



Since 1923

TORONTO FIELD NATURALIST

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Staghorn Sumac in High Park, October 2022. Photo: Wendy Rothwell

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PRESIDENT'S REPORT – JOURNEY TO NATURE

This being my first report as president, I would like to share the story of my journey to nature which led me to the Toronto Field Naturalists. My family moved to Toronto from South Africa in 1979. My relationship with nature growing up in this city consisted of picnics in parks like Sunnybrook or Earl Bales and outings to Harbourfront or Centre Island. I had no knowledge of or exposure to the ravines or the vast trail system in the city.

Fast forward to the early 2000s where I found myself increasingly unhappy and unhealthy, both physically and mentally, after having built a career in the digital media industry. At the time I was living near the Humber River trail and took to walking between James Gardens and the Old Mill Bridge. On these walks I started taking photos of nature with my phone and became fascinated with what I was capturing. I noticed improvements in my health the more time I spent in nature.

Not long after that I made the decision to stop working full-time in digital media and pursue an interest in nature photography. The more photos I took, the more fascinated I became with the vast tapestry of nature, and I wanted to learn more about nature. I reached out to an old friend whom I had known since my early days in digital media, having recalled that he was involved with a nature group. He recommended that I check out TFN and consider becoming a member. I had never heard of TFN and was amazed to find the breadth of what they had to offer. I was also surprised to find that my friend had recently become president of TFN.

I joined and offered to volunteer, thinking my digital marketing skills might be of benefit. Little did I know that my friend, Jason Ramsay-Brown, had some other ideas in

mind, and I was later approached to join the board. I would not consider it an exaggeration to say my decision to join was one of the best decisions I have ever made. It has opened a path to knowledge about nature and to a community of amazing people. I consistently marvel at the fact that it is a volunteer-run organization and how it continues to deliver its programming to members and contribute to this city.



Cabbage White Butterfly on goldenrod. Photo: Zunaid Khan

I am sharing my story because I think it is important to understand that, for TFN to continue to fulfill its mission of connecting people with nature in Toronto, we need to better understand how nature is perceived by the diverse communities that now make up our city. This is critical to the future and long-term health of, not only TFN, but also the green spaces in our city.

Thanks to all members for supporting TFN and to all our volunteers who keep

this great organization moving forward.

A few asks as I sign off:

- Get out for a walk. We have a great program of walks that you can find at <https://tfngo.to/memberwalks>
- Become a walk leader. The walks committee will gladly assist you and we have experienced walk leaders available to mentor you as you get started. Send them an email at walks@torontofieldnaturalists.org.
- Do you have an interest in writing, graphic design or social media? Our promotions and outreach committee is looking for volunteers to join our communications team. If you are interested, send an email to volunteering@torontofieldnaturalists.org.

Zunaid Khan
president@torontofieldnaturalists.org

LECTURE REPORT

Plastics in the Great Lakes Ecosystem

October 2, 2022

Dr. Chelsea Rochman, Assistant Professor of Ecology, University of Toronto

Plastic surrounds us in our day-to-day lives. Dr. Rochman's compelling lecture reminded us that plastic is everywhere, as convenient and useful products and also as waste. Since the dawn of the plastics age in the 1950s, global plastics production has grown at staggering speed, from zero to over 300 million metric tonnes per year today. Most of this plastic is still discarded, and almost half of it is thrown away after a single use. A seminal research survey reported in 2017 that less than 10% of plastic is recycled globally. And a key report in *Science* concluded in 2015 that about 8 to 12 million metric tonnes of plastic waste end up in the world's oceans each year. But waste plastic is not just an ocean problem. Dr. Rochman leads an active team of students and volunteers at U of T focusing on microplastics in the Great Lakes – a research field barely a decade old.

Research on microplastics in the environment – tiny bits of plastic degraded from larger particles – is rapidly evolving. A wide range of plastic materials contributes to microplastics, including plastic litter, abraded dust from vehicle tires, road paint and clothing fabrics. Collectively, the various types of microplastics are dispersed through the global dust cycle. They also enter water bodies, including the Great Lakes. It's estimated that about 10,000 tonnes of plastic enter the Great Lakes each year.

From open waters, microplastics make their way into the food web. There is widespread evidence of microplastics in wild-caught fish. Dr. Rochman's lab typically finds about 100 particles of microplastics per fish (mostly in the gut), but counts have been as high as 915 particles per fish. Plastic particles also enter muscle (the parts we eat as fish fillet) and livers of fish, and lab studies show that high concentrations can reduce survival of fish. A likely

mechanism is that plastics displace nutrients in the gut so, with less space for food, animals are not able to absorb their needed levels of nutrients.

Professor Rochman engages on plastic waste policy both federally and internationally, regularly applying her science to advise governments on risk assessments, measuring protocols, policy targets and priorities. Currently she is assembling a working group on plastic waste for the International Joint Commission on the Great Lakes. At a grass-roots level, she also founded U of T's Trash Team – a group of about 90 U of T students tracking plastic waste pathways to the Great Lakes, improving waste literacy and fighting litter across Toronto.

Professor Rochman is hopeful that Canada's plastics strategy can shift plastic use trends towards more producer responsibility, better standards for recycling, and ultimately towards a true circular economy. A federal ban on certain single use plastics such as straws and six-pack rings will kick in this year as an early, highly visible part of Canada's strategy.

In a lively Q and A session, people asked what top plastic items are found along Great Lakes shorelines; cigarette butts are a huge issue, and fatbergs have begun showing up in Toronto's combined sewer overflows. As for managing microfibres from clothing, Professor Rochman's lab has found that washing machine filters can effectively trap many microfibres before they enter the sewer system, so that's an approach individuals can take. Demanding higher recycled plastic content in products is also a helpful role for consumers and is key to strengthening recycling rates of materials collected in the Blue Bin. Of course, our most powerful approaches as individuals include refusing unnecessary products and reducing our overall consumption patterns.

Professor Rochman's excellent lecture is now available to the public on <https://www.youtube.com/watch?v=qlXuVGdrrHc>

Ellen Schwartzel

*Twixt fall's bright hues and
Winter's white, November grey.
A time to reflect.*

Haiku by Charlotte Broome

TFN OUTINGS INFORMATION

A list of walks available to members is posted on the 'Members Only' walks page of our website (<https://tfngo.to/memberwalks>) at the beginning of each month and can be downloaded or printed. You are welcome to bring one non-member guest.

Listed below are two November outings you might like to consider.

High Park in November, a nature walk.

Leader: Ellen Schwartzel

Saturday, November 5, starting at 10 am.

Duration: 3 hours. Distance: 3.5 kms

Meet at the park entrance, south side of Bloor St W at High Park Ave, south of High Park subway station's main exit.

A circular route on mostly unpaved and uneven surfaces including stairs and some steep slopes. Washrooms available along the way.

Route: Beginning at the high tablelands and open oak savannah, we'll head south along Wendigo Creek to Grenadier Pond, where we may see fall birds, sassafras and black cherry. We'll look for acorns and talk about overwintering strategies of turtles, beavers, other animals, and plants. We'll walk to the duck ponds and check on areas that received burn treatment back in April.

We'll end at the Grenadier Café where take-out food is sold on weekends and washrooms are available. Sharing lunch with other TFNers at nearby picnic tables would be a nice option before heading back to High Park subway station.

Bring binoculars, a bagged lunch or money for take-out lunch at the Grenadier Café.

Wear layered clothing and sturdy shoes as it might be muddy.

TTC: Subway to High Park station on line 2.

Parking: Note that High Park is closed to vehicles on weekends, so there is no access to parking lots within the park.

Walk leader's cell phone: 647-463-5562

Toronto Islands, a nature walk with a focus on winter ducks.

Leader: Zunaid Khan

Thursday, November 10, starting at 9:15 am at Ward's Island.

Duration: 2 hours. Distance: 3-5 kms.

Meet at Ward's Island ferry dock.

A circular route on mostly paved, fairly flat surfaces. Washrooms available at the start.

Route: We'll walk around Ward's, Snake and Algonquin Islands (time permitting).

Bring binoculars, camera and snacks.

Dress for the weather, including ice grippers if appropriate.

TTC: Subway Line 1 to Union station, then streetcar to the ferry terminal stop.

Take the 9 am ferry to Ward's Island. You can purchase your tickets in advance at: [ferry tickets](#)

Parking: there are a number of paid parking lots close to the ferry terminal.

Walk leader's cell phone: 416-716-6464

VOLUNTEER PROFILE: KAYOKO SMITH

For many years, Kayoko Smith expressed her interest in herbaceous plants through her career as a floral designer. She became aware of TFN more than ten years ago when a friend introduced her to our walks. One of the first outings she joined was a bird-watching walk at Tommy Thompson Park. Kayoko was quickly impressed by TFN's great walk leaders and she became interested in expanding her knowledge of plants, birds and other species. After a few years of attending lectures and participating in stewardship activities, particularly at the Toronto Brick Works and Nordheimer Ravine, Kayoko began leading TFN walks, first at the Brick Works and then in other areas of the city including the CNE and Cedarvale Ravine. The walks she has led have focused on combining her interests in natural history and heritage.

Kayoko appreciates the fitness and health benefits of walking in nature, often visiting the Rosedale ravine near her home. She has lived in Toronto for almost all her life, yet has been introduced to locations she would not have known about apart from her involvement with TFN. Kayoko also enjoys the opportunity to meet friends and connect with other nature enthusiasts at TFN walks.

Since completing her employment career in floral design, Kayoko has embarked on a new career of volunteerism. When asked how many hours she spends volunteering per week, Kayoko joked that it would be easier for her to count the number of hours that she is not volunteering. This makes sense based on the number of volunteer positions she holds. Kayoko is currently a member of the



board of directors of the York Pioneer and Historical Society. She is a volunteer steward of Scadding Cabin, a local heritage site, where she maintains the garden and looks after the overall wellbeing of the cabin. She also volunteers at the Art Gallery of Ontario.

Kayoko has recently completed a two-year term as a member of TFN's board of directors. She served on the walks committee, which was challenged to find new ways of engaging TFN members during the pandemic. Kayoko enjoyed working with other board and committee members to meet the challenges of the pandemic. She is pleased to have been able to contribute to innovative digital projects, as well as a program of self-guided walks that will be online in the near future. Kayoko has appreciated the opportunity to learn from her talented board and committee colleagues. Meanwhile, TFN has been strengthened by Kayoko's creativity and enthusiasm.

Kayoko describes her time on the TFN board as "a great experience" and encourages others to become more involved in TFN. She highlights volunteering "in anything" as being one of the most rewarding experiences anyone could have, where "you learn more than you give." Kayoko continues to be impressed with all that TFN is able to achieve as a volunteer group, and describes TFN as an amazing organization that all members should be proud of.

Tracy Garner



TFN walk in High Park, 2014. Photo: Nancy Dengler

TREE OF THE MONTH: STAGHORN SUMAC (*RHUS TYPHINA*)

Not the first woody plant that comes to mind when we think of our more imposing trees, staghorn sumac is hardly ever a “real” tree. At its largest, it is an over-blown shrub that barely satisfies most official definitions of a tree. It is such a fiery presence in the autumn, however, that it is hard to ignore. The vibrant reds, oranges, and purples of its fall foliage light up the margins of highways in the countryside and the edges of woodlands in parks and ravines in town.

Staghorn sumac is named for the appearance of its shoots, forking once each year, every year, each year’s new twigs thick and coarse and very densely clothed with straight, stiff hairs. The whole look is reminiscent of antlers of male deer in their spring velvet before this living skin has been rubbed away from the bony core during duels and other charming activities. Besides the twigs, the individual fruits, the stalk and central axis (peduncle and rachis) of the flower and fruit clusters, the leafstalk and central axis (petiole and rachis) of the large, pinnately compound leaves, and the lower surface of the leaflets are all densely hairy as well.

Take away all of this fuzz, and you have staghorn sumac’s sister species, smooth sumac (*Rhus glabra*), which is almost indistinguishable in shoots, leaves, flowers and fruits, except that all of these parts are completely glabrous (except for the fruits, which have much shorter hairs). There is also an uncommon hybrid between these two species (called *Rh. X pulverulenta*) that is intermediately hairy. Staghorn sumac is much more common in southern Ontario than is smooth sumac which, within the province, is mostly found east to west all across the southern edge of the Canadian shield, thus making it a generally more northerly species. Contrarily, considering eastern North America as a whole, smooth sumac has an overall more southerly distribution than does staghorn sumac.

Besides the unmistakable forking, the appearance of staghorn sumac is also dominated by its clonal growth habit. You never see one alone, but almost always packed cheek by jowl with its identical conjoined underground twins in a shallowly dome-shaped cluster, most obviously when they are just shrub-sized. From early summer through the winter, most of the shoots of half of these clones are adorned with massive, handsome, cone-shaped fruit clusters (infructescences) because staghorn sumac is dioecious, with separate male and female individuals, and hence whole clones. Each flower cluster has a highly branched axis, the tips of each ultimate branch (pedicel) topped by a bright red, densely glandular hairy, tiny stone fruit (drupe), just 3 – 5 mm in diameter. Together, they are packed so closely that they make an essentially solid mass, the whole cluster sometimes steeped in water to brew a lemonade-like beverage.



From top:
Branches of female with mature leaves and fruits;
Densely fuzzy winter twig with buds and
partially encircling leaf scars;
Shallowly dome-shaped clone in fall colour
Photos: Ken Sproule

Continued on next page

The fruit clusters (and the flower clusters that preceded them) form the tips of the current year's twigs. As the new replacement twigs grow out beside them the following spring, the intact, overwintered fruit clusters appear right smack in the angles between the branch forks. The remnants of three or more years' worth of these annual infructescences may be seen in successively older forks, appearing more battered with each passing year.

The male flower clusters (inflorescences) are similar to those of the females, though somewhat looser and more open, and flowers of the two sexes are also similar to each other. Flowers of both sexes have recognizable male and female flower parts, but the male parts of female flowers take the form of staminodes (non-functional stamens) and the female parts of male flowers are stigma-bearing pistillodes (non-functional pistils or carpels). After pollination, the male flowers wither and drop off and the inflorescence is reduced to just a shrivelled stalk that can last for a few years as a recognizable stub.

The forking that dominates the architecture of growth in the tree sumac is referred to as sympodial growth and occurs precisely because the reproductive clusters, both male and female, terminate the tip of their shoot and consume its shoot apex, so the original twig is usually replaced in the following year by just two axillary buds growing out above scars from the uppermost leaves just beneath the inflorescence.

As a visual bonus, particularly in the late summer or fall, you may notice conspicuous, sometimes red-tinged, fruit-like, irregularly globular bladders attached to the undersurface of some leaflets. These are leaf galls induced by a specialist woolly aphid, staghorn sumac aphid (*Melaphis rhois*). The sexual female founder (fundatrix) of the gall lays a single egg on the underside of a young leaflet, so, echoing the behaviour of the host sumac, all the tiny wingless aphids later found inside the mature gall belong to a single clone, derived by repeated cycles of asexual, parthenogenetic live births. When the leaves fall in autumn, the colony dies, except for winged females that fly off and found overwintering colonies in moss clumps. The galls are hardly ever, if ever, so numerous as to be of any real consequence to the health of their sumac host.

James Eckenwalder



From top:
Multiple years of remnant fruits at tips of branches;
Male clone in flower;
Male flowers with pistillodes in the centre.
Photos: Ken Sproule

EXTRACTS FROM OUTINGS LEADERS' REPORTS

Castle Frank Brook Ravine, Aug 1. Leader: Paul Overy. To mark Simcoe Day, we explored some of the history and features of the creek ravine named after John Graves Simcoe's summer home (itself named after his son, Frank), and at least one significant outcome today of Simcoe's policies as Lieutenant Governor of Upper Canada – the stopping of development of the Spadina Expressway. That resulted from the fact that the Concession Roads laid out during his tenure (in Toronto, these are Queen St, Bloor St, St Clair Ave, Eglinton Ave and onward to the north) remained under the Crown's control, so are considered "Provincial Roads" today. We walked through a deeply transformed landscape which, thanks to much effective stewardship over decades, has become an area notable for its recreational and naturalized spaces.

Todmorden Mills Wildflower Preserve, Aug 6. Leader: Ellen Schwartzel. On a steamy hot morning, our group was grateful for the shaded trail of the Wildflower Preserve and the vision and dedication of Preserve volunteers over many decades. We contemplated the core job of a leaf: to capture light and transpire water. Plants have been around for a very long time and have evolved countless variations on the basic leaf design. Some of these raise tantalizing questions: Why do some stinging nettles fail to sting? Do cup plants derive an advantage when goldfinches drink from their cups? We admired buttonbush, black chokecherry, sensitive fern and duckweed. We had good birders in the



Cicada killer wasp and prey.

Photo: Lillian Natalizio

group, but the birds were shy. A few Mallards dabbled on the oxbow pond. We heard chickadees and cardinals, and someone saw a gnatcatcher.

Leslie Street Spit, Aug 8. Leader: Charles Bruce-Thompson. Despite the shortage of rain The Spit was looking verdant and healthy. Embayment D is now almost completely covered by waterlilies, presumably because of the low water mark. We saw Wood Ducks, an egret, Common and Caspian Terns, a Great Blue Heron and a Black-crowned Night-heron. The resident beaver family has managed to outwit the latest iteration of devices installed by the TRCA to prevent them from damming the carp-exclusion barrier. We saw a magnificent cecropia moth caterpillar in its final instar.

High Park, Aug 10. Leader: Ellen Schwartzel. Despite illness depriving us of our bug walk leader, our group had beginners' luck. Gathering on Hawk Hill, we immediately saw a cicada killer wasp grab and fly off with a cicada, and eventually bundle it into a sandy burrow. Later at Grenadier Pond, we saw female Wood Ducks, several Black-crowned Night-herons and a Great Blue Heron. Other birders kindly pointed out an Osprey perched in a tree on the far shore. We heard a catbird in dense bushes. A family of Least Bitterns stayed hidden in the reeds at the north end of Grenadier Pond, but gathered birders were happy to describe what they had seen.

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UPCOMING JUNIOR NATURALISTS' EVENTS

We are excited to welcome families with children between 6-12 yrs to join in the TFN Juniors' fall 2022 programs that run Saturday mornings 10:00 am – 12:00 noon. The program follows the wildlife around town.

Nov 12: Create a T-shirt with dyes made from local plants.

Dec 3: Visit Colonel Sam Smith Park to welcome returning winter ducks.

If you are interested in joining any of our Juniors' events, please contact Anne Purvis at juniortfn@torontofieldnaturalists.org. Your name will be added to an email list and you will receive an invitation a week before each event. If your family is able to attend, you pre-register by responding to the invitation email. One parent is required to stay with your children for the duration of the program.

JUNIOR NATURALISTS LAKE ONTARIO SALMON

On October 15th, the Junior Field Naturalists visited Colonel Danforth park to learn about salmon, their annual migration in Toronto's river systems and their importance to the Indigenous peoples who lived here.

The salmon native to Lake Ontario is the Atlantic salmon, which arrived at the end of the last ice age around 12,000 years ago. The lifecycle of salmon goes through seven stages, beginning in a stream as an egg, hatching three months later into an alevin. In this stage the young salmon live amongst the gravel and still have the yolk sac attached which they can use as food for several weeks.

After the alevin stage, they leave the safety of the gravel as fry and forage for aquatic insects. After their first year, the salmon develop vertical stripes along their sides that help camouflage them. At this stage they are called parr. Salmon stay in the parr phase for up to four years, after which their physiology changes to allow them to regulate the amount of salt in their bodies; their colouring also becomes silver. These smolt, as they are now known, migrate downstream, and typically enter the ocean, where they will stay for one to several years, maturing as adults until it is finally time for them to return to their birth stream to spawn.

This lifecycle is called anadromous. Unlike Pacific salmon, Atlantic salmon do not die

after they spawn, but return to the same river to spawn numerous times.

Lake Ontario Atlantic salmon are considered to be landlocked, as they do not travel down the St Lawrence to the Atlantic but spend their adult life in Lake Ontario. Historically,



Chinook Salmon in the West Don River. Photo: Ken Sproule

Toronto had extensive wetlands and streams which were perfect habitat for large populations of fish. However, as the area was developed, habitat loss, food loss, pollution and overfishing caused the population to crash. The last Atlantic salmon was caught in 1882.

Coho and Chinook salmon, two Pacific salmon species, were introduced to Lake Ontario multiple times following the demise of the Atlantic salmon stocks. These populations became naturalized in the 20th century.

In 2006, following habitat and water quality improvements, a restoration program for Atlantic salmon was initiated, and in 2011, 100,000 fry were released into the Humber River. Since then, each fall, visitors to the Humber River can watch members of all three species travel upstream.

Vanessa McMain

To learn more, see *Fishes of Toronto*, a booklet published by the City as part of its Biodiversity Series available free from the Toronto Public Library, and accessible online here: <https://tfnngo.to/torontofishes>

BARK- AND WOOD-BORING BEETLES

During a walk in the woods, stop to look at dead tree branches and trunks from which the bark has fallen. You are likely to see intriguing squiggles, straight lines, channels, blobs, and holes etched across or penetrating into the exposed bare wood surface. These are clues to the lives of some of the many insects who feed on the large majority of the forest biomass that lies within the bodies of the trees, including their roots. This biomass far outweighs the leaves, flowers and fruits that may form our dominant impression of the forest. Herbivory and microbial attacks on the leaves are pervasive and, by the end of the summer, will be found on virtually every leaf you look at. What goes on inside the tree is much less obvious, except where dead bark has sloughed off. While the surface indications of the animal lives unfolding within the tree hint at only a fraction of what's going on, they can tell us things about their makers, even when we don't know who those makers were.

Insects feeding inside trees belong to all the major orders. The activities of most of these insects are concentrated in and near the interface between wood and bark that is exposed by loss of bark. This is because the highest quality nutrition provided by the tree is to be found in the living cells of the (vascular) cambium layer and of the adjacent sapwood and inner bark, since outer bark and heartwood consist almost entirely of dead cells. A notable exception to this rule is that heartwood may host numerous kinds of wood-decaying fungi and bacteria which may, along with the breakdown components of the wood produced by their enzymes, constitute another rich food source for insects within the depths of the tree.

Among the many insects feeding within trees, three groups of beetles are particularly numerous, prominent, and

responsible for some of the most conspicuous burrows engraved on bare wood. Essentially every species of hardwood tree and conifer here hosts one or more species of generalists and specialists in each of these beetle groups. The vast majority of the beetles are not especially harmful to healthy trees, typically preferring recently dead or dying, weak, injured or diseased individuals. Some that do attack healthy trees do not inflict much damage because of where they feed or because they do not build up large populations. There are notorious exceptions, however, and three beetles that have been much in the news in recent years because of their devastating effects on certain trees are each otherwise typical examples of the three beetle groups in question.

The smaller European elm bark beetle (*Scolytus multistriatus*), featured in the October issue of this bulletin, belongs to the bark beetles, constituting a highly specialized subfamily (Scolytinae) of tiny (mostly under 3 mm long, but up to 1 cm), bullet-shaped, predominantly dull-coloured snoutless members of the enormous weevil family (Curculionidae), otherwise known for their conspicuous, greatly to briefly elongated snouts, explaining the alternate common name snout beetles. The elm bark beetles, of course, do not kill their host elms directly, but through acting as vectors for the Dutch elm disease fungi (*Ophiostoma ulmi* and related species). We have about 90 species of bark beetles in Ontario, most of which produce slender, complex galleries consisting of an egg-laying gallery carved out by the female (which in some species is begun by the male) from which branch larval feeding galleries, one for each egg successfully hatched.

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Bark beetle galleries, 2009



Bark beetle galleries, 1975

The Asian long-horned beetle (*Anoplophorus glabripennis*) had us terrified a few years ago over the potential loss of all our maples and many other trees, and was exterminated here only at great cost and after the removal and burning of thousands of infected mature trees. It is a member of the long-horned beetle family (Cerambycidae), a relative of the seed and leaf beetle families (Bruchidae and Chrysomelidae), whose larvae are referred to as round-headed borers. The outstanding feature of the adult beetles is the length of their slender antennae, often as long as the body or longer. These are generally larger beetles than the bark beetles, mostly 8 to 25 mm long (but ranging from 2 to 50 mm), and often brightly coloured or strongly patterned. Some of the adults visit flowers and some are mimics of other insects, like ants and wasps. This is the largest family of wood-boring beetles in Ontario, with over 200 species.

The third example of a devastating introduced wood-boring beetle pest is the emerald ash borer (*Agrilus planipennis*) from eastern Asia, currently eating its way through all of our ash species and, unlike the Asian long-horned beetle, no longer controllable. This is a member of the metallic wood-boring beetle family (Buprestidae), a relative of the click beetles (Elateridae) whose larvae are referred to as flat-headed borers. The adult beetles average a little smaller than long-horned beetles, mostly 8 to 22 mm long and ranging from 2.5 to 33 mm. They tend to be smooth and shiny and many sport vivid, structurally-produced, metallic colours, earning them the alternate common name jewel beetles. Like the long-horned beetles, adults of the approximately 100 species of metallic wood-boring beetles in Ontario are favourites with collectors, which no one would say of the unprepossessing bark beetles.

As you look at the adult egg-laying, and adult and larval feeding galleries in the field and in the photos accompanying this article, try to infer what the features of these galleries imply about their makers. Are they only denizens of the cambial zone (broadly speaking) or do they also or primarily burrow down into the heartwood beneath? To what extent do the adult beetles also feed within the tree or do they just prepare chambers for and lay their eggs within the tree while feeding elsewhere? Are eggs laid singly, in aggregates, or in ordered rows? Do the larvae lead a solitary or gregarious existence and, if crowded, do they seem to interact with or avoid one another? Are galleries broadly chamber-like, as their makers more or less expand it on all sides as they feed, or are they elongate? If elongate, do they bore headlong straight across the tissue, are they sinuous, or do they double back on themselves, more thoroughly and densely exploiting the food source? How do elongate galleries widen along their length as larvae grow? Are there any indications of how long the larval stage lasts? The smallest beetles, feeding on the richest food (the cambium and its environs) may have multiple generations in a year while, in contrast, the largest beetles feeding on the poorest food (the dead cells deep in the heartwood that may also be heavily invested with anti-feeding toxins) may require several years before they pupate and reach maturity.

These are just a few of the kinds of questions raised by bark and wood-boring beetle galleries, and I hope you find as much food for thought in the fascinating patterns of these ubiquitous inscriptions as I do.

Article and photos by James Eckenwalder



Wood-boring beetle chambers and galleries, 2007



Wood-boring beetle galleries, 1975

EXTRACTS FROM OUTINGS LEADERS' REPORTS *continued from page 8*

Earl Bales Park, Aug 13. Leaders: Rachel Gottesman and Bob Kortright. We did a circuit of the park pointing out trees, shrubs and flowers, and distinguishing between native and introduced species. We saw an Indigo Bunting, two Great Blue Herons (one chasing the other), a cormorant, Canada Geese, Chimney Swifts and swallows. We spotted dragonflies including black saddlebags and an eastern fork-tail; also a few azure, cabbage white and monarch butterflies. The woods were beautifully silent and uncrowded. We noted the farmhouse built by John Bales, who settled the area in the 1800s, and mentioned that the park was named after Robert Earl Bales, great-grandson of John, who was mayor of the township of North York. We owe a debt of gratitude to Mayor Mel Lastman who purchased the golf course that replaced the farm and turned it into a park for the people of Toronto. On our way out we passed many people picnicking and enjoying the beautiful day.

Rennie Park, Aug 21. Leader: Danielle Pellatt-Hall. We saw hackberry trees, many with galls, black walnut, butternut, sugar maples and Norway maples. There was a small patch of grey-headed coneflower and a small hillside of rough woodland sunflower. Around the water edges were a lot of invasive species but we still saw some jewelweed starting to bloom and one person spotted a fine cardinal flower plant. Another member shared a bit of history about the location. You never would have guessed that it used to be a municipal dump!

Chine and Midland Ravines, Aug 23. Leader: Charles Bruce-Thompson. After the welcome deluge of the previous day, the vegetation was looking refreshed and healthy. A stiff breeze from the lake made for pleasant walking conditions. We saw wild cucumber in flower and panicked, New England and purple-stemmed asters just beginning to bloom. There were numerous American goldfinches, almost to the exclusion of any other birdlife.

With the demise of green ash, black walnut is now the most common tree species in the area.

High Park, Sept 6. Leaders: Jessica Nelson and Susan Blayney. In the savannah we observed sparrows, goldfinches, chickadees and bees. We then visited Hawk Hill and the ornamental gardens south of the Grenadier Restaurant before exploring the upper section of Grenadier Pond where we saw even more sparrows and goldfinches, as well as chickadees, nuthatches and a couple of warblers. Insect highlights of the walk included two large orb weaver spiders (at least one of which was a cross orb weaver), a few singing katydids, a cicada and lots of bees.



Above: Orb weaver spider. Photo: Jessica Nelson

Below: Juvenile Yellow-crowned Night-heron.

Photo: David Creelman



Colonel Samuel Smith Park, Sept 8. Leader: David Creelman. It was a lovely morning to hunt for birds in Col. Sam's. At 'The Bowl', a depression (former pond) surrounded by Norway spruce and other mature trees at the north end of the park, we found quite a few birds. The highlights were American Redstart, Cape May Warbler, Northern Parula, Bay-breasted Warbler, Black-throated Green Warbler, Yellow-rumped Warbler, Magnolia Warbler, and White-throated Sparrow. We visited the pond where a rare visitor, an immature Yellow-crowned Night-heron, was easily seen from the viewing platform. There were also Black-crowned Night-heron, Great Blue Heron, and Blue-winged Teal among the Mallards.

Heritage and Nature, Walking the Coast of the Old City of Toronto, Kew Beach to Woodbine Park, Sept 10. Leader: Joanne Doucette. This was the second in a series of walks focusing on Toronto's coast, how it was created, how it changes, its joys and dangers, the creatures that inhabit it, the plants that grow on it, and its history. As promised, geography, geology, history and storytelling were on the agenda. We talked about how Woodbine Beach was created, what

continued on next page

WEATHER (THIS TIME LAST YEAR)

November 2021

Toronto moved into more seasonable late fall weather this month, with temperatures averaging a fraction of a degree above normal and precipitation dropping below normal. Amid this, we had both periods of remaining sunny, mild weather and our first snow storm.

The first half of the month was still fairly warm, but with a few cooldowns, and the latter half was seasonably chilly, but with a few mild spells. Lake effect snow north of the city fell as early as the 3rd, but we quickly moved into our warmest spell of the month with temperatures peaking on the 8th. The highest temperature in the Toronto region was 20.5° at Oakville, with 19.1° at Pearson Airport and 17.3° downtown. After a few flurries on the 15th, more warm weather in the mid- to upper-teens occurred on the 17th-18th. These weather changes were accompanied by occasionally brisk winds but only light rains, which was a pleasant break from October.

The final week of the month brought our first taste of winter. Snow squalls affected the areas to the north and west of Toronto on the 22nd-26th. And a system passing just south of the lower Great Lakes brought 10-12 cm of snow to Toronto proper, with temperatures remaining just below freezing all day.

Overall, November had a monthly mean temperature of 5.3° downtown (exactly equal to the 30-year average) and 4.2° at Pearson (0.2° above the 30-year average). Total precipitation was 40.8 mm downtown and 38.2 mm at Pearson. These values are about 25-30 mm below normal. Snowfall as measured at Pearson was 15.0 cm, 6.5 cm above normal, making it the fourth November in a row to have significant snowfall.

Gavin Miller

IN THE NEWS

Cities are Driving Evolution

An article by Sharon Aschaiek in the autumn edition of the *University of Toronto Magazine* describes a recent study showing that white clovers are biologically adapting to city life, demonstrating the profound impact of urbanization.

Whereas white clover plants in rural environments naturally contain hydrogen cyanide, an unpleasant bitter-tasting chemical that protects them from grazing predators, new U of T-led research shows that white clovers in urban settings, which host fewer foraging herbivores, are 44% less likely to emit this toxic chemical, and the frequency of plants producing hydrogen cyanide increases with their distance from downtown. These observations led to a worldwide study conducted by 287 scientists in 26 countries to document the genetic diversity of white clover over a wide geographic range. The

findings, published in *Science*, show how white clover is undergoing “parallel evolution” – meaning it is biologically changing to adapt to the circumstances of urban life.

While the findings from this project are still being parsed, James Santangelo, U of T Mississauga alumnus and researcher on the Global Urban Evolution Project, says this study provides fertile soil for reimagining how we approach city-building and conservation in the future. “I think clover is going to be just fine, but we may need to be concerned about other species, such as birds that rely on song for mating and whose songs are now disrupted by noise pollution,” he says. “Our best shot at conserving most biodiversity is to build more connected green spaces that are uniformly distributed across the city.”

You may read the article at <https://magazine.utoronto.ca/research-ideas/science/cities-are-driving-evolution/>

EXTRACTS FROM OUTINGS LEADERS' REPORTS *continued*

threatens it and why, how the Ashbridge's Bay Parks were built, and the lost wetland known as Ashbridge's Bay. Woodbine Park always has surprises up its metaphorical green sleeve. A flock of migrating Blue Jays was one of them. We focused on the nature of our parks, especially small mammals such as squirrels and skunks (many divots seen) and the interrelationships among all the elements we saw – from the red and white oaks to the understory trees, herb layer and soil biota.

As we walked, I mixed in the history and prehistory of the shore, from Indigenous stories to the history of the Beach neighbourhood and the boardwalk. In this context, a species list is not as relevant as the connections between people and all of the creation around us as we walked, talked, listened and shared.

TFN LECTURES

We conduct the TFN Lecture Series through Zoom technology. On the scheduled date of each lecture, members will be welcomed into the virtual space at 2:30 pm. The host will introduce the speaker, who will present a 45-minute lecture with accompanying visual materials and then answer questions from the audience.

See information about this month's lecture on the back page. To join the meeting, visit the "Members Only" section of our website to access this link.

If you prefer, you may dial in to the November lecture by phone as follows:

Meeting ID: 845 1569 3620 Passcode: 451920 Dial in by phone: +1 780 666 0144 Canada

The presentation and follow-up question period will subsequently be posted on our website for viewing by TFN members.

TO ACCESS THE "MEMBERS ONLY" SECTION VISIT:

<https://tfngo.to/private>

The password was delivered in the email notifying you that the newsletter is available online.
If you have misplaced the password you can request it by emailing
membership@torontofieldnaturalists.org.

ABOUT TFN

TFN is a volunteer-run non-profit nature conservation organization.
We connect people with nature in the Toronto area, helping them to understand, enjoy,
and protect Toronto's green spaces and the species that inhabit them.

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NEWSLETTER

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Members are encouraged to contribute letters, short articles and digital images. Please email to: newsletter@torontofieldnaturalists.org

Submissions deadline for Dec: Nov 1

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KEEPING IN TOUCH

One morning in early October I looked outside and saw a raccoon drinking from one of my water basins. Its head was slumped sideways over the basin in an unusual position. When I looked again a few hours later, it was curled up behind my garage. Its fur looked disheveled.

A staff person at the Toronto Wildlife Centre asked me several questions and determined that the poor animal was suffering from distemper. Apparently there is an outbreak in East York of this awful disease. I was not invited to bring it to the Centre, as they didn't want to infect other animals and, at this point, there was nothing that they could do for it. I was instructed to phone 311.

The poor animal spent the day drinking and moving from spot to spot, as though trying to get comfortable. Around 5 p.m. an animal welfare person took it away to be euthanized. It was very difficult to observe this poor sick creature, but I am so grateful for the quick and knowledgeable response from the Wildlife Centre and to 311 for relieving the animal of its miserable illness.

Jennifer Smith



Goldfish in Toronto Ponds

Melanie Melanich recently sent us an article she had clipped from the autumn 2021 issue of the *University of Toronto Magazine* that reported a massive goldfish inhabiting a stormwater pond in Ancaster. Cole Burston, who took this photo, said he had never seen anything quite like these monstrosities “bigger than a human hand.” Nick Mandrak, a UTSC biology professor, said “These oversized goldfish – or their ancestors – were probably once pets whose owners released them into the wild.”

Melanie wrote: “The enclosed article horrified me when I first saw it, and it continues to haunt me. I wonder what our members have noticed about invasive species in our ponds, rivers and streams. How healthy are our aquatic species? Years ago Diana Banville and I saw redbreast dace in Taylor Creek. How are they doing? As a part of our ecosystem that often supplies food to other species, our native fish need to be given attention.”

In response, Barry Singh commented, “At our home in Cape Town, we had a pond 12 ft square and 18 inches



deep and a number of goldfish; the largest were about six inches long. Their growth may have been stunted because of the size of the pond or they may have been a sub-species. I never saw any that were larger, even in the botanical gardens, until I came to Toronto.”

Ed: If TFN members have observations or knowledge in answer to Melanie's questions, please continue the conversation by emailing newsletter@torontofieldnaturalists.org

FOCUS ON NATURE – SKY

The September challenge for TFN's Photography Group was 'sky.' This dramatic image was submitted by Myrna Markovich.

Having a theme to direct my photography and subject matter requires me to pay more attention to what surrounds me. Occasionally I seek the shores of Lake Ontario from Col. Sam Smith Park as a source of inspiration for sky vistas. In this photograph the competing forces between light and darker cloud formations, with evidence of a scattered rainfall in the distance and the promise of relief from the conflict beyond even that, presented itself in its story form later on my laptop.

Myrna Markovich



If you would like to join the Photography Group, email photography@torontofieldnaturalists.org.

TFN LECTURE

Sunday, November 6 at 2:30 pm

See page 14 for information about lectures via Zoom

Protecting and Recovering Butterfly Species at Risk in Ontario

Jessica Linton, a Senior Biologist at Natural Resource Solutions Inc. in Waterloo, will provide an overview of her research and ongoing work, which includes spear-heading Ontario's first reintroduction project for Mottled Duskywing butterflies at Pinery Provincial Park.



Upcoming lecture:

Dec 4 (by Zoom) Unlocking potential for funding new parks in Toronto,
Jean-François Obregón Murillo, Researcher, Toronto Metropolitan University