



Since 1923

# TORONTO FIELD NATURALIST

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American Kestrel, artwork by Joanne Doucette

Special double-sized issue!

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## PRESIDENT'S REPORT

This summer was one full of great change and has required each of us to reflect on and adapt to a broad palette of issues and circumstances. It warms my heart to say that, based on the many conversations I've had with fellow members over the past few months, the resilience and empathy of our whole community have never been more evident. Many thanks to all who have reached out to share your ideas, advice, encouragement and offers of assistance.

As announced via email in early July, TFN partially reopened our Walks program once mask use on the TTC became mandatory. Walks are now open only to members and require online RSVP to ensure strict attendance limits (10 people) and to facilitate contact tracing. The only walks offered are those in locations where physical distancing, between participants and passersby, can be proven both convenient and conducive to learning from shared experiences. Many participants are emailed a follow-up survey a day or two after each walk requesting feedback on the effectiveness of our protocols and guidelines. Their responses are used to refine our approach to help ensure the safest and most enjoyable walks possible. Truly, restarting our walks has been a community endeavour and I would like to personally thank the dozens of members who have given so generously in this regard. Please know that the feedback we've received from both participants and the general membership has been overwhelmingly positive.

Throughout this much larger-than-usual issue of our newsletter you will note that many other TFN programs and initiatives are restarting as well, albeit in forms very different from our traditions. Lectures will now be held online. This year's AGM will also be conducted online, independent of the October lecture. Trips to our Jim Baillie Nature Reserve now require RSVP to provide peace of mind to visiting members and their social circle.

Until the pandemic is well and truly under control, the role that technology will play in our operations will no doubt be vigorous. Our Board and Standing Committees have spent

significant time considering the impact that all of this will have on our community, working to streamline our solutions to the largest extent possible. To take full advantage of everything TFN has to offer, please consider the following three things:

1. Make a habit of regularly visiting the "For Members" area of our website and, in particular, our new password-protected "Members Only" section. While we will ensure future issues of the newsletter provide you with all critical updates, circumstances often evolve more quickly than our publication schedule. Our website is the most authoritative place to find up-to-the-minute information.
2. Download and install Zoom. Without it you will miss our lectures, AGM and numerous volunteer opportunities. Zoom is simple to use and we feel confident that a substantial portion of our membership will be able to develop comfort with this program quite readily. In fact, many TFNers have already done so over the past few months. To help get you up and running, Zoom support information is provided in the "Members Only" section of our website including an email address you can use to receive more personalized assistance.
3. Please make sure we have your email address. In the event we have an urgent notice meant for our whole community, email is the most effective option we have to ensure we reach the greatest number of members immediately and with the least impact on our volunteer resources.

In signing off, I would like to take a moment to extend warm thanks and appreciation to our friend Agneta Szabo, who stepped down from the TFN Board over the summer. Your gentle spirit and valuable contributions will be missed, Aggy.

Jason Ramsay-Brown  
 president@torontofieldnaturalists.org

### VISIT THE NEW "MEMBERS ONLY" SECTION OF OUR WEBSITE

One location with one password opens up a whole world of new information and features just for TFN Members!

<https://torontofieldnaturalists.org/private>

**RSVP for a TFN Walk • Attend an upcoming lecture • Attend the 2020 AGM • Reserve a visit to JBNR  
 Connect with a fellow member • Download the latest issues of the newsletter • so much more!**

One password now gives you access to our lecture Zoom information, lecture archives, latest newsletter, walks list and so much more! This password was delivered in the email notifying you that the September newsletter is available online.

If you have misplaced the password, you can request it by emailing [membership@torontofieldnaturalists.org](mailto:membership@torontofieldnaturalists.org).

## TFN LECTURES

The TFN Lecture Series Committee is pleased to announce that TFN Monthly Lectures will resume, in remote online format, starting in September!

The TFN Lecture Series subcommittee (Dave Barr, Jason Ramsay-Brown, Maryann Weston and Alex Wellington) has developed a plan for TFN Lectures to resume through the use of Zoom technology beginning with the Sunday September 13 lecture. Zoom is a program that speakers are most likely to have experience using, and one with which many TFNers have already developed familiarity and comfort over the past few months. It is simple to use and we feel confident that a substantial portion of our membership will be able to develop that same familiarity and comfort quite readily.

To help get you up and running, Zoom support information, including details on how to join the lecture, is provided on TFN's website. We strongly urge you to review this information and install Zoom a couple of days before the meeting to ensure you don't miss a moment of it.

On the scheduled date of each lecture, members of the TFN Lecture Series Committee will welcome members into the virtual space promptly at 2:30 pm. The host will introduce the lecture and then play the speaker's pre-recorded presentation (approximately 45 minutes) with accompanying visual materials. Following this showing the speaker will be available to answer questions from the audience through the use of Zoom technology.

For those unable to attend the lecture, the presentation and follow-up question period will be recorded and made available for viewing by all Toronto Field Naturalists via our website.

**See back cover for schedule of fall lecture series**

### TO ACCESS OUR ONLINE LECTURES (INCLUDING HELP INFORMATION)

#### VISIT THE NEW "MEMBERS ONLY" SECTION OF OUR WEBSITE

<https://torontofieldnaturalists.org/private>

One password now gives you access to our lecture Zoom information, lecture archives, latest newsletter, walks list and so much more! This password was delivered in the email notifying you that the September newsletter is available online.

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### TFN NEWSLETTER SURVEY

I hope you are enjoying this one-time double-sized newsletter. Special thanks to the writers, photographers and artists who have contributed such a great variety of material. Thanks also to members of the Newsletter Committee who have adapted to a different way of proof-reading now that COVID restrictions prevent us from getting together. While TFN is rising to the significant challenges of devising new ways to conduct our walks and lectures, the newsletter is one benefit of membership we can continue to provide in its usual forms.

It would be a great help to us to receive feedback from you about your experience of reading our newsletter month by month: the types of features you most enjoy, how it has influenced your enjoyment of and knowledge about nature, and ways in which it might have enriched your sense of belonging to TFN. We would also appreciate receiving your suggestions for ways to improve our publication. With the expert help of Lynn Miller, we have devised a survey which we hope will provide the types of feedback we need. **Now we ask for your help.** Please take a few minutes now to complete the survey:

<https://bit.ly/3aarEnw>

This survey may also be accessed via the new "Members Only" section of our website. For the benefit of members who may not have regular computer access, a paper version of the survey will be mailed to those members who have not provided TFN with their email address. **We look forward to hearing from you by October 1.**

Wendy Rothwell, Editor

## “POD WALKS”

### AN ALTERNATIVE WAY TO WALK WITH TFN

Would you like to try nature walks with a small, regular group of TFN members?

As part of our pandemic response, TFN is considering ways to supplement – **not replace!** – our traditional TFN walks. An intriguing idea of “walking pods” has been suggested by TFN Member Glenn Berry.

Given enough interest, TFN could help set up small groups (or “walking pods”) that would meet regularly at some agreed-upon spot and walk together (physically distanced, of course!), appreciating nature along the way. This pod approach would connect people with fresh air and friendly naturalists while limiting the number of people walkers would interact with and the travel required to meet up.

If this idea is of interest to you, please email us by September 21 (ideally); at [podwalks@torontofieldnaturalists.org](mailto:podwalks@torontofieldnaturalists.org). In your message, please tell us:

- Your postal code and nearest major intersection
- Safety requirements you'd want to see in your pod (e.g., maximum number of people, whether masks are required, etc.)
- Whether you would be willing to help coordinate pod walks in your neighbourhood

## JOIN THE TFN COMMUNITY ON FACEBOOK!

While TFN has had a presence on Facebook for a number of years, we've just recently launched something different: the TFN Community Group! Post your photos. Start your own discussions. Ask questions. Share knowledge.

The TFN Community Group is the easiest way to stay connected with friends and fellow members from the comfort of your own home!

Join Now:

<https://www.facebook.com/groups/tfncommunity>



## TFN ANNUAL GENERAL MEETING

Thursday, October 22

7:00 PM - 8:00 PM via Zoom

**TFN's 2020 Annual General Meeting (AGM) will be an online event this year, enjoyable right from the comfort of your own home!** All TFN members are invited to attend.

Please join us as we share memories of the past year, celebrate our amazing volunteers and donors, and welcome our 2020/2021 Board of Directors.

### TO PLAN YOUR ATTENDANCE OF OUR AGM

### VISIT THE NEW “MEMBERS ONLY” SECTION OF OUR WEBSITE

<https://torontofieldnaturalists.org/private>

One password now gives you access to our AGM Zoom information, walks list, latest newsletter and so much more! This password was delivered in the email notifying you that the September newsletter is available online.

If you have misplaced the password, you can request it by emailing [membership@torontofieldnaturalists.org](mailto:membership@torontofieldnaturalists.org).

## TFN OUTINGS

We are pleased that, by putting safety precautions in place, it has been possible for us to conduct walks this summer, enabling TFNers to get out and enjoy nature together despite the COVID-19 pandemic. We must continue to comply with quickly-changing guidelines set forth in public health advisories issued by all levels of government. In view of the uncertainty as to what restrictions may be in effect in the coming month, we are continuing our practice of offering “member only” outings posted on our website. To ensure the safety and enjoyment

of walk participants, we select locations that can conveniently accommodate physical distancing.

To ensure that groups do not exceed allowed maximums and to facilitate contact tracing should the need arise, members who wish to attend a particular walk must RSVP, after which they will receive details of the meeting time and place. Walk leaders will have a list of who RSVPed, and only people on the list will be allowed to participate.

### TO ACCESS OUR SEPTEMBER WALKS LIST VISIT THE NEW “MEMBERS ONLY” SECTION OF OUR WEBSITE

<https://torontofieldnaturalists.org/private>

One password now gives you access to our walks list, lecture Zoom information, latest newsletter and so much more! This password was delivered in the email notifying you that the September newsletter is available online.

If you have misplaced the password, you can request it by emailing [membership@torontofieldnaturalists.org](mailto:membership@torontofieldnaturalists.org).

In order to provide all members with a fair chance to take part, walks will not be announced via email. Members will need to check the webpage to discover available walks. The RSVP facility for each walk opens on the website at a random time of day five days before the date of the walk.

Please do not RSVP for a walk unless you have every reason to believe you will be able to attend.

Before RSVPing, please review all guidelines on the webpage and be sure to carefully review walk descriptions for any additional guidelines specific to that walk.

To maximize the number of members who can participate, our walks are currently open only to TFN members. Please do not RSVP for or bring guests.

Do not RSVP if you are in quarantine or self-isolating (e.g., as a result of contact with a suspected COVID case, recent travel or concerning symptoms) unless the full 14-day isolation period will have ended by the time of the walk.

Do not attend a walk if you are experiencing any potential symptoms of COVID-19.

If you intend to travel to the walk by TTC, remember that masks/facial coverings are currently required to ride.

We request that you bring hand sanitizer and fully clean your hands before joining the walk.

Participants are required to maintain physical distancing throughout the walk. (If you attend with someone from your social circle/bubble, please let the group know.)

Walk participants and leaders are encouraged to wear a mask or other facial covering throughout the walk provided that doing so would not compromise their health or safety.

Please be aware that our walk leaders are obliged to immediately end their walk in the event that any participant willfully disregards physical distancing requirements or intentionally acts in any way that could potentially lead to transmission of COVID-19.

**Should you exhibit any potential symptoms of COVID-19 in the 14 days following a walk you must immediately report this to [walks@torontofieldnaturalists.org](mailto:walks@torontofieldnaturalists.org). Those in attendance will be notified promptly but you will not be personally identified in this communication.**

## NATURE IN PANDEMIC TIMES

This has been a spring and summer like no other. The pandemic has forced many of us into isolation with beloved outings like TFN walks cancelled for months on end. Even now, for safety's sake, TFN walks are restricted to small numbers and wide-open terrain. Solo walks in the neighbourhood have become our new normal. What has that felt like? What have we seen? We hope you'll enjoy these samplings of local nature, as observed by TFN members. Perhaps they are echoes of your own pandemic adventures. While you may not have met a massive insect in an unlikely setting or revisited a site you first discovered in public school, Nature has no doubt revealed herself to you in some form, even in the lockdown



Theresa Moore shared: "During the pandemic my local park, German Mills Settlers Park (northeast of Steeles and Bayview) has continued to provide an abundance of natural wonders and a relatively quiet and safe refuge. Some of the most remarkable sightings have included a Baltimore Oriole foraging at my feet, a flock of at least 40 Yellow-rumped Warblers, a muskrat carrying grasses to its home and this curious mink."



Floyd Ruskin managed to photograph an intruder inside a friend's kitchen – a white morph squirrel!

Wendy Rothwell wrote: "Spring of 2020 was an especially exciting time for me, strangely as a side-effect of the pandemic. I seemed to have greater opportunities to pursue two of my primary pleasures – exploring nature and photographing flowers. Even the closure of High Park (my usual stomping ground) during cherry blossom time had its advantages, as a friend and I enjoyed daily walks admiring neighbourhood gardens. I discovered beautiful spring flowers of which I had previously been oblivious: hellebore, glory in the snow, summer snowflake ... Who'd guess there were so many varieties of tulips!"



Joanne Doucette's artistic talents were rekindled, sharing her fine bird illustrations on the TFN Facebook group. Her caption for a drawing of an Eastern Meadowlark explained: "Working on pieces like this takes me out of myself, out of this pandemic, into a quiet place of joy."

## CONGRATULATIONS TO PAULA DAVIES, RECIPIENT OF ONTARIO NATURE'S W.W.H. GUNN CONSERVATION AWARD!

TFN member Paula Davies received the 2020 W.W.H. Gunn award from Ontario Nature for outstanding personal service and strong commitment to nature conservation over a number of years with exceptional results.

As many TFN members know, Paula has served as the volunteer Director of the Todmorden Mills Wildflower Preserve (TMWP) volunteer stewardship team for over 25 years. The successful transformation from a degraded site to a healthy plant community with many native species providing habitat for birds, mammals and other creatures has been due in large part to Paula's expertise and her considerable abilities to lead and inspire other volunteers.

Letters of support for the TFN's nomination of Paula had this to say:

*"Paula's achievements at TMWP are remarkable. Her dedication, expertise and hard work, going back many years, have transformed what was once mostly a heavily degraded dumping ground into an oasis of biodiversity. Under her leadership a group of volunteers, recruited and inspired by her, has maintained a sustained*

*restoration project."*

*"Paula's tutelage and wisdom have done much more than save a natural area and protect its natural heritage. Paula has helped raise an entire generation of stewards and conservation advocates, and informed and inspired the policies and practices that nature in our city so greatly depends upon."*



To learn more about TMWP, go to [www.hopscotch.ca/tmwp](http://www.hopscotch.ca/tmwp)

Nancy Dengler

### TFN would like to interview YOU!

In anticipation of TFN's 100<sup>th</sup> Anniversary in 2023, we've been conducting interviews with our members to collect their stories and remembrances of years gone by. To date, such interviews have been conducted in person, but with the recent adoption of Zoom technology by so many of our members, we're now looking to schedule video call interviews!

If you're interested in participating, please email [archives@torontofieldnaturalists.org](mailto:archives@torontofieldnaturalists.org) for more information.

**COME SEE SOME OF THE INTERVIEWS WE'VE ALREADY DONE!  
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## TREE OF THE MONTH: EASTERN SYCAMORE (*PLATANUS OCCIDENTALIS*)

If there is one striking trait of eastern sycamore, it is the bark. At a distance it gives an overall impression of uniform, glowing, creamy white. As we approach more closely, however, this impression gives way to a rich patchwork of colours in varying shades of tan, grey, orange and green, flaking in irregularly rounded scales and patches reminiscent of jigsaw puzzle pieces.

The variations in colour reflect the ages of the scales as they form, darken progressively, and are shed to reveal fresh new light bark beneath. The formation of these patches, known as rhytidomes, helps keep the bark on sycamore trunks much smoother and thinner than that on a comparably sized oak, maple, elm or cottonwood. Of course the process of shedding can break down with time and you can find broad swatches or even whole lower trunks of ridged and furrowed bark on large individuals.



Eastern sycamore bark.  
Photo: Ron Dengler

The flaking, thin, patchy bark of eastern sycamore is shared with other species of plane-tree, including London plane-tree (*Platanus X acerifolia*), derived from a stabilized hybrid between eastern sycamore and oriental plane-tree (*P. orientalis*) from the Balkans and vicinity. London plane-tree is cultivated ubiquitously in temperate climate cities around the world, including Toronto. The same bark type is found in a few other unrelated temperate trees and in many more tropical ones, but the only other tree with a similar bark you are likely to see in Toronto is the sycamore maple, *Acer pseudoplatanus* (“false plane-tree”). The shared bark type is responsible for an instructive example of common name transfer between the U.K. and North America. Some snooty Brits insist that we should not be calling our native plane-tree sycamore, since that name rightly belongs to their maple. But, while North Americans may have borrowed the name from the European maple species, that tree was not its original source. Sycamore is a Greek compound meaning “fig mulberry” and there is, indeed, an eastern Mediterranean fig tree, *Ficus sycomorus*, with the same mottled bark, that lent its name, first to sycamore maple and then to our

sycamore. So the attribution to a maple species has no pride of place.

Another confusion between eastern sycamore and maple species involves the leaves. Sycamore leaves do resemble those of many maples but, with living trees, there is no real possibility of mistaken identity because the leaf arrangement in plane-trees is spiral while that of maples is opposite. However, in the rich fossil leaf beds of the Pleistocene Don Valley Formation, deposited about 100 thousand years ago during the most recent previous (Sangamonian) interglacial period, palmately lobed leaves are found singly, presumably after having been shed in the autumn. Most of these were identified by twentieth century paleobotanists as belonging to maple trees and some were even described as a new species of maple. But the majority of these, including the type and other specimens of “*Acer torontoniensis*,” and other supposedly extinct fossil maple species, are unequivocally sycamore leaves. In maple leaves with five lobes, the central vein of each bottom lobe arises independently at the tip of the petiole alongside that of the adjacent upper lobe.



Characteristic leaf venation of  
*Platanus X acerifolia* (London plane-tree), left and  
*Acer platanoides* (Norway maple), right.

Photo: James Eckenwalder

In plane-trees, the vein to the lower lobe branches off from that of the main side lobe above it. This should be clear in the accompanying photograph, and it is also clear in the fossil leaves, even going back to the earliest known plane-tree relatives in the Cretaceous, as much as 100 million years ago. Eastern sycamore was one of the dominants of the Don Valley Formation floodplain forest, the same general habitat, along with seasonal swamps, that it still occupies today. A denizen of the deciduous forest zone, eastern sycamore reaches its local northern limit in Toronto, though it is not a common tree here being much outnumbered by planted London plane-trees.

*continued on next page*

Our two local plane-trees are easily distinguished when they are ornamented with their tan ping-pong ball fruit clusters at the end of a long string (the peduncle). In eastern sycamore, the spherical heads are “always” single at the end of the string. (I’m sure there are vanishingly rare exceptions, as there always are with categorical statements in biology, but I have never seen any.)



Single fruit clusters, Eastern sycamore.

Photo: Ron Dengler



Leaf and green fruit cluster, London plane-tree

Photo: Ron Dengler

On every fruiting London plane-tree, you can easily find peduncles holding two or more balls, though there are also many with just a single one. The balls continue to hang on the trees after leaf fall, making it easy to distinguish the two species even in winter.

Pick apart one of the balls when ripe and you will find a hard, woody-textured, dimpled, spherical core about a centimetre in diameter from which detach hundreds of densely packed, 1 cm-long, narrow achenes (dry, one-seeded fruits). Each is fringed with a wind-buoyant tuft of many



Single fruit removed from cluster.

Photo: Ron Dengler

stiff hairs, one of the many ways that wind-dispersed seeds engage with the air. The fruiting balls mature from tight, spherical capitula (heads) of purely female flowers with bright red stigmas. Similar dense heads of tawny male flowers are also borne at the ends of long, slender peduncles, but separately from the female heads. Both sexes extend as prolongations of the true tips of twigs. These inflorescences are thereby terminal, like those of Norway maple, Kentucky coffee-tree and horse-chestnut.

Another set of distinctive features of eastern sycamore and other plane-trees resides in the winter twigs. Unlike the great majority of our trees, the leaf base of plane-trees completely encircles the conical lateral buds which, also highly unusually, consist of a single bud scale. Thus, when the leaves are shed, the bud is completely ringed by the leaf scar which has five or more discrete bundle scars. All the buds are lateral, “axillary” to leaves, including the pseudo-terminal bud at the tip of the twig that will continue the growth in the following year. Even when a given shoot does not end in an inflorescence, the original shoot apex dies at the end of the growing season and is replaced in the following year by the nearest lateral bud, leading to what’s called sympodial growth.

Twenty-five years ago, if you had asked a plant taxonomist what the closest relatives of eastern sycamore were, s/he would most likely have replied that there probably was a relationship to witch-hazel and related plants (family Hamamelidaceae). Not one of us had the slightest inkling that the real answer, subsequently revealed by DNA studies, led to three additional plant families that were completely dissimilar in appearance to the plane-trees and to each other. These four families, Platanaceae, Proteaceae, Sabiaceae and Nelumbonaceae, are now placed together in a single taxonomic order, Proteales.

The three unsuspected relatives all have flowers that are much larger, showier, and structurally different from those of plane-trees, and their vegetative morphologies and ecologies are



Spherical head of female flowers in May, London plane-tree.

Photo: Ron Dengler

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## VOLUNTEER PROFILE: BOB KORTRIGHT

Listen and learn. That's my motto whenever Bob Kortright leads a TFN walk. Bob is the kind of guide who can point out a blooming witch hazel on a bitterly cold November day and then prompt us to wonder what pollinator could brave such temperatures. A moth; who knew? Moments later he may draw attention to the piercing call of a brown creeper. He'll invite us to consider how this tiny bird survives the Toronto winter, foraging for dormant insects. Bob shares his deep knowledge of natural history generously and with quiet authority, often cautioning that he'd prefer to have an (even) stronger grasp of certain taxonomic groups.

So the question arises – how does this guy know so much? Did it help that Bob's grandfather was a naturalist of some note and the author of *Ducks, Geese and Swans of North America*? Bob thinks not. Although he loved birds and had some interest in other creatures in childhood, his high school and university studies scarcely touched on biology. Nor did his career with Ontario Hydro and then OPG involve any tramping about in the woods. Instead, Bob recalls his nature gene being switched on by his first experience of the tropics in 1990 during a guided tour of Costa Rica's astonishing biodiversity. From there, his interests widened to encompass the more nuanced flora and fauna of our temperate zone.



Bob began to attend walks with the Toronto Field Naturalists in the late 1990s. By 2005, he felt sufficiently self-taught to lead walks. Pinky Franklin invited Bob onto the TFN Board in 2006, and he has contributed tirelessly since, serving as President 2010-2012 and as Secretary-Treasurer today. When asked why he supports the work of the TFN, he observes: "TFN has the right instincts. We link people with nature in their own backyard, without the need for getting into a car."

Never a fan of driving, Bob made his life carless some time ago. And he is happy being an urban creature. "I'm a big-time user of the Toronto Public Library system," he explains. And here's a tip: Bob makes very good book recommendations (see pages 12 and 23). He is also active in other facets of the city's cultural life as a member of the Brodie Club and a member of an east-end choral group.

Bob's advice to new TFN members is simply to get involved. "TFN has many worthwhile projects on the go. If you can, try to volunteer in some capacity and get to know the people as well as the natural history." Bob also points out that TFN's ability to operate entirely on volunteer strength, without staffing, gives the group resilience and independence, especially in these tumultuous times. "In a given year, at least 160 volunteers contribute to TFN's work. That's remarkable."

Ellen Schwartzel

### TREE OF THE MONTH *continued from previous page*

also completely different. Other than shared DNA patterns, there are no obvious features to reveal the shared ancestry of these four highly distinctive and widely divergent families. Perhaps the strangest association revealed by the DNA studies was the inclusion of Nelumbonaceae. This family includes only two species: the Eurasian sacred lotus (*Nelumbo nucifera*), a prominent player in the cultural and artistic traditions of east, south, and west Asia and the Nile, and the American lotus (*N. lutea*), found naturally as close to us as the south shore of Lake Erie, previously almost universally but wrongly thought to be a highly unusual water-lily.

Eastern sycamore is increasingly being used in regeneration plantings in Toronto's ravines so that, even though less common today around the city's streets and parks than London plane-tree, there are ample opportunities to look at the numerous outstanding features of this tree.

James Eckenwalder

## HOW EGG-LAYING BUTTERFLIES CHOOSE THE RIGHT HOST PLANT

Butterfly caterpillars are voracious, but picky, eaters. Many butterfly caterpillars feed on only one or a few host plant species, and adult females will seek out these specific hosts on which to lay their eggs (oviposit). After hatching from its egg, a caterpillar will eat more than 200 times its birth weight before it is ready to form a chrysalis and metamorphose to an adult butterfly. Caterpillars generally do not travel from plant to plant to feed, so it is crucial that the female butterfly find exactly the right host plant to lay her eggs so that her offspring can thrive. If she chooses the wrong plant – one that is toxic to caterpillars – they will sicken and die. How do the females manage to choose the right plant?

All butterflies, including the examples listed below, are “leg tasters.” Their mouth parts are hollow tubes that serve as straws to suck up food, but completely lack taste receptors. Instead, taste is sensed by the terminal segments of their legs – the tarsi. Butterfly taste receptors are more than 100 times more sensitive than human taste buds and can distinguish tastes such as sweet, bitter, sour or salty. Upon landing on a leaf, egg-laying females “drum” (a rapid movement of their forelegs across the surface of the leaf). The drumming provides physical and chemical information about the suitability of the plant as a potential host for offspring. If the signs are good, she will lay an egg (only one per host plant for most butterfly species) before flying on to seek out another host plant. By laying a single egg per plant, the butterfly ensures that her offspring won’t be competing against each other for food resources.



**Monarch butterfly** caterpillars feed exclusively on milkweed species, all members of the dogbane family, Apocynaceae. Milkweeds contain toxic cardenolides which are poisonous to most herbivorous insects. Monarch caterpillars can tolerate these toxins, however, and repurpose them for their own protection from predatory birds. Adult female monarchs seek out milkweed plants with moderate levels of cardenolides, enough to confer toxicity on the caterpillar but not so much that caterpillar growth is inhibited. The specific chemical signal that female monarchs are looking for is quercetin glycoside. Quercetin is thought not only to induce oviposition but also to be an indicator of cardenolide level. Monarchs show a preference for certain species of milkweed too. For

instance, under experimental conditions they consistently choose swamp milkweed over common milkweed for egg laying. Monarch butterflies encounter a variety of milkweed species in their long migration between their wintering grounds in Mexico and Ontario. The ability to choose the best plant host for the next generation is key to the butterflies’ survival.



**Cabbage white butterflies** are introduced butterflies that are major pests of agricultural crops such as canola, kale and broccoli. All known host plants for cabbage white butterflies belong to the mustard family, Brassicaceae. These plants contain natural chemicals called mustard oil glycosides, compounds that release bitter sulphur-containing mustard oil when tissues are damaged. For this reason, caterpillars and adult cabbage whites are distasteful to predatory birds. In selecting a host for her eggs, a cabbage white will land on candidate plants, often choosing larger, darker green individual plants. She will either accept or reject the plant based on tactile (smoothness or roughness of the surface) and chemical stimuli (whether mustard oils are present) detected by her drumming behaviour. She will lay just one egg per plant and might travel from 500 m to 3 km in her search for the right hosts.



**Red admiral butterflies** depend on the common stinging nettle and the related species false nettle and wood nettle, all belonging to the nettle family, the Urticaceae. Nettle leaves are known to be rich in phenolic compounds and anthocyanin glycosides, chemicals that confer antimicrobial activity, but it is unknown which chemicals provide the right signal for egg laying. Red admiral caterpillars and adults are not toxic or bitter-tasting to predatory birds, but the caterpillars gain some protection by using silk to roll a nettle leaf into a protective feeding chamber.

*continued on page 10*

BUTTERFLIES *continued from previous page*

**Black swallowtail butterflies** specialize on plants in the carrot family, Apiaceae. Females use native plants like spotted water hemlock, introduced plants like Queen Anne's lace, or cultivated herbs like parsley, dill and fennel for laying their eggs. Extensive research on black swallowtail egg-laying behaviour and on the chemical makeup of these members of the carrot family indicates that the butterflies respond to a complex mixture of chemicals rather than a single compound. Egg-layers also respond to volatile chemicals released from the leaf, so sense of smell plays a role in the selection of oviposition sites. Research experiments indicate that some swallowtails even use visual cues such as leaf shape to select their host plant. Selection of host plants appears to be innate, not learned, behaviour.

**Baltimore checkerspot butterflies** have historically depended on the native plant white turtlehead as a caterpillar host plant. White turtlehead only grows in wet meadows, restricting the range of this pretty little butterfly to this habitat. In the last century, however, Baltimore checkerspots have made the leap to an introduced weed,

English plantain, resulting in an expanded geographic range. Both plant hosts belong to the same plant family, Plantaginaceae, and both contain several bitter-tasting chemicals belonging to the iridoid glycoside group. Under experimental conditions, female butterflies prefer to lay their eggs on white turtlehead rather than English plantain when given a choice. Caterpillars grow faster and to a larger size on turtlehead compared to plantain as well. Baltimore checkerspots are unusual in that females lay a cluster of eggs (~250) on each host plant, so it is thought



that caterpillars from the same "litter" compete with each other and may exhaust the host plant, making it necessary to search for alternative hosts. Here in Ontario, caterpillars are also found on ash trees, but it is unknown whether ash leaves have the right smell and taste for female Baltimore checkerspots to oviposit or whether caterpillars move to the ash trees secondarily.

Nancy Dengler

Photos of butterflies and caterpillars: Ken Sproule

## IN THE NEWS

### White-throated sparrow is changing its tune!

On July 2nd, Sarah Zhang reported in *The Atlantic* that a strange new type of song of white-throated sparrows, first noticed in Prince George, BC in the early 2000s, has been rapidly spreading across the continent. The male's song, which Canadian birders have traditionally interpreted as *Oh sweet Canada, Canada, Canada*, has now been abbreviated to *Oh sweet Cana, Cana, Cana*. Biologists at the University of Northern British Columbia and Wilfrid Laurier University have just published a new study, based on recordings of 1800 male White-throated Sparrows between 2000 and 2019, which confirms the progressive adoption of the doublet-ending song from western to eastern Canada. For details, see: <https://www.theatlantic.com/science/archive/2020/07/bird-song-sparrows/613768/>



White-throated Sparrow.  
Photo: Ken Sproule

### Bob Kortright recommends the following publications about birdsong:

For a fascinating account of one man's search for secrets of birds through their song, try *The Singing Life of Birds*, D. Kroodsma, 2005, 496 pp. There is a lot about variation in song from bird to bird (in some species) and dialects. His evidence was used in splitting species that look the same but are reproductively isolated because they sing different songs (Winter Wren/Pacific Wren?). *Birdsong* by Don Stap, 2005, 272 pp was an easier read on the same subject. One of the striking things I remember was how our chickadees have dialects on Martha's Vineyard but not on the mainland! More recently, the new edition of *Birds of Toronto* mentions that urban birds apparently sing differently in order for their songs to be heard above the roar of traffic.

## TORONTO WILDFLOWERS: SUNFLOWERS AND SILPHIUM

*Helianthus* (sunflower) and *Silphium* (cup-plant) are members of the very large Asteraceae (sunflower family), about 1600 genera and 25,000 species. Articles on other family members are in TFN newsletters in 2011 September, 2011 November, 2017 December, 2018 September and 2019 September. The family includes many food plants, herbs and herbal remedies and highly poisonous species, sources of oil (e.g., some sunflowers) and many ornamentals.

*Helianthus divaricatus* (woodland sunflower) is common in Toronto. TFN's *Vascular Plants of Metropolitan Toronto* (1994, 2nd ed.) reported it in the Humber, Don, and Rouge watersheds and in High Park. *H. strumosus* (paleleaf woodland sunflower), which is closely related to *H. divaricatus*, is relatively common in High Park.

*Helianthus*, as noted in *The ROM Field Guide to Wildflowers of Ontario* (2004), comes from the Greek *helios* (sun) and *anthos* (flower). *H. divaricatus* is up to 1.5 m tall with flower heads consisting of ray florets up to 30 mm long surrounding disc flowers that form a disc up to 15 mm wide. It can bloom from July to September locally, in open forests and tallgrass woodlands. It occurs in the southern portion of Ontario. Its full range is Ontario, Quebec and the eastern U.S. (USDA Plants database).

The common *H. tuberosus* (Jerusalem artichoke) is very similar to *H. divaricatus*. They both have opposite leaves but *H. tuberosus* also has some alternate leaves on the upper part of the stem



Woodland sunflower (*Helianthus divaricatus*)



*Silphium perfoliatum* (cup-plant) is rare locally, recorded by the TFN only at Black Creek (Humber), the lower Don, High Park and the Toronto Islands. Plants can be up to 2.4 m tall. The upper egg-shaped leaves are joined at the base to form a cup, hence the common name. Flower heads are up to 75 mm across, including a disc about 10 mm across surrounded by numerous ray florets. This is a summer- or early fall-blooming species locally found in thickets. Its range is Ontario, Quebec and most of the eastern half of the U.S. (USDA Plants database). Its Ontario range is probably very limited, as it is not included in *The ROM Field Guide*.

All species are attractive and can be a bonus in late summer or early fall visits to Toronto's natural areas.

Article and photos by Peter Money

Cup-plant (*Silphium perfoliatum*)

NATURE IN PANDEMIC TIMES *continued from page 6*

Zunaid Khan was at the south end of Grenadier Pond on a July morning when he spotted Purple Martins on the Purple Martin birdhouse built there some years ago. This is the first time for Purple Martin sightings in High Park in five years, Zunaid learned from a fellow photographer. Their return may be due in part to the recent removal of invasive phragmites and the cleaning of the birdhouse. City staff plan to clean it annually from now on. Zunaid remarked: "Quite fascinating what happens when you remove invasives."



Lynn Pady savoured the clear, unpolluted air of this past spring season, admiring nighttime views of the planets over the lake, along with nighthawks and a diversity of moths, all from her balcony. She noted: "The prize so far tho' goes to the Hermit Flower Beetle – a scarab – that astonishingly ended up on the balcony 21 flights up. One was here on August 8th last year, which amazed everyone. To have another come to visit for about ten minutes this year broke the record for 'wonder' and 'magic'."

Jason Ramsay-Brown described a recent trip to TFN's Jim Baillie Nature Reserve with Charles Bruce-Thompson. "Our visit to the reserve surfaced a profound appreciation for the solitude it provides, a refuge from the concerns of

visiting with nature in the city during these times. Wandering its cool, shady trails, a heat wave blasting outside its borders, without a worry in the world about encountering other travelers along the trail felt almost sublime. Swallowtails flitted across verdant patches of Joe-Pye weed, the melodies of countless birds played in the air, each turn yielded new green vistas populated by flora both familiar and foreign. How lucky our community is to have a place like this available to us!"



Finally, for Richard Partington, a Facebook discussion triggered a childhood reminiscence. As a budding young naturalist at Swansea Public School in the late 1950s, he had discovered striped maple near Grenadier Pond. Might it still be growing there? Richard went to see. His report on Facebook was short and exultant:

"Miraculously found yesterday striped maples at more or less exactly the same spot as 60 years ago. Two scrubby little specimens. But nevertheless! Can hardly believe it."



The pandemic, with all its attendant losses and hardships, has also heightened our appreciation for small local joys. For naturalists, it has reinforced how much we treasure our nearby nature and how vital natural spaces are to a modern livable city.

Ellen Schwartzel

## BOOK A PRIVATE VISIT TO TFN'S JIM BAILLIE NATURE RESERVE (JBNR)

TFN's Jim Baillie Nature Reserve (near Uxbridge, Ontario) offers 35 hectares of amazing wilderness to explore and, as a TFN Member, you and your social circle are welcome to visit!

To help protect the health and enjoyment of our members and their guests, visits to JBNR currently

require RSVP. Simply reach out to our Nature Reserves Coordinator, Charles Bruce-Thompson at [cbthomps@gmail.com](mailto:cbthomps@gmail.com) and let him know when you'd like to visit and for how long. Bruce will make sure no one else RSVPs for the same time, allowing you and your social circle peace of mind during your visit.

### FOR MORE INFORMATION, INCLUDING RULES FOR VISITING THE RESERVE, VISIT THE NEW "MEMBERS ONLY" SECTION OF OUR WEBSITE

<https://torontofieldnaturalists.org/private>

One password now gives you access to our JBNR reservation information, latest newsletter, walks list and so much more! This password was delivered in the email notifying you that the September newsletter is available online.

If you have misplaced the password, you can request it by emailing [membership@torontofieldnaturalists.org](mailto:membership@torontofieldnaturalists.org).

## BOTANICAL CHALKING

"Rebel botanists" are loose in our cities, wandering laneways and back alleys armed with pockets full of sidewalk chalk and keen identification skills. Their goal? To open people's eyes to the botanical wonders right under their feet, slipping out from between fence boards and poking out from between people's prized peonies.

Botanical chalking is a very simple idea with humble beginnings. French botanists, wanting to raise awareness about the wild flora present in their cities, began using chalk to write the names of plants on the sidewalks and brick walls next to where they found them growing. The idea spread like wildfire and such impromptu plant tags quickly starting popping up all across Europe and, soon thereafter, in North America. A quick poke through online communities like Instagram and Twitter shows that botanical chalking is now a certified global phenomenon, and an increasingly popular one at that.

Botanical chalking may be a simple idea, but it's also one with intensely powerful possibilities. With only a few extra strokes of chalk, these tags could be used not only to familiarize people with the names of plants but also to deepen people's appreciation of their value, increase their understanding of ecology, and even reflect our own cultural relationships to these remarkable little life forms. Adding "Monarch host plant" underneath a milkweed tag could encourage people to ponder, on their way to the



supermarket, the plight of these butterflies. Writing names in Oneida might be used to raise awareness about revitalization efforts for this critically endangered language. Identifying plants as native, exotic or invasive might serve to better educate people about those "wildflowers" creeping into their lawns and gardens. The possibilities are endless.

In Toronto, our vandalism bylaw (§313-7) prohibits defacing or disfiguring any public or private property by "daubing with paint or other substance." Of course, one need look no further than the wonderful chalk memorials drawn on Yonge Street following the van attack of 2018, or even at the countless hopscotch designs scribbled in every neighbourhood each summer, to know that enforcement isn't absolute. When

Rogers Communications started advertising their offerings by chalking their trademarks on city streets back in 2010, Toronto 311 was certainly quick to respond. Similarly, anti-Ford messages chalked outside Queen's Park in May, 2019 delivered a clean-up bill to protesters of almost \$1500. But it's hard to imagine someone catching grief for pointing out a native rudbeckia or invasive garlic mustard, regardless of how rebellious such botanists might be.

Jason Ramsay-Brown

This article was originally published on the TFN Blog, July 15, 2020

## Q&A: BIRDS' SENSE OF SMELL

**QUESTION:** How do birds use their sense of smell?

Jennifer Smith

**ANSWER:** Do birds smell? Of course they do, in both senses! Why would they have a sense of smell and not use it, especially in dark burrows or cavity nests, etc.? But how much do they depend on it? A sense of smell would seem to be of most value in the dark and at short range, so not as obviously useful to most birds as to slower nocturnal mammals. Being mostly diurnal and with great senses of sight and hearing, it is conventional wisdom that most birds do not rely on their sense of smell very much. After all, even owls seem to rely mostly on hearing and vision.



Dark-eyed Junco. Photo: Ken Sproule



Turkey Vulture. Photo: Ken Sproule

Long ago, J.J. Audubon put out rotten carcasses which Turkey Vultures ignored, feeding the myth that birds cannot smell well. Now we know that the vultures prefer fresher carrion and can smell it hidden under leaves, though they also rely on their excellent eyesight. One chemical emitted by carrion that attracts them is mercaptan – the smell added to natural gas so we can

detect a leak. This fact was discovered after pipeline engineers noticed vultures investigating leaky natural gas pipelines.

Kiwis, kakapos and other nocturnal birds and also many seabirds rely on their sense of smell to find food. For seabirds like albatross, shearwaters, petrels and fulmars, which range over hundreds of miles of ocean in search of concentrations of seafood, smell has been shown to be a good signal of where the food is and a powerful attractant, particularly to those species that nest in burrows. Storm-petrels and diving petrels sniff out their own burrow in a colony in the dark.

Many other bird species rely on olfactory clues in their close relationships with mates and offspring (smelling each other's smell). This even includes songbirds which, of all major bird groups, have the smallest proportion of their brain devoted to olfaction. For example, breeding success in our junco is strongly related to how masculine or feminine they smell; females preferring the most masculine-smelling males and vice versa (ref. [Audubon magazine, Jan/Feb 2014](#))!

Bob Kortright



Bumble bee on globe thistle  
Photo: Wendy Rothwell

### Calling all gardeners!

A PhD student from the University of Ottawa is hoping to launch a project to explore the impacts of a warming and drying climate on pollinator populations, specifically bees.

If you have a garden in Toronto, preferably one with lots of flowering plants that attract pollinators, and are willing to have two artificial nesting structures ('bee/wasp hotels') set up in your garden, please contact Lydia Wong ([lwong014@uottawa.ca](mailto:lwong014@uottawa.ca)) for details. More information can be found at: [https://torontofieldnaturalists.org/wp-content/uploads/2020/07/Call-for-participants\\_Toronto-2.pdf](https://torontofieldnaturalists.org/wp-content/uploads/2020/07/Call-for-participants_Toronto-2.pdf)

## THE “BIG FOUR” OF HIGH PARK

Let me introduce you to the Big Four native grasses of Ontario’s tallgrass oak savannah: big bluestem, little bluestem, Indian grass and switch grass. All are perennials and all can be found in High Park. They are “warm season” grasses as opposed to many of the European grasses that develop in spring and go dormant in summer.

When we introduce friends, we always say their name and a few things about them, such as where they live, but we expect that others will recognize them by their appearance. A picture can be worth more than a thousand lemmas, rachises, glumes and other technical words for the parts of grass.

***Andropogon gerardi*** The name is derived from the Greek *andros*, a man and *pogon*, beard. The species was named after French botanist Frederic Gérard. I know it as big bluestem, but it is also called turkeyfoot, turkey claw, prairie tallgrass, tallgrass, bluejoint beardgrass, tall bluestem and barbon de Gérard. You can find it from Quebec to Saskatchewan. Big bluestem grows in prairies, oak savannah and dry woods, and on rocky shorelines. High Park boasts some of our most extensive expanses of big bluestem, but it can also be seen in Lambton Park and a few other spots. On the Toronto Islands, big bluestem is likely to be found in moister situations than switch grass.



Big bluestem (*Andropogon gerardi*), High Park, Aug. 2013. Photo: Ken Sproule

This bunch grass grows up to 60-200 cm tall and outshades other plants, forming dense stands. Its main roots go down 3 metres into the soil while its rhizomes rise only a few centimetres above ground. The round, stout stems show bronze, tan, crimson, green, and/or lead grey. The leaves grow up to 60 cm long and under 1.25 cm wide, with a small scale-like collar where the blade meets the stem. The leaves often curl and the lower ones are

sometimes hairy. Each big bluestem flower has a short bristle, and the flowers form lines on short stalks that radiate in bunches of two to six from a single point at the top of the stem, like a bird's foot. It blooms from August to October. The fruit is a small hairy grain with a long twisted bristle.

Big bluestem is the dominant grass of the tallgrass prairie and once covered many hectares of southern Ontario. It provides cover and food for juncos, finches, sparrows and other small birds as well as many other species. Native people in southern Ontario burned the oak savannah and prairies regularly, preventing the forest from taking over. Loss of habitat to agriculture and urban development have reduced oak savannah and prairie to mere patches in their former range. Settlers were unaware of the potential of “The Big Four” as forage crops, so they relied instead on imported European grasses like orchard grass. Now agronomists have rediscovered big bluestem as a commercial hay and forage plant. Cattle love it so much that some farmers refer to it as “ice cream for cows,” as it says on the Lady Bird Johnson Wildflower Center website (downloaded July 21, 2020) [http://www.wildflower.org/plants/result.php?id\\_plant=ANGE](http://www.wildflower.org/plants/result.php?id_plant=ANGE)

The Anishnaabe used a root decoction as a diuretic and to alleviate stomach pains and gas. Extracts of the leaf blades were used as a wash for fevers or as an analgesic. The plants were also used to fasten the support poles of wigwams. Moist grass was laid on hot stones to prevent steam from escaping during cooking. It was also used to cover fruit during ripening and under fruit while drying. Little boys shot the stalks as arrows in play.

***Schizachyrium scoparium*** is one of my favourite grasses. Its scientific name is from the Greek *schizein*, to split and *achyron*, chaff. *Scoparium* means broom-like. I know it as “little bluestem” but it is also commonly called poverty grass, broom bluestem, broom beardgrass, prairie beardgrass, and small feathergrass because its flowers have long white wisps like downy feathers. It grows from Alberta to Quebec and enjoys full sun on moist to dry prairies, savannahs, open woods and old fields.

*A characteristic grass of the native prairie to the southwest, Andropogon scoparius [an alternative name for little bluestem] is largely restricted in its distribution in Ontario to the sand dunes and dry rocky shores of Lake Huron, Lake Erie and the Ottawa River, although it does occur in a few inland stations in the southwestern peninsula.* (William G. Dore and J. McNeil, *Grasses of Ontario*, Agriculture Canada, Monograph #26, 1980, p. 501).

## PHOTOGRAPHY AND BEHAVIOUR

I hope all of you have been keeping well over the past few months. No doubt it has not been easy, given the times we find ourselves living in. I trust you have been able to get out and enjoy nature safely. To me this year has reinforced my belief in the need to continue the work of protecting our green spaces in this beautiful city we call home. In past articles I have focused on sharing tips on nature photography. Going forward, I intend to share more about being in nature as a photographer and my observations of the ever-changing story of nature.

Spending time in nature to get healthier led me to pursue photography. Initially, I sought to photograph all aspects of nature in equal measure. However, my fascination with birds and their behaviour led to them becoming the dominant subject of my work. In studying their behaviour, I was driven by two things. First, my need to behave ethically while in nature so as to have minimal impact on the ecosystems I was exploring. Second, the hope that, by understanding the behaviour of my subjects, I would be better able to capture unique images. Early on I realized that my state of mind while attempting to immerse myself in nature (e.g., not being distracted by human activity) impacted my ability to effectively study my subjects. Being calm and at ease made me better able to listen to, observe and learn the behaviour of my subjects. *Listening first, then observing*, became my mantra. While actively listening, I survey the terrain looking for food sources, water and potential nesting areas. I primarily focus on food sources, scanning areas of goldenrod, sumac, berry-bearing trees and observing insect activity, mostly in proximity to water.

Recently, due to the COVID-19 pandemic, I have limited my areas of observation to green spaces close to home – the Don River watershed including Earl Bales Park, West Don Parklands, East Don Parklands, Betty Sutherland Trail and G. Ross Lord Park. Early in the lockdown I was able to observe behaviour and activity that, in previous years, would have been very difficult to see due to human activity. During this year's spring migration there was increased bird activity but significantly reduced human activity.

In Earl Bales Park, I observed significantly greater numbers of Double-crested Cormorants: 20-30 in the ponds compared to 5-10 in previous years, increased numbers perched in trees and, early one morning, over 100 in the air. Reduced human activity in the park and the closure of the Don Valley Golf Course contributed to this increase in the numbers of cormorants in this area.

Another observation in Earl Bales Park: Northern Flickers feeding in the grassy space between the dog park and the bottom of the ski hill. Typically, these birds would not be seen there due to human activity, primarily people letting their dogs off leash. This year I observed ten flickers in this area.

Spending a lot of time along the Don River this spring and summer has also given me the opportunity to observe and study the behaviour of the Spotted Sandpiper. I was aware that they could be found along the river but in past years I spent more time elsewhere and only had occasional sightings of them. This year I have taken the opportunity to seek them out in a specific area over the course of a few months. I was not previously familiar with this species; though intrigued by their call, I found them very difficult to spot. Recently I have observed quite a number of them near the Betty Sutherland Trail, East Don Parklands and along the Don River where the Finch Recreational Trail runs down to the river. I am unaware if there have been increased numbers in these areas, but I believe it was easier for me to hear and spot them early in the spring due to reduced human activity. Hence I was able to identify behaviour and discover vantage points where it was easier to see them and position myself so as not to disturb them while photographing. They tend to fly low over the water move up and down the river and feed near sandbanks and where water levels are low.

I hope you enjoy these observations and the photographs. I look forward to sharing more of them in future.

Zunaid Khan



Double-crested Cormorants, Northern Flicker and Spotted Sandpiper. Photos: Zunaid Khan

## HIGH PARK MOTH STUDY FIVE YEARS AND 1,000 SPECIES LATER

High Park has long been a popular destination for naturalists and biologists alike. Not surprisingly, much of the park's biota has been extensively surveyed, with inventories existing for birds, mammals, herptiles, fish, plants and more. There is even a smattering of lists for insect groups (butterflies, dragonflies and damselflies). In 2016, the High Park Moth Study (HPMS) formed, its purpose being to contribute to this repository of knowledge by documenting the diversity, abundance and seasonality of the park's moths. The idea was for a group of insect enthusiasts, all volunteers, to set up lights and sheets in High Park on a weekly basis, spring through fall, over a number of years. One of these sessions was the subject of a feature article published last year in the Toronto Star (see [HighparkmothiaTorontoStar](#)).

Fast forward to the present: On July 8 of this year, well into its fifth season and after nearly 120 study sessions, the HPMS reached a long-sought milestone – the 1,000th moth species for High Park! For us, this was the equivalent of scaling Mount Everest.

Moments after our special guest, a mottled snout (*Hypena palparia*), landed on one of our sheets, those present toasted with a non-alcoholic sparkling beverage (High Park is dry, after all). Fittingly, the first person to spot this moth was Dave Beadle, our study's eagle-eyed resident expert and co-author of two Peterson field guides to moths. We are extremely fortunate that Dave lives in Toronto and attends our sessions on a regular basis. Without him, our species checklist would undoubtedly be a lot shorter. TFN has also contributed to the study's success by providing us with grant money to acquire essential equipment.



Reaching a milestone:  
The mottled snout that landed on our sheet  
Photo: Dave Beadle

There was some question as to whether we should put the study on hold this year on account of the COVID-19 situation. After careful deliberation, we felt we could run sessions in a safe manner by limiting the number of attendees and practising proper social distancing. In the future, when life returns to normal, we will revert to our default policy of allowing all those interested to attend.

Over the years, HPMS participants have witnessed an incredible diversity of moth species, some of which were first records for the city, for the province or even, in a handful of instances, for Canada. One moth we recorded hadn't been seen in this country in over a century! At the time of writing, our current total stands at 1,031 species. Photos of many of the species seen during our sessions can be found at <https://inaturalist.ca/projects/high-park-moth-study>

Despite achieving the lofty goal of 1,000 species we set for ourselves back in 2016, we intend to continue the study for years to come, for there will always be more moth species to record. Besides, it takes many years' worth of data before any meaningful patterns start to emerge. Another factor that will keep the study going is that many of us are becoming increasingly

interested in the other creatures attracted to our lights, including beetles, flies, wasps, true bugs, spiders and more.

The first five years of the High Park Moth Study have been a memorable journey for all those involved and we eagerly look forward to the myriad discoveries that await us in the years to come.

Richard Aaron



## TREE SWALLOW NESTING BEHAVIOUR

For several years I've watched House Sparrows nesting in the rectangular cavities high up on concrete electric poles. They often get a head start at the end of winter, perhaps because the concrete absorbs the heat of the sun and keeps them warm overnight. This year, for the first time, I've noticed Tree Swallows trying out the poles. In my experience, Tree Swallows usually nest in holes in trees or man-made bluebird boxes, while Barn Swallows use a variety of man-made structures such as bridges, bus shelters and even ferry docks. I didn't observe the success of the pole nesting Tree Swallows and whether the neighbourhood House Sparrows pushed them out. Has anyone else seen Tree Swallows nesting in pole holes?

Jenny Bull

## JUNIOR NATURALISTS: WARBLERS MIGRATING IN THE FALL

Many bird lovers have favourites and, for a lot of us in southern Ontario, our favourite birds are the warblers. During the spring migration it is thrilling to catch sight of one of these brilliantly coloured little gems. It adds to the excitement that we haven't seen them for almost a year. Most of them leave us after a brief stopover and head north to the mixed forest or the boreal forest to nest. They have come all this way from Latin America for the 'protein pulse of the insect hatch in North America' (<https://www.allaboutbirds.org/news/when-does-a-songbird-migrate-depends-on-what-it-eats/>). When this is over they will head back down to the tropics.

In the fall we have the fun of seeing them again, but now they are truly playing games with us! They have molted their distinctive breeding plumage and are basically travelling incognito back down south to spend the winter. Also, tree leaves are bigger than they were in spring, adding to the challenge.

How can we take the frustration out of birding in the late summer and fall, and connect with our little friends on their southbound journey? The first thing we want to do is pick the right time and place to spot them. Birds choose stopover sites to fatten up on their way south. In

Toronto they prefer areas near the lake such as Toronto Islands and the Leslie Street Spit.

Timing is also critical. What days are we most likely to see a lot of songbirds? Cold fronts move across North America in a southeasterly direction. They push warm moist air ahead of them and often cause rain and storms on their leading edge. Birds will wait it out in large numbers until these fronts have moved through and then travel on the cool, dry days that follow. Often there is a northerly wind that helps them. When to go birding? Just before the cold front hits Toronto. (From *Understanding Birds and Weather: Fall Birding Basics* by Team Ebird.) You can also check the FLAP website [Learn about Bird Migration](#) for detailed weather information.

So how can we distinguish our favourite warblers and know which ones we are seeing? Again, timing can help a little bit. John Ruddy compiled data from 1990-2016 to determine peak migration times for most of the warblers. See [Fall Warbler Migration Guide](#). The table below shows peak dates for warblers that are common fall migrants in our area. We can

*continued on next page*

Peak August 1st	Peak August 22 <sup>nd</sup>	Peak Sept 7 <sup>th</sup>	Peak October 1 <sup>st</sup>
Yellow Warbler	American Redstart Black-and-white Chestnut-sided Common Yellowthroat Cape May Blackburnian Canada Mourning Ovenbird Northern Waterthrush	Blackpoll Tennessee Nashville Bay-breasted Magnolia Black-throated Blue Black-throated Green Palm Wilson's	Yellow-rumped



Yellow-rumped Warblers (male). Left, in April. Right, in October. Photos: Ken Sproule

see that Yellow Warblers leave very early. Two large groups peak around August 22nd and September 7th. (There doesn't seem to be a clear food-related reason for the two-week delay of the second wave. In both groups there are warblers that depend on spruce budworm caterpillars and can eat Ontario berries in a pinch after the breeding season.) The Yellow-rumped Warbler is the last to leave, around October 1st.

A good way to prepare for a day of birding is to look at this table and then study the non-breeding plumage of birds you are most likely to see at that time. This may be

challenging because most field guides only show birds in their breeding plumage. Sibley guides and apps to birds of (Eastern) North America include illustrations of all our birds including non-breeding plumage. A helpful website is <http://www.natureinstruct.org/dendroica/spec.php> Pick the bird you want and scroll to the right to see photos in various stages.

Hope this will help give you the thrill of seeing and identifying some of the warblers that pass through our neighbourhood in the fall.

Anne Purvis

## A ROBIN FAMILY

This summer a robin built a nest in a tree not far from my balcony (but not near enough to get good photos with my small camera). It was a great opportunity to observe, through binoculars, a wonderful part of God's creation up close.

When mother robin settled down in the nest, her tail pointed up, but when it rained and the nest needed to be kept dry, she sheltered it with her wings and her tail pointed down to let the rain drip off. The rain drops shone silvery on her feathers.

The two baby birds looked quite comical at first, with tufts of fluff atop their little

heads. There was always much excitement when mother or father robin arrived with a morsel for them. They grew rapidly. Soon they went from flopping around in the nest to flapping around in the nest, then to stretching their wings. Finally they were ready to try those wings. I didn't catch the flight of the first one to leave but watched the second one perch on the edge of the nest and summon the courage to flit up into the branches leaving an empty nest.

This was a captivating experience for me in the midst of COVID.

Eileen Skillen

## JUNIOR NATURALISTS' SUMMER ACTIVITIES

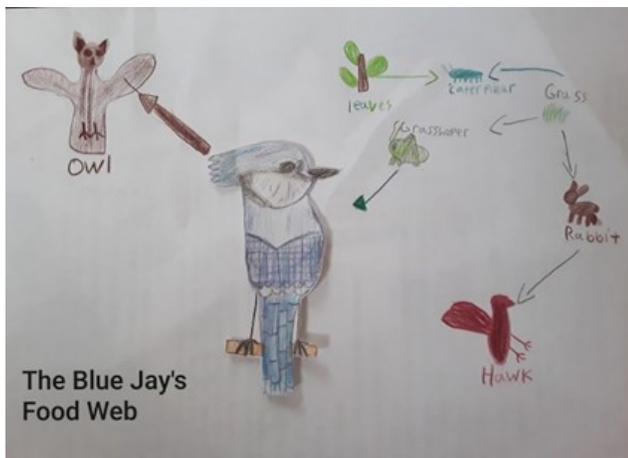
The Junior Naturalists partnered with Strickland Reading Clinic to provide a ten-week nature program during the COVID crisis. Seven TFN families and three Strickland families became regular participants. We had a Zoom meeting every Wednesday at 12:30 starting from April 8th. Each time we met, a challenge was issued to participants to explore something that was going on in nature that week. Some of the themes we covered were mining bees, spring ephemerals, the songbird migration, early butterflies, grasshoppers and bumblebees.

We started each meeting by sharing our nature adventures of the previous week. One week a participant shared about a bat landing on their running shoe when they were out for a walk at dusk! Then we watched a slide show, narrated by Anne Purvis, of drawings and photos submitted by participants. These are posted on The [TFN Juniors Utube channel](#), available for members to have a look. The

slideshow usually included an information segment about the theme of that week. Following the slide show, Sandra Iskandar, one of the Strickland Moms led us in a drawing lesson. We learned to draw bloodroot, the silvery blue butterfly, the common yellowthroat and other creatures. Please see below a collage of some of the drawings.

When the ten-week class ended, the Juniors' leadership team continued to make weekly posts on the Juniors' blog with a different theme each week. These were in three parts. Anne and Jim Purvis created a slideshow from drawings and photos submitted by members, Vanessa McMaim created a game and Monica Radoski helped us find an informative video related to the theme.

Anne Purvis



## FOR READING

Here are my thoughts on a few of the books I have read since the COVID-19 lockdown.

***The Once and Future Great Lakes Country, An Ecological History***

by J L Riley  
McGill-Queen's University Press, 2014

The Foreword by renowned historian Ramsay Cook summarizes the great achievement that is this history of the environment of the Great Lakes region. Riley has used an enormous number of sources to create a very extensive summary of what the Great Lakes basin was like as reported by explorers, government officials, land developers, settlers, botanists, foresters... over the past 400 years. He details what happened to the wildlife, the forests, the prairies, alvars, cliffs, bogs, fens and other wetlands. In addition to the often depressing history of deforestation and ruining of the land for farms and cities, and invasive species damaging what nature remains, there is also an account of hope from someone who has been intimately involved in saving land from development through the Ontario government, Ontario Nature, the Nature Conservancy of Canada and others. So don't miss the last couple of chapters and especially the Afterword.

***The Monkey's Voyage: How Improbable Journeys Shaped the History of Life***

by Alan de Queiroz,  
Basic Books, 2013 (368 pages)

An engaging and enjoyable account with fascinating examples of many improbable journeys that brought animals and plants across oceans to new lands where they spread and evolved into many new species, such as monkeys from Africa to South America. Equally fascinating are De Queiroz's account of the history of the science from Darwin's experiments and arguments to show how well birds disperse seeds and the eggs of amphibians and invertebrates. He explains arguments among scientists and how they were settled by improvements in molecular dating combined with fossil evidence. Scientists are human – sometimes they are reluctant to accept good evidence that conflicts with positions they have taken in the past. If we don't evaluate new evidence fairly we might be squelching progress rather than simply being skeptical. Eventually unreasonable skeptics fade away as others are persuaded by the evidence.

***The Tangled Tree: A Radical New History of Life***

by David Quammen,  
Simon & Schuster, 2018 (480 pages)

A fascinating and well-written history of phylogenetics and the interesting people who played roles in bringing it to where it is today. However, I'm not sure the subtitle is justified. While I enjoyed the book and loved the insights into the struggles of some scientists, I didn't feel it gave me a big revelation about the history of life. For a radical (but persuasive) account of the origins of life and of eukaryotes, I recommend Nick Lane's *The Vital Question* – not an easy read but worthwhile.

***The Nature Principle: Human Restoration and the End of Nature-Deficit Disorder***

by Richard Louv  
Algonquin Books, 2011 (320 pages)

A sequel to the author's *Last Child in the Woods* (2005) which introduced the wonderful term "nature-deficit disorder," this effort focuses on adults instead of children. It contains references to research on the health effects of exposure to nature. I, and I suspect most of those who read this book, are already convinced that connecting with nature is good for us. So you might be better off spending time in nature rather than reading this book. If you need a guide with ideas for improving lives through connection to nature, I suggest *Vitamin N* (2016) by the same author.

***Endless forms most beautiful – the new science of Evo Devo and the Making of the Animal Kingdom***

by Sean B. Carroll  
W.W. Norton, 2005 (Paperback, 350 pages)

Provides great insight into how evolution works by looking at embryological development. Evolutionary Developmental Biology is relatively new science that has shown that complex life is ironically much simpler than anyone ever expected.

Bob Kortright

## FASCINATED WITH FASCINATION

Conjoined blooms on a black-eyed Susan, a ribbon-like strip of fused dandelion stems, a peace lily sporting multiple flowers enrobed by a single (often malformed) spathe ... All are examples of fasciation: abnormal growth in vascular plants that causes tissue to become elongated, contorted or otherwise deformed. While such abnormalities are rare, spend enough time with your nose in the dirt and there's a chance you'll spot an example from time to time.

Fasciation can result naturally from a variety of influences: disease, predation, exposure to chemicals, mineral deficiencies, sudden environmental shifts (e.g., prolonged rain after drought, cold snaps, etc.), genetic inheritance and random mutation. To induce fasciation in a laboratory setting, researchers often depend on pathogens, parasites or radiation.

While the ability for radiation to increase rates of mutation is, thanks to decades of post-apocalyptic films and novels, fully entrenched in pop culture, the ins and outs of plant abnormalities are most decidedly not. So it's not at all surprising that many people's first encounter with plant fasciation came by way of a viral photograph shot in 2015 just 100 kilometres from the Fukushima Daiichi Nuclear Power Plant in Ōkuma, Japan. Shared by Twitter user [@san\\_kaido](#), the shot of three fasciated daisies spread like herpes across the internet, seeming to validate people's worst post-disaster fears. In its wake surfaced a slew of similar pre-internet photographs from Chernobyl and Three Mile Island. Less hysterical news sources were quick to mention fasciation as a natural occurrence, but the backwaters of the internet rarely let the truth get in the way of a good story.

Fasciations have been documented in trees, shrubs, flowers and cacti from some 107 families (Presland, J., Oliver, J. & Barber, M. (2009). *Abnormalities in Plants*. Wiltshire Botanical Society), and appear to be most commonplace in Cactaceae, Crassulaceae, Euphorbiaceae, Leguminosae, Liliaceae, Onagraceae, Plantaginaceae, Ranunculaceae and Rosaceae. As indicated by the Fukushima daisies, Asteraceae also graces this list. Here in Toronto, at least anecdotally, your best bet for seeing fasciations in the wild comes from dandelions, black-eyed Susan, fleabane daisies, Culver's root and viper's bugloss.

Fasciations are often short-lived affairs, present one year but gone when the plant emerges again the following spring. However, in some cases it is possible for the abnormality to be carried genetically from generation to generation. Shocking to absolutely no one, horticulturists look at a plant's tendency to fasciate as a potential benefit in cultivar development. This has been of particular note with cacti, succulents and ferns, and can often be conveniently identified by way of the cultivar's name, which often ends with some play on the words fasciation or cristata (an alternate term for fasciation). Popular cultivars include *Veronicastrum virginicum* 'Fascination' (Culver's root), *Dryopteris affinis* 'Cristata' (golden male fern) and *Mammillaria elongata* 'Cristata' (ladyfinger cactus).

If you've snapped a pic of a plant fasciation, we'd love to see it! Copies for the TFN Archives can be sent to [photos@torontofieldnaturalists.org](mailto:photos@torontofieldnaturalists.org). Want to share your shot with our community? Why not start a thread on the TFN Community Group on Facebook? <https://www.facebook.com/groups/tfncommunity>

Jason Ramsay-Brown



Fasciated daisies.  
Photo courtesy [@san\\_kaido](#),  
presented under Fair Use



Fasciated ladyfinger cactus  
Photo courtesy Shutterstock



Fasciated black-eyed susan  
Photo courtesy Shutterstock

## EXTRACTS FROM OUTINGS LEADERS' REPORTS

**Trees, Mount Pleasant Cemetery, July 4. Leader: Bob Kortright.** On this first walk after 3½ months' absence due to COVID-19, an enthusiastic group came out to learn about the trees of Toronto's third non-denominational cemetery. Paul Overy explained that the original aim for the arboretum was to contain every tree species that could grow in our climate. Some highlights of our walk were rare native trees like pawpaw, American chestnut, American sycamore, cherry/sweet birch and striped maple, and uncommon aliens such as Korean mountain-ash, persimmon, Nootka cypress, Amur cork, golden chain/waterer's laburnum, paperbark and vine maple, Japanese pagoda, angelica and arborvitae. There is a brochure at [mount pleasant arboretum](#).

**Tommy Thompson Park, July 12. Leader: Martin Chen.** Eight hikers came out on a beautiful summer morning. Highlights were the ponds on the northwest spit covered with lovely water lilies. We also saw Eastern Kingbird, Common Tern, Trumpeter Swans, Queen Anne's lace and butterfly milkweed.

**Toronto Botanical Garden and Wilket Creek, July 22. Leader: Kayoko Smith.** The walk focused on naturalized landscape, human intervention and the revitalization of Wilket Creek. We touched on the history of early settlers, Toronto Botanical Garden and Edwards Gardens. After the rain, the botanical garden was in the glory of summer – so beautiful and refreshing. Photographers flocked to take pictures of a hummingbird. Later, while identifying plants on the trail, we saw an Eastern Kingbird perched in a tree.

**Taylor Massey Creek, July 23. Leader: Linda McCaffrey.** We reviewed the history of the Walter Massey family, centred on what is now Crescent Town. We saw a black empire dragonfly, a turtle and a mallard with four ducklings.

**The Meadoway, Scarborough, July 25. Leaders: Sarah Kotsopoulos and Dane Somgyvary.** This exploration of restored meadow habitat allowed participants to appreciate the midsummer blooms of a variety of wildflowers and

learn about the life history of butterflies. Notable highlights included many monarchs, black swallowtails (both adults and caterpillars) and a newly-introduced species, the European common blue butterfly. We also watched Red-tailed Hawks hunting and American Goldfinches foraging.

**Highland Creek, July 26. Leader: Linda McCaffrey.** On a steamy July afternoon, seven intrepid people assembled in the valley of Highland Creek. This was planned as an accessible walk along the switchback path through the forest to the top of the valley. We were delighted to welcome one person in a wheelchair and share with her the delights of the trail and of the Miller Lash Mansion. Japan was featured. That country is heavily forested by design after a brush with environmental collapse in the 17th century. The mansion is in the Arts and Crafts style – a movement inspired by Japanese architecture. Who knew? We heard, then saw, a Cooper's Hawk circling overhead. I had never heard one crying out before. Lovely white pine in the forest – Ontario's provincial tree.



Young Cooper's Hawk at Col Sam Smith Park, July 30.

Photo: David Creelman

to temper the heat and humidity. As we passed the Environment Centre, we saw Barn and Cliff Swallow nests in their final days of occupation. The abundant Canada thistle seed heads were popular with numerous American Goldfinches. Monarch butterflies are finally showing up in significant numbers. We saw a very agitated Common Raven with several small birds in hot pursuit.

**Colonel Sam Smith Park, July 30. Leader: Charles Bruce-Thompson.** The highlight was a recently-fledged Cooper's Hawk that sat patiently on an overhead branch while we took photos. We also saw a Mourning Dove on the nest, numerous American Goldfinches, Yellow Warblers, Barn, Tree, and Rough-winged Swallows and swirling clouds of midges chimneying above the trees, appreciated by swallows and dragonflies. Botanical highlights were shrubby cinquefoil, water horehound and common arrowhead, all in flower.

**Evening Ramble, Leslie Street Spit, July 28. Leader: Charles Bruce-Thompson.** A cool breeze off the lake helped

## HOW PLANTS DEFEND THEMSELVES FROM HERBIVOROUS PREDATORS

Green plants make their own food for energy and growth but, because they are rooted in place, cannot escape herbivorous animals – birds, mammals, insects and other invertebrates – that are trying to eat them. Instead, they must stand and defend themselves to survive. Over millions of years, plants have evolved a diverse arsenal of physical and chemical weapons, adaptations that help protect them from their herbivorous predators. These interactions between green plants and herbivores form the basis of every food web found in our familiar forest, woodland and wetland ecosystems.

Adaptations that help plants reduce the damage done by herbivores include both *physical defences* (such as sharp thorns) and *chemical defences* (such as bitter-tasting compounds). Many plants employ multiple strategies to protect themselves from herbivores. Some defences are always present and are part of the normal development of the plant; these are *constitutive defences*. Other defences are called into play only when the plant is challenged by herbivore damage; these are *inducible defences*. All defences are costly to the plant, and plants must fine-tune the balance in allocation of their resources between growth, reproduction and defence.

**Physical defences** include spines, thorns and prickles that discourage large herbivores from eating leaves and stems, especially in tropical and subtropical ecosystems. Spine and thorn are general terms for adaptations where individual leaves (as in some cactus spines) or stems (as in hawthorn thorns) are modified to be hard and sharp, effective physical defences against herbivore feeding. In some of our more familiar plants, such as roses, blackberries and raspberries, tissues near the surface of stems and leaves are modified to form sharp prickles that equally discourage grazing.



Hawthorn thorn (above)  
Raspberry prickles (below)



The physical defences of many plants include surface hairs that consist of just one or a few cells. These hairs are adaptations that have multiple functions: reducing water loss, preventing tissue over-heating by reflecting solar energy, and defending the plant from herbivores. The woolly leaves of common mullein are covered with tiny branched stiff hairs that form a physical barrier that makes it hard for insect larvae to move around the leaf and feed and for adults to lay eggs. Some plants such as nettles have highly specialized hairs. Brushing against the plant breaks the tip of the tiny single-celled hairs, transforming them into minute hypodermic needles that inject a mix of irritating chemicals (same as in a bee's sting) into the skin.



Hairs on leaf of common mullein

Physical defences are typically constitutive and don't change once they are formed. Experiments have shown, however, that physical defences can also be inducible. Willows respond to feeding damage by leaf beetles by forming new leaves with many more hairs. Leaves with greater hair density cause the beetle larvae to move around more and feed less, resulting in less damage to photosynthetic tissue overall and greater reproductive success for the willow.

**Chemical defences** include a vast array of chemical compounds. In fact, over 30,000 different kinds of chemicals made by plants have been identified and many of them function as a kind of chemical defence system. Most of these chemicals are stored inside plant cells and are packaged in a way that won't interfere with the cell's metabolism. When a herbivore starts feeding on these tissues, however, the packaging is disrupted and the toxic chemicals are released. Examples of important defence compounds are: alkaloids, phenolics, terpenoids and cardenolides.

**Alkaloids** are bitter-tasting nitrogen-containing compounds that interfere with animal neuro-transmitters. As humans, we are familiar with the effects of the alkaloids caffeine and nicotine. The amounts we ingest are small for our body size, but may be lethal for insect larvae

*continued on next page*

and other small herbivores. Alkaloids are often stored in special cells or compartments within the plant and are released upon mechanical damage. Bloodroot is a conspicuous example. When damaged, the underground rhizomes of bloodroot bleed an orangey red sap rich in the alkaloid sanguinarine which interferes with DNA replication and protein synthesis. Thus it is an effective deterrent to soil herbivores such as nematode worms.



Underground stem

of bloodroot

Phenolics are bitter-tasting, astringent compounds that readily bind to proteins. For example, capsaicin, the alkaloid found in chili peppers, binds to heat receptors in the mouth, giving a burning sensation. Another example, tannins, reduce the digestibility of plant tissues by binding to salivary and digestive enzymes. Tannins also are toxic to the insect gut through the production of reactive oxygen species. Oak leaves, bark and acorns are rich in tannins, and the protein-binding properties of oak



Acorns and leaves of red oak

tannins have been used traditionally in tanning leather. Tannins, like many other chemical defences, can also be inducible. In cottonwoods, the tannin content of leaves increases dramatically after attack by forest tent caterpillars or gypsy moth caterpillars.

Terpenoids are simple hydrocarbons that are often aromatic, such as the essential oils produced by mints, sage, citrus and conifers. Terpenoids are toxic to many insect herbivores and also can act by gumming up insect mouthparts.

Cardenolides are a type of steroid, and are used as defence compounds in twelve or more plant families. The majority of cardenolide-containing plants occur in the milkweed family, the Apocynaceae. Cardenolides are effective deterrents to herbivory because they act to suppress a universal cellular feature, the sodium pump, which is essential for nerve and muscle function.



Cardenolide-containing sap bleeding from common milkweed leaf

Milkweed butterflies such as monarchs have evolved ways to hijack this plant chemical defence for their own benefit, however. Monarch larvae feed preferentially on milkweed, are relatively insensitive to the cardenolide, and are able to store the toxic cardenolides within their own bodies, thus protecting them from predatory birds.



Monarch butterfly caterpillar feeding on milkweed flower

Nancy Dengler  
Photos by Ron Dengler

“BIG FOUR” OF HIGH PARK *continued from page 17*



Little bluestem (*Schizachyrium scoparium*), High Park, Sept. 2015. Photo: Ken Sproule

This yellowish-tan grass, the shortest of the Big Four, grows to 60-90 cm tall. It turns reddish in fall. In dry soil, such as that found in High Park, it forms clumps, but in wetter areas it can develop as sod. Its stems or culms are usually hairy, flattened near the base. This part of the plant becomes bluish in the spring. Little bluestem's leaves are to 25 cm long and 3.8 cm wide. They fold slightly and form a sheath around the stem where it meets the leaf. The flowers group in narrow spikelets to 8 mm long. The spikelets themselves form clusters to 6.3 cm long. The inflorescence on the end of a slender nearly upright side stalk is mixed in with the leaves. The minute flowers lack petals and usually have 3 stamens with 2 styles. Scales, tipped with long white hairy-feathery bristles, enclose each flower. It blooms from August to September. Its seed or grain is purple or yellow and also tipped with a bristle-like awn. The grain becomes white and fuzzy when mature. Some First Nations used little bluestem switches in sweat lodges. They also rubbed dried grass into soft fibres to line moccasins.

*Little bluestem is one of the best grasses for nesting and roosting habitat. The clump type of growth habit and many fine leaves at the base provide excellent nesting sites. The seeds are consumed by small mammals and birds, including upland game birds, rosy finches and juncos, as well as chipping, field and tree sparrows. The seeds are of high value especially as a food source for birds that spend the winter on grasslands, such as prairie chickens and sharp-tailed grouse. Meadowlarks nest in areas where little bluestem grows. The dusky skipper butterfly caterpillars overwinter in tube tents above the base of the clumps.*

***Sorghastrum nutans*** I find “The Big Four” easiest to identify in late summer and late fall. Look for Indian grass (also known as yellow Indian grass) and recognize it by its coppery silky panicle (a loose branching cluster

of flowers). Its scientific name *Sorghastrum* is from Greek for “poor imitation of sorghum”; *nutans* is Latin for “nodding.” As to the common name, “*North America's native peoples wove Indian grass into baskets and mats and dyed and threaded it with beads, bark and quills for ornament.*” (Catherine Macleod, “Native Plants to Know: Indian Grass,” *The Blazing Star*, Fall 2003, Vol. 4, Issue 4, p. 12)



Indian grass (*Sorghastrum nutans*), Crothers Woods, Sept. 2015. Photo: Ken Sproule

Indian grass can be found from Manitoba to Quebec in prairies, oak savannah and in dry fields. A bunch grass, it can sometimes be found as a lone stem all by itself surrounded by other grasses, especially big bluestem, and wildflowers. It grows to 90 to 240 cm – taller than the average pro basketball player. The blades of the leaves, 60 cm long and 1.3 cm wide, stick out at a 45-degree angle from the stem. Each leaf has a pair of tooth-like, erect, pointed narrow lobes (ligules) where the leaf blade meets stem. The ligules are usually reddish to yellowish in colour. It blooms from August to September. The tiny flowers have three stamens with projecting yellow anthers and two styles. The scales around the flower have a twisted awn up to 8 mm long. The spikelets (the typical arrangement where a grass has more than one flower) are in a narrow cluster up to 25 cm long. The grain is hairy with a long, twisted awn. It is very nutritious for and is relished by livestock.

*Indian grass is characteristic of the tall-grass prairie of the central United States and southernmost Manitoba. In the Great Plains it is considered a useful range forage grass and several cultivars have now been made available for seeding. In Ontario, in contrast, the plant appears to be unproductive and, like the *Andropogon* species and other prairie plants with which it is often associated, is in danger of extinction.* (William G. Dore and J. McNeil, *Grasses of Ontario*, Agriculture Canada, Monograph #26, 1980, p. 511).

*continued on next page*

Small mammals, such as mice and birds, eat the seeds and use the stems and leaves for nesting material and cover. Indian grass is the host for the pepper-and-salt skipper butterfly larva. Several types of grasshoppers, leafhoppers and planthoppers eat the leaves.

*Sorghastrum nutans* is not related to another plant with the same common name (*Vetiveria zizanioides*, a Eurasian native with antibiotic properties) that is the subject of much current research.

Please check out this grass whose “panicles painted in colours of autumn are too striking to be ignored, although they are ‘nothing but grass.’” (Mary Evans Francis, *The Book of Grasses*, 1912, p. 56)

***Panicum virgatum*** *Panicum* refers to an edible grain known to Europeans – “millet.” If *Panicum* reminds you of the French word for bread *pain* or a kitchen pan, you are on the right track. It literally means “anything baked.” All species of *Panicum* have round or oval flower clusters and tiny round seeds or grains, some edible, some not-so-much. Grasses were used in sweat lodges as switches to gently strike the back during prayer and the second part of its scientific name refers to similar uses since *virgatum* means “striped” or “made with sticks” or “wand-like” and we call it switch grass, yellow switch grass, wand grass or wand panic grass.



Switch grass (*Panicum virgatum*), Crothers Woods, Oct. 2013. Photo: Ken Sproule

I have seen switch grass in moist prairies, such as Ojibway Prairie in Windsor, Ontario, and on oak savannahs, open

ground and by roadsides. More and more landscapers are planting it as an ornamental grass. Switch grass spreads by numerous rhizomes that form into a thick, dense patch of clones. However, it is usually patchy on well-drained range sites like oak savannahs.

Like big bluestem and Indian grass, switch grass grows taller than the average NBA player. In the case of this bunch grass, it can reach 2.1 m. Switch grass leaves grow from 10 to 60 cm long. Leaves are usually smooth but often have an area of dense hairs on the upper surface near where they unite with the stem. Switch grass flowers are minute, with three stamens (hard to see except with a hand lens) and two styles. Each feathery little purple flower sways in the wind on its own delicate stem; many such flowers and stems branch out from the main stem to form a loose open panicle 5-50 cms long. The colour of the panicle ranges from purplish to reddish to coppery to yellow to gold.

In winter, the tannish-gold clumps of switch grass can be seen in High Park. It blooms in August and produces the hard grain that reminded botanists of millet. Cattle will feed avidly on Switch grass when it is young and tender, but not later. Deer are known to paw up and eat the rhizomes in winter when other food is scarce. Birds eat the seeds and use switch grass, like the others of the Big Four, for cover and nesting material. Since time immemorial hunters have planted switch grass to attract game such as white-tailed deer. It is a larval host for the Delaware and Hobomok skippers.

Indigenous peoples used some species of *Panicum* externally for rheumatism, internally for sore throats, coughs and fevers. They also ate a variety of grass seeds, besides wild rice and maize, grinding them and eating them in a porridge. To learn more about the plants Indigenous peoples have traditionally eaten, this book can be downloaded free at [http://www.hscdsb.on.ca/wp-content/uploads/2017/03/plantfoods\\_indigenous.pdf](http://www.hscdsb.on.ca/wp-content/uploads/2017/03/plantfoods_indigenous.pdf)

Farmers now plant switch grass to produce biofuel. See [https://www.agrireseau.net/documents/Document\\_93992.pdf](https://www.agrireseau.net/documents/Document_93992.pdf)

I hope to lead a walk and introduce you in person to friends – the Big Four of High Park.

Joanne Doucette

### Suggested reading:

Brown, Lauren. *Grasses: An Identification Guide*, New York: Houghton Mifflin, 1979. Paperback, 1992  
Dore, William G and J McNeil, *Grasses of Ontario*, Agriculture Canada, Monograph #26, 1980

## WEATHER (THIS TIME LAST YEAR)

### September 2019

September was another pleasant month, just slightly warmer than normal and fairly dry. Early September was cool, but warm weather prevailed after the 10th. There was record warmth over parts of the southern and eastern USA, but conditions were not extreme around Toronto. The monthly mean temperatures of 18.0° downtown and 17.6° at Pearson Airport were just 0.1° and 0.6° above normal. The monthly minimum temperature of 10.4° downtown (on the 9th and 29th) and 8.6° at Pearson Airport (on the 9th) were the highest on record. The hottest day was the 22nd with a high of 31.3° at Pearson. This fell well short of the hot spell in late September 2017.

The most notable weather feature this month was the period of tranquil, warm weather from the 13th-25th when calm winds and temperatures in the mid- to upper-twenties prevailed. Virtually no rain fell from the 16th-25th. A thunderstorm overnight on the 10th-11th brought the only rainfall over 10 mm. Rainfall totals for the month were

35.6 mm downtown and 46.4 mm at Pearson, slightly over half the normal monthly total.

If one counts the main growing season as being from May to September, Toronto had almost exactly normal conditions, with early wetness being offset by late dryness, and sporadic heat in July and mid- to late September.

The period October 2018 to September 2019 was the coolest 12-month period for Toronto since November 2014 to October 2015. The 12-month average temperature for the period ending September 30, 2019 was 8.1° at Pearson and 8.9° downtown. These values are slightly below the 30-year annual average (1990-2019) but slightly above the late 20th century average (1971-2000). In other words, we have finally cooled off from the 2015-2016 El Niño peak but haven't overturned the long-term warming trend.

Gavin Miller

## ABOUT TFN

TFN is a charitable, non-profit organization.

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### NEWSLETTER

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**Submissions deadline for Oct. issue: Sept. 1**

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See email addresses for specific queries at: <https://torontofieldnaturalists.org/about-tfn/contact-us/>

Address: 2 – 2449 Yonge St, Toronto M4P 2E7. The office is normally open 9:30 am to noon on Fridays.

**Note:** If you wish to drop by on Friday, please phone first to ensure that someone will be there.

## KEEPING IN TOUCH

### An Infestation!

A few weeks ago a neighbour found a huge infestation of caterpillars on his pussy willow tree. Based on the blue and red dots along their spines, we identified them as gypsy moths. I had been wondering about tiny black



beautifully shaped objects covering my deck. Turns out they were frass (poop) from the caterpillars. I had read that one could hear the sound like raindrops from the trees being attacked. Sure enough, the sound I heard was not the chewing but frass as it fell through the leaves.

We were alarmed to see how destructive these caterpillars can be. A friend showed me a photo of an oak tree that had been totally stripped in 48 hours and has little chance of surviving. I banded my trees with sticky tape and squashed any caterpillars on their way up or down – an unpleasant task! Later I found about six pupae which look like fox scat, black and rather ugly.



Later we were inundated with up to 50 male moths daily, darting around the garden frantically searching for the larger white females that cannot fly. They lay clusters of as many as 300 orange eggs.

Anne Leon

### Escargot!

Theresa Moore's friend June D'Souza submitted this astonishing photo of a gray squirrel apparently considering eating a snail. Have any members seen this behaviour?



### Exciting sightings!

These photos were taken during a walk in Colonel Sam Smith Park on June 25th.



The snapping turtle was at the water's edge at the main pond. As I approached, it crawled away and did a 'double back-flip' into the water.

Along the trail across from the still empty marina (ah the COVID impacts!), I was attempting to get a good shot of a Willow Flycatcher when a woman wildly motioned me over to some shrubby



vegetation. These Barn Swallow chicks were all lined up waiting to be fed by their parents that flew in and out. Here's one chick anxiously awaiting delivery!

Margaret Kelch

### A Welcome Visitor

During the summer I heard children outside my front fence talking about a snake. Staying six feet apart, I looked to see a garter snake well over a metre long and as thick as my wrist. It became a focal point for the neighbourhood over the next few days and I met several new people.

Despite childhood fears in Ghana in 1947, I became very fond of the snake and went out daily to say Hello. It was amazing how well it blended with the evergreen bush,



whether it was under it or on it. Once, it was right at my feet within five centimetres of the sidewalk. I felt a sense of loss when, after five days, it was gone. But it left me with new friendships in my neighbourhood.

Anne Leon

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**Publications Mail**  
Registration No. 40049590

## TFN LECTURE

Sunday, September 13, 2:30 pm

**See page 3 for announcement about lectures via Zoom**

The Redside Dace – a fish in peril



Redside dace. Photo: W. Roston

*Erling Holm, Assistant Curator of Ichthyology in the Department of Natural History, Royal Ontario Museum, will discuss the biology and habitat of endangered redside dace, the threats it faces, and actions being taken to reverse the declining population.*

### Upcoming lectures:

- Oct 4 Dog-strangling Vine, Stuart Livingstone, University of Toronto
- Nov 1 Salamander-eating Pitcher Plants, Patrick Moldowan, University of Toronto
- Dec 6 Rethinking Beauty: Inspiring Gardeners in a Changing World, Paul Zammit, Niagara College