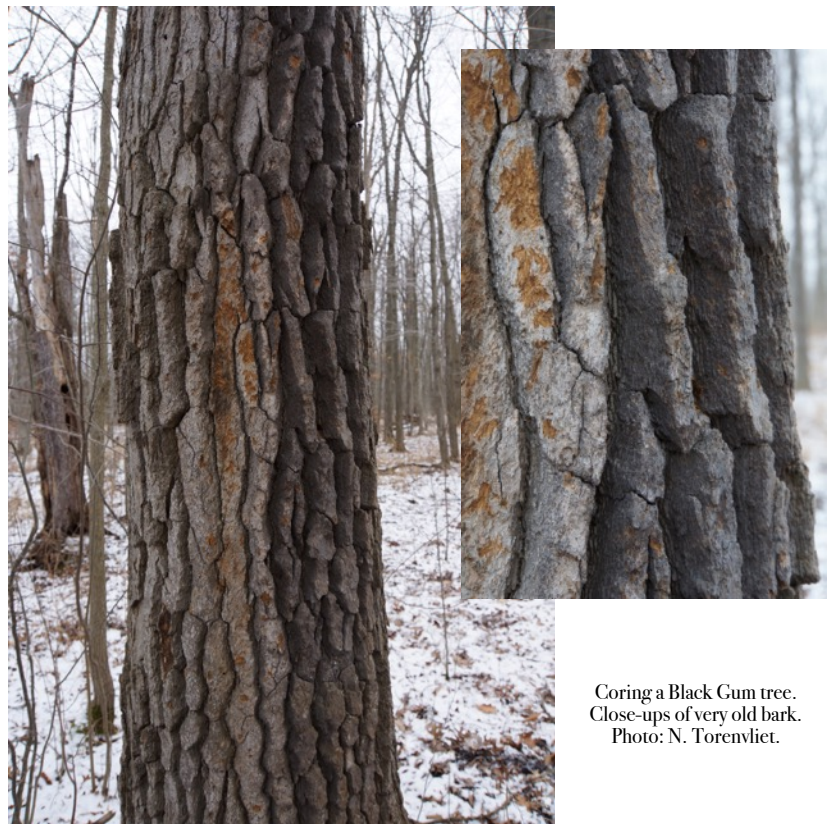
Meditation in the slough

By Nate Torenvliet

Mythological nymphs in a cool, wet woodland. It may not be what most might imagine when visualizing what is quite possibly Canada's oldest broadleaf tree. However, it's not too much of a stretch once you become acquainted with the small, quiet grove of Black Gum that grow in the eastern region of Niagara, Ontario.

Black Gum, a member of the Tupelo family, is a tree that doesn't disappoint, at any time of the year. Its Latin epithet, *Nyssa sylvatica*, refers roughly to a mythological nymph of the wet woodland; a pretty name that Black Gum quietly lives up to. But, being dioecious, perhaps there's enough flexibility in this designation to accommodate the male black gums, who, according to Greek mythology, certainly can't be nymphs but must be their satyr male counterparts.

Though not a species at risk, Black Gum is never common in Ontario and is usually found in wet woodlands, often on the very edge of standing water. The characteristic horizontal branching of young trees often becomes irregular and flat-topped in old trees, creating its unmistakable presence in the forest. Its thick glossy-green leaves glisten and shimmer in the summer sunlight, and by autumn turn intense shades of red, scarlet, and purple. But the bark of this tree really sets it apart. Dark grey-brown and blocky in younger trees, becoming deeply fissured and rusty-coloured in middle-aged trees, and then balding in old age into light-grey smooth plates. Average sized trees top 15 meters in height and 40 cm in diameter.



Coring a Black Gum tree.
Close-ups of very old bark.
Photo: N. Torenvliet.

I'd heard about this black gum grove for some time, and was eager to visit the trees and see if they were older than some other gums I had visited in the past. So, on a sunny and snowless holiday December morning I thought it was as good time as any to find some old trees.



It takes at least forty years to reach the size of a dime. Photo: N. Torenvliet.

Shortly after arriving and heading into the woods, the gums revealed themselves. Each one uniquely oozed with character; character that had been beaten by and adapted to centuries of life in that quiet slough forest. They seem to site themselves carefully in those wet woods – often perched-up somewhat near the water's edge where they grow slowly, and carefully, not rushing any one thing. Indeed, these trees seem to almost meditate at the edge of the slough; quietly growing through time itself.

After considering the many different bark patterns, one in particular caught my attention: a flaky baldness, sometimes extending many meters up a stocky bole – surely, ancientness in bald-barklessness. I looked for one that I hoped would give me a peek into its centuries past. I needed little – just a tiny sample from a special hollow bit.

After seeing one old gum lying on its belly, hollow nearly to the top, I wondered in silent hopelessness if any of these old trees would still hold the secret. Further along, another giant of a gum, sliced right through at the knees in decades past lay on its back, half returned to the slough from which it came. Hollow too, it might have been left to rot at the sight of its woodlessness; a sacrificial sentinel perhaps, which inspired frustration in the saw holder, and saved the others.

Admittedly, my first two attempts came up short as the borer twisted into emptiness after just a few twists through the youngest wood. These ancient denizens of the slough weren't so forthcoming. But there was one tree that caught my attention early on; it almost beckoned me over to see it first, before any other that day. Of course, I obliged, and went over to stand before it as I do all special trees I visit. It loomed before me as I stood there; my knees a little bent, jaw a little low-slung as I gazed up and down it. This one was special. And with a gentle pat I moved on to visit the others. It would be my last try that day, before my hope could be put to rest. Dead set, I twisted the borer in and, with each turn, my hope regained lost ground. She was solid as a rock. I carefully extracted the delicate core. It was complete, and it looked good!

Once home, I mounted the core, then sanded it to a polished shine. Then, under forty-or-so times magnification I began to read the rings of annual growth, and with a pin prick marked each decade. I was excited. The rings were consistently tight and stacking up fast. It reminded me of an old Bristlecone pine (*Pinus longaeva*) sample I collected in California some years ago. Would it be older than the three-hundred-and-twenty-five year old gums I visited at another site a year earlier?

I could see stress recorded in the rings, serious stress. There were decades in the past where this tree all but gave up. Perhaps a bad storm smashed its top out, or maybe years of drought brought it near the edge. Growth ebbed and flowed, and this tree pressed on.

After I'd run through the length of the core, one decade at a time, I went back to the beginning – today's date, and began pressing a second pinhole next to each century: one hundred, two hundred, three hundred, ... four hundred, ...four-sixty, four-seventy, four-eighty, ... and finally, the last ring at four hundred and ninety-eight years ago. I was delighted.

To the 498 annual rings we can comfortably add the approximate 15 years it took for the tree to grow to the height of the sample. This means that this spring, this tree will grow those glossy-green leaves for the 514th time. Indeed, decades before Europeans explored inland from the Newfoundland coast, this tree extended upward from its first set leaves in 1501.

This is perhaps the oldest non-cedar tree in Ontario, and holds its own against all but the cone-bearing trees in Canada.

And so Black Gum has longevity to round off its list of qualities that make it a tree to remember. It's hard not to respect their slow and steady travel through time in a world so fast-paced and hurried. Indeed, I'd credit them with something of patience for all their time spent meditating in that watery woodland where time almost seems to stand still. 🌿

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Plank roads in Ontario

By Bill McIlveen

When Europeans arrived in North America, there were no roads as we have come to expect then. Waterways were used where available. There were many Indian trails or footpaths that followed the shortest and most convenient routes as dictated by the local topography. Such trails were quite adequate for pedestrian traffic but they were not at all suitable for wagons and other forms of transportation required for the emerging agricultural commerce. As well, it was necessary to have roads suitable for the rapid movement of military personnel, especially when it is remembered that much of the significant settlement was occurring at a time when there were ongoing hostilities between Canada and the United States.

The government of the day had little resources for building the needed roads. It was a fairly common requirement that settlers were obligated to clear and create roads along the front of their new properties as one of several conditions of receiving their land. As of 1793, this might require the settler to spend one or more (up to 12) days per year attending to this obligation. Such obligations were called the Statute of Labor, a practice that did not formally disappear until 1926. After that date, the Province paid a subsidy to the municipality so that a road superintendent could be hired. But until municipalities took on the responsibility for road maintenance, local landowners were called on to do the work. Depending upon the physical conditions on a particular bit of road

allowance and on the resolve with which the local landowner faced his obligations, the new roads could vary widely in quality and speed of development. There was no central authority for ensuring that the roads met any particular standard. As well, a portion of the new lands were set aside as clergy reserves to support the Church and without a local tenant there, the allowance in front of those properties did not receive much attention and these rights-of-way might remain uncleared.

It is nearly impossible to determine the total length of roads that needed to be constructed in Ontario. Some roads were never built or had to deviate around steep slopes, rivers and wet areas. Construction never ceases, especially in growing urban areas. Sometimes roads are relocated or re-routed to remove sharp curves. However, as a first approximation of the total distance of the original roads in rural areas, we can assume that most roads followed the rectangular layout of most townships. In many cases, the layout was concession roads spaced one mile apart with side roads placed every two miles. Assuming that this arrangement was the norm, there would be three miles of road for each area one mile wide and two miles long. Knowing that the total area of Southern Ontario is approximately 140,000 square kilometres, we can calculate the potential length of roads to be over 127,000 km.

The clearing of land for agriculture, including the development of drainage systems, upon the arrival of European settlers represents

the largest ever human impact on the natural environment in Ontario. First Nations people had cleared some land to grow corn and other crops for centuries via burning but the proportion of the land that they used was small in comparison to the forest removal by the new arrivals. The main obstacle for growing crops was the forest cover. Although some portion of most farm lots was often saved as woodlots to obtain firewood, the larger part of each farm was given over to growing crops of some sort. This meant the removal of huge areas of standing forest. Some of the trees were used as lumber to build houses, barns and other structures including fences. Some wood was turned over to facilities (asheries) where the wood was burned and the ash saved and exported to make lye used in making soap. Much of the wood was simply burned *in situ*. Trees also had to be removed for the construction of the roads. Most road allowances were established to be 4 rods or 66 feet. Although the full road width might never be cleared, the potential area of 127,000 km of road allowance is about 25,000 ha or equivalent to about 2.7 standard (6 mile x 6 mile) townships or an area about 6 miles by 16 miles. The land area devoted only to road construction was therefore not insignificant.



Sketch of a "Corduroy road across a swamp in Orillia Township" by T.H. Ware, 1844.

Most of the land at the time of settlement was covered with forest that was growing well in soil that had been created through biogeochemical processes, leaf fall, decay of organic matter, and the like. This soil was therefore very soft and not at all suitable for heavy traffic. After the routes were cleared of trees, passing horses and wagons would soon leave ruts in the soft earth. Especially where there was a particularly moist section, the road would be no more than a muddy mess that was nearly impassible in summer. The settlers welcomed winter for then the roads would be frozen and passage of sleighs would be much easier. Gravel for building roads may or may not have been locally available. Even if a nearby deposit were available, the roads such as they were would not have been suitable for transporting that gravel in any reasonable quantity.

One solution to the muddy roadways was to place logs side by side, at least across the wetter sections (Fig.1). This may have helped to cope with the mud so that vehicles would be less likely to get stuck. A series of round logs forming a corduroy road does have profound consequences for travellers and wagons bouncing their way across. In time, it was decided that the rough corduroy road surface problem could be resolved by building the roads out of thick planks. These were not unlike larger versions of wooden sidewalks that kept human feet out of the mud on the streets. The roads were built of planks at least three inches thick and nailed to large stringers laid on the ground. Some of these stringer logs, still in good condition, were unearthed during road construction at Caledonia in 2013 [Martindale]. Various tree species were used including pine, oak, maple, beech and poplar. Some available references indicate that the plank road projects used certain number of feet of boards but it is not clear whether the units in that report were ‘linear feet’ or ‘board feet’. The Cobourg Road required ‘300,000 feet’ of boards while the Albion Road use ‘two and a quarter million’ feet. No matter the units, the amount of wood and the associated loss to tree cover needed to create that lumber, the amount of wood used was substantial. At a nominal 10 feet in width (some roads were only 8 feet wide and some were 12 feet wide and there was passing space included every half mile), the roads would have required over 13,000 board feet of three-inch timber per mile.

When the Plank Roads were new, they must have seemed like a godsend and the last word of road construction at that time. The new roads would have seemed smooth and easy to travel by comparison to what had served before. While the new plank roads were welcome, there was a major flaw. That was the fact that the wood was vulnerable to attack by fungi. After a few years of heavy traffic, some of the planks would rot and this would result in a horse breaking through and become maimed or that a wagon wheel or axle would break. Such accidents often led to claims for damages or lawsuits. Even if the tolls could cover such claims, in combination with other upkeep costs, they could not sustain the incurred costs and after only a few years, the planks were torn up and a more permanent road of a macadamized type was constructed.

It is somewhat difficult to compile a complete list of all of the plank roads that were constructed in Ontario. Records are scattered and incomplete. It seems that planks were not always used throughout the entire length of a road where some parts could be made with gravel. Dates of construction or conversion to gravel were not always

available. As well, some companies were awarded a charter as a Plank Road Company (e.g. Streetsville Plank Road) but there is no evidence that they ever built such a road. In 1844-45, the Government of Canada received petitions from various persons and groups for support or permissions to build plank roads in various parts of Ontario [Canada, 1845]. Many of these plans were never developed. The list from 1845 includes intentions to build roads at Niagara Ten Mile Creek, Haldimand County, Bronte to Owen Sound, Prescott to Bytown, Hurontario from Port Credit to Lake Huron (2 requests), Kingston to Bytown, Bytown to head of St. Lawrence Canal, and Cornwall to Roxborough.

For those locations where we have some record of an existence of a plank road in Ontario, we can compile the following table:

| Year | Plank Road Name | Start | End | Miles * | Removed | Source |
|------|-------------------------|------------------|--------------------|---------|---------|-----------------------------------|
| 1843 | London and Port Stanley | Port Stanley | London | 27 | | Elgin |
| 1841 | Weston Road | West Toronto | Coleraine | 18 | | Filey |
| 1844 | London and Brantford | London | Brantford | 19 | | Canada; Plaques Martindale |
| 1844 | Hamilton Plank Road | Port Dover | Hamilton | 38 | | |
| 1843 | Kingston Road (Toronto) | Toronto | Rouge River | NA | 1860 | Appleby |
| 1845 | Reach Road | Oshawa | Port Perry | 19 | | Monteith |
| 1851 | Danforth Avenue | NA | NA | NA | | Danforth |
| 1843 | Old Stage Road | Brantford | Woodstock | 24 | | Plaque |
| 1846 | Cobourg Plank Road | Cobourg | Rice Lake | 11 | 1850 | Caldwell |
| 1847 | Markham Plank Road | Kingston Road | Markham | 5 | | Stamp |
| 1847 | Albion Plank Road | Weston | Bolton | 18 | | Etobicoke |
| 1848 | Hastings Plank Road | Belleville | Canniff's Mills | 3 | | Moodie |
| 1849 | Plank and Gravel Road | Port Burwell | Tillsonburg | 15 | | Gillies |
| 1850 | Vaughan Road | Yorkville | Vaughan | 20 | | Vaughan |
| 1850 | Bellville - Marysville | Bellville | East side Hastings | 14 | | Hastings |
| 1850 | Belleville Trenton | Bellville | Trenton | 9 | | Hastings |
| 1850 | Trafalgar Road | Oakville | Brisbane | 29 | 1856 | Oakville |
| 1850 | Davenport Road | Bathurst St. | West Toronto | 7 | | Toronto |
| NA | Matilda Plank Road | Iroquois | Brinston | 6 | | Carter |
| 1851 | Old Plank | Bond Head | Holland Landing | 9 | 1858 | Ellis |
| 1855 | Chatham and Rondeau | Rondeau | Chatham | 17 | | Ontario |
| 1860 | Lambton Plank Road | Sarnia | Oil Springs | 19 | 1875 | Sarnia |
| NA | Winston Churchill | Whaley's Corners | NA | NA | | Heritage Mississauga; Smith Smith |
| NA | Cooksville Port Credit | Norval | Whaley's Corners | 2 | | Smith |
| NA | NA | Erindale | NA | NA | | Smith |

**Some distances were estimated from current road maps*

Plank road construction was not restricted to Ontario. Early in the process, the American promoter George Geddes visited Ontario and was highly impressed with the reported results. The reported successes in Ontario were obviously inflated but this did not deter Geddes. Despite warnings by the engineer Thomas Roy [1841] that plank roads had a rather limited life expectancy, the development of plank roads in New York was heavily promoted in that state by Geddes, J.S. Skinner [Klein 1994; Skinner, 1851] and others.



“Last Toll Gate in Ontario at Miton Village” based on photograph taken about 1930. Painting by W.D. Mellveen.



Sign for Plank Road at Sarnia, 2014. Photo courtesy of Leanne Wallis.

Despite the warnings, a total of 1388 plank roads were sanctioned in 15 states, mostly in the northeastern part of the United States. The roads numbered 335, 315, and 205 in New York, Pennsylvania, and Ohio respectively. In New York, over 3000 miles of road were built in that state alone [Klein, 1994]. The life of the boards was anticipated to be 7 to 12 years but, in reality, they only lasted about four years. Toll fees could not cover the replacement costs of the planks and in short order, the road companies were insolvent.

In Ontario, many roads were converted to gravel roads by the companies that had ownership of the plank roads. They continued to collect the tolls and many toll roads apparently never had planking. The records for this are quite inconsistent. The public were growing ever more discontent about paying tolls every few miles. Individuals sometime defied the tolls, crashing through or avoiding them via other means, with many law suits followed. In several instances, the public burned some of the booths. In 1879, faced with this unhappy populace, the Provincial Government at the time launched an enquiry as to how to eliminate the toll road by turning over the responsibility [Assembly, 1879]. The resulting enquiry faced a messy situation and was informed of a wide range of conditions where some counties owned all of their road system to some counties with nine toll roads and some roads overlapped county lines. It is difficult to make a clear and accurate summary of the information provided to that Government Committee but there were at least 44 toll roads in operation at that time. Those extended for at least 884 miles and had at least 110 gates though some gates may simply have served as check points. Within a few years after 1879, most of the roads were taken over by the local counties or townships. The last road where tolls were collected was the former Plank Road between Oil Springs and Sarnia. The last tolls on that road were collected in 1926 (Figure 2).

Although the original plank roads have been gone from Ontario for about 150 years, their origin still lives on in their names. A number of roads still exhibit their heritage under the name Plank Road as shown in Figures 3 and 4. A traveller on such roads has the opportunity to know how that road history simply by looking at the road signs. 🌱

References:

- Appleby, A.** 2009. Kingston Road – Wards 36, 43, 44 – Kingston Road Initiative – Action Report. City of Toronto, 14 pp.
- Assembly,** Ontario. Legislative. (2013). pp. 273-4. *Journals of the Legislative Assembly of the Province of Ontario, 1887* (Vol. 20). London: Forgotten Books.
- Canada Dept. of Public Works,** 1847. Report of the Commissioners of Public Works laid before the Legislative Assembly, 12th July, 1847, Lovell, Canada. 137 pp.
- Canada.** 1845. Journals of the Legislative Assembly of Canada, Volume 4 Session 1844-1845.
- Caldwell, C.** 2013. The Plank Road. Part 5. Cobourg History. Cobourg Internet.
- Carter, J.S.** 1905. The Story of Dundas Being a History of the County of Dundas from 1784 to 1904. The St Lawrence News Publishing House.
- Danforth BIA** 2014. History of the Danforth. www.thedanforth.ca/history-of-the-danforth
- Ellis, B.M.** 1984 Life on the Old Plank Road : Highway 88. Tecumseth and West Gwillimbury Historical Society, 1984 Bond Head, Ont.
- Etobicoke Historical Board.** 1985. Villages of Etobicoke. Argyle Printing, Weston.
- Filey, M.** 2004. Toronto Sketches 9: “The Way We Were” Toronto Sunday Sun. April 25, 2004. Pg. 198.
- Gillies, S.** 2010. Highway 19 was a toll road, Ingersol Times May 10, 2010.
- Heritage Mississauga.** 2008. The Newsletter of Heritage Mississauga. Vol. 21 Issue 3.
- Klein, D.B. and J. Majewski.** 1994. Plank Road Fever in Antebellum America: New York State Origins. New York History pp 39-65.
- Martindale, B.** 2013. Plank Road logs discovered last week in Caledonia Sachem and Glanbrook Gazette August, 27, 2013.
- Monteith, R.** 1859. History of the Township of Reach. Ontario Observer.
- Ontario.** 1871-72 Sessional Papers No. 8. - Legislature of the Province of Ontario, Volume 2.
- Reaman, G.E.** 1971. A History of Vaughan Township. Toronto: University of Toronto Press.
- Roy, T.** 1841. Remarks on the Principles and Practice of Road Making. Applicable to Canada. Toronto, H. and W. Roswell. 32.
- Skinner, J.S.** 1851. On Roads in General. On History, Structure, and Statistics of Plank Roads in the United States and Canada. A. Hart, Philadelphia.
- Smith, W. H.** 1851. *Canada Past, Present and Future; Being a Historical, Geographical, Geological and Statistical Account of Canada West.* Vol. 1. 1851. Reprint. London: Forgotten Books, 2013. 421-2.
- Stamp, R.M.** Early Days in Richmond Hill. A History of the Community to 1930. Chapter 7. The Neighbours at Mid-Century. Richmond Hill Public Library Board, 1991.

www.elgin.ca/elgincounty/.../archives/.../
www.hastingsbylaws.ca/By-Laws/Archives/.../By-laws%20toc.pdf
www.mocavo.com/The-Story-of-Dundas-Being-a-History
www.oakvillehistory.org/trafalgar-allan-corridor.html
www.ontarioplaques.com/Plaques/Plaque_Oxford03
www.ruralroutes.com/5567.html
www.sarnia.com/groups/plankroad/history.htm
www.torontoneighbourhoods.net/neighbourhoods/.../davenport/history
www.vaughan.ca/.../vaughan_archives/historyofvaughan/Vaughan
en.wikipedia.org/wiki/Erindale,_Mississauga