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# LANDSCRIPT

PROTECTING the WILDERNESS of our UNIQUE ARCHIPELAGO

## Improving the Outcomes of Climate Change

*How Conservation Planning aids Environmental Resiliency*



Moose: Knee-  
deep in Trouble

Who were the First  
Inhabitants of Georgian Bay?

Where Snakes  
Give Birth



# Science-Based Conservation Planning:

## *Improving the Outcomes of Climate Change*

by Bill Lougheed, Executive Director, GBLT



*The Georgian Bay area is a mosaic of land, water, and wetland habitats. Preserving interconnectivity between these habitats is essential for climate change resilience. Photo by Nate Stapulionis.*

As the world prepares to feel the increasing effects of a changing climate, conservation and land management are emerging as key components of climate change mitigation and adaptation strategies. Environmental protection has a crucial role to play in slowing the onset of climate change, and as it is now inevitable that changes will occur, we must also think about the stresses that our plants, animals, and ecosystems will be subject to in the coming years.

Many species are likely to face significant challenges, and survival may depend on the ability to adapt or migrate. Ecosystem composition is likely to shift. Conservation organizations have an important role to play in ensuring that we are giving our environment the best possible chance at adapting successfully to these changing conditions. From local protection and stewardship of critical habitats to regional planning for species health and habitat connectivity, there is much that we can and should be doing to actively prepare for and buffer some of the effects of climate change.

At the International Land Conservation Network and the Land Trust Alliance (USA) meetings in Minneapolis, Georgian Bay Land Trust staff participated in full-day workshops which addressed conservation planning in the context of climate change. These sessions featured scientists from around the globe and focused on developing conservation strategies to help regional and large-landscape ecosystems cope with and/or adapt to climate change. Below are some of the actions that we

can take using science-based conservation planning to improve the outcomes of climate change in Georgian Bay.

### **Identify and Protect Critical Habitats**

Critical habitats are those that are essential to the conservation of species at risk. It is known that conservation of large tracts of critical habitat and providing connectivity between these areas increases survival rates of threatened species. By identifying the highest priority habitats for protection and working to save these areas, the GBLT can have a significant impact on the resiliency of threatened species and ecosystems.

### ***Prioritize habitats for conservation***

Land Trusts use conservation planning to strategically locate, protect, and maintain areas that promote the persistence of biodiversity and other natural values. The GBLT makes use of our Natural Area Conservation Plan (NACP) to evaluate and prioritize habitats for conservation throughout eastern Georgian Bay and the North Channel. We will be updating the NACP to include species corridors and natural linkages so as to better inform our efforts, and the conservation efforts of others, in response to climate change.

Our conservation planning considers many factors including:

- Mapping and ranking of important species
- Species habitat preferences: forest specialists, wetland specialists, and generalists
- Species dispersal abilities: short (<1km), medium (<10km), and long (<100km)

- Assessment of the most important protected areas for connectivity and transboundary links
- Fragmentation and anthropogenic/natural barriers to species movement
- Connectivity and biodiversity ranking of inland wetlands and coastal wetlands
- Natural corridors including natural physical features as they improve or restrict connectivity
- Forest types and vegetation communities
- Critical habitats for our 45+ species at risk

***Maintain and steward forested riparian habitat, critically important in the face of climate change***

Riparian ecotones are habitats within a stream or river corridor whose vegetation communities and forest cover (near the stream bank) commonly differ from the surrounding upland habitat. Riparian vegetation helps stabilize stream banks in the event of climate change-induced floods. Riparian areas provide natural linkages between different habitats and provide critically important migration corridors for aquatic and terrestrial wildlife. We know that keeping such areas intact reduces stream and river evaporation, and that failing to do so can have devastating effects on species survival during periods of drought.

***Provide species relief from heat stress***

Temperature extremes close to Georgian Bay proper are moderated by lake effect, and species will benefit from shoreline refuges from the heat. Protection of sufficient expanses of coastal habitats is a means to improve ongoing species survival.

**Reduce Habitat Fragmentation**

Studies have shown that large, intact habitats are likely to be more resilient to the effects of climate change than smaller habitat pockets. Conservation planning that designates large-scale protected areas and works to prevent fragmentation of features such as rivers can play a very important role in promoting ecosystem resiliency.

***Assist forest resilience through large-scale protection***

Recent studies demonstrate that tree growth near a forest's edge declines three times faster than that in the interior in response to heat stress during the growing season. These studies suggest that we can assist forest resilience by maintaining forest sizes above threshold limits. Thinned forests are also more susceptible to wind damage, and large, un-fragmented forests will be better able to withstand these negative effects of climate change. Additionally, interiors of larger forests and areas with dense canopy, such as hemlock forests, will provide cooler refuges for species to escape heat stress. We are fortunate on Georgian Bay to have several tree species with moderate to good drought tolerance, and whose geographical zones extend far to the south of us. These species have a better likelihood of surviving in warming conditions, especially when protected by a large forest system.

***Reduce stream and river fragmentation***

Predicted changes in temperature and seasonal timing of precipitation will result in various physical disturbances such



*Protecting riparian zones and maintaining unfragmented river systems is of immense benefit to the species that call our lakes and rivers home. This waterfall is found at the GBLT's Blackstone Lake Reserve*



*At-risk migratory birds like this Prairie Warbler depend upon protected habitats throughout their migratory range. Photo by Jim Poole*

as wildfire, channel drying, or increased debris flow. These disturbances can affect species populations in streams and rivers. Studies show that human caused fragmentation of river systems substantially reduces the presence of at risk species, and populations in short stream fragments are at higher risk of extirpation. By identifying key river systems in need of large-scale protection we can help to lessen the impacts of roads, dams, and other disturbances on our environment.

**Prioritize Habitat Connectivity**

As our climate changes, the ability of plants and animals to move between neighbouring habitats may be crucial to their survival. It is expected that many species will need to migrate into new areas as environmental conditions shift, but man-made barriers such as roads and subdivisions can impede or prevent movement for a number of species. Ensuring that barrier-free habitat corridors are preserved is a critically important conservation action in the face of climate change.

***Maintain access to coastal and inland wetlands***

Georgian Bay and its proximal inland watershed are home to the richest biodiversity of reptiles and amphibians in Canada.

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# Knee-Deep in Trouble:

## *The Decline of Ontario's Moose Population*

by Donald M. Fraser, Go Home Bay



*Moose in Algonquin Park by Ryan Hodnett*

Although they are found along the entire coast of Georgian Bay and range across “cottage country”, moose are rarely observed in our area. However, if you venture well inland and park yourself inconspicuously beside a flooded beaver pond, you might be rewarded with a view of this majestic and mysterious animal, standing quietly up to its knees in water, munching slowly on aquatic vegetation. If you have indeed been fortunate enough to witness this spectacle, cherish the memory—because you may not see it again.

The moose is regarded as one of the most iconic symbols of the Canadian wilderness. A denizen of northern forests and inland bogs and swamps, it needs cooler climates to thrive. But a number of factors, most tied to climate warming, threaten to jeopardize the moose population across much of North America, including Ontario. And in an ironic twist, it is a tiny insect, no bigger around than a small shirt button, that is threatening to take down this mighty creature.

In the early 1980s Ontario's moose population was estimated to be more than 80,000 individuals, peaking at about 115,000 in the early 2000s. But since then the provincial population has declined to an estimated 92,300 moose. That may not sound like much, but statistically it represents a 20 percent decline in only seven years, and in some regions of northern Ontario this decrease is in the range of 50 to 60 percent! What is even more alarming is that the primary causes responsible for this decline—warmer summers, harsher winters, disease,

predation, and habitat change—are all on the rise. To compound the situation even further, the moose is a highly valued game species and hunter demand throughout its range remains high.

To better understand the complex interrelationship between and among these varied factors, it is helpful to examine each individually.

Like many environmental crises, climate warming appears to be the root cause of the moose's problems. Rising temperatures and unpredictable fluctuations in precipitation can adversely affect moose in a number of ways. With its long legs and thick fur the moose is well adapted to deep snow and harsh cold. But when winter or summer temperatures rise above a certain threshold, as is the current trend, they become stressed. When exposed to long bouts of high temperatures, moose feed less frequently, reducing the vital fat reserves they require to survive the winter.

If warmer temperatures persist into the fall, thereby delaying the onset of winter, moose may delay breeding, which can result in the production of fewer offspring. One positive consequence of warmer temperatures and reduced precipitation in summer is that these conditions increase the frequency of forest fires. Fires are beneficial to moose, since they promote forest regeneration and produce new growth which provides a highly nutritional food source. However, the moose population that inhabits “cottage country” now rarely

benefit from fires, since they are quickly suppressed to prevent threats to human life and damage to private property.

As if the direct effects of climate warming haven't had enough of an impact, increasing temperatures have recently made moose more susceptible to infestations by a couple of tiny, but insidious, parasites—winter tick and brain worm.

The winter tick is a mite that mostly attacks moose, although elk and white-tailed deer are also primary hosts of this parasite. As many as 83,000 winter ticks have been found on a single moose, although the average is closer to 4,000. Winter tick is a natural phenomenon that has existed for generations, so why is it suddenly a concern? Once again, the answer is directly related to climate change. Shorter winters mean that there is a greater likelihood that tick larvae will survive long enough to grab onto a moose host. And by April, when the then-adults finally detach themselves, they are less likely to fall onto snow and perish.

In years with significant winter tick infestations, moose can be severely affected. Visible signs appear towards the end of winter (February and March) and manifest themselves as moderate to severe hair loss, weight loss, the appearance of skin lesions, and loss of blood. In an attempt to stop the severe itching caused by the tick bites, moose begin to groom themselves excessively. Infected moose often stop eating and may appear lost or confused, often wandering outside their natural habitat and becoming less fearful of humans. The cumulative effects of these factors can make moose more vulnerable to predators, poaching/hunting, and collisions with vehicles. In some cases, severely affected animals may die outright from tick infestations, particularly the more vulnerable young. Infected moose are especially susceptible during March and April, when food supplies dwindle and the potential for spring hypothermia rises.

Unlike black-legged ticks (commonly known as “deer ticks”), which can transmit the bacteria responsible for Lyme disease to humans, the winter tick does not carry any diseases that can be transmitted to humans. In addition, meat from infested moose or deer is fit for human consumption.

Brain worm is a roundworm common throughout eastern North America. While feeding on vegetation, animals such as deer and moose become infected when they accidentally eat snails or slugs infected with brain worm larvae.

White-tailed deer are the typical hosts of brain worm; however, they are largely unaffected. In moose, on the other hand, brain worm infections are usually fatal. Signs of brain worm infections in moose include an inability to stand up, weakness, stumbling, walking in circles, and generally disoriented behaviour.

Unlike winter tick, recent studies indicate that the brain worm does not kill many moose directly but predisposes them to other types of mortality, including susceptibility to starvation and hypothermia, and greater predation by wolves.

In the face of all these complex and intricately linked threats, it is clear that the moose faces an uncertain, if not ultimately

doomed, future in Ontario and elsewhere. If there is any good news at all it lies in the fact that, unlike many other species exhibiting significant declines in Ontario, the moose is a highly valued game species and an integral element of First Nations culture. Accordingly, the Ontario Ministry of Natural Resources and Forestry (OMNRF) is devoting considerable effort to tracking the plight of the moose, exploring ways to reduce the pressures on this noble animal, and taking action to sustain and grow its population.

Recently implemented short-term initiatives have included shortening the hunting season in Northern Ontario and delaying its commencement by one week. Admittedly, these measures may not appear to be more than token efforts, resulting in little tangible effect on moose numbers. More importantly, however, OMNRF has been closely monitoring moose population trends for decades and research has focused on evaluating the full range of environmental factors discussed above and their long-term effects on moose.

I am not, by nature, a pessimist. But as an ecologist who has spent the past 40 years studying changes in Ontario's wildlife populations, I am struggling to find a way to end this article on an upbeat, positive, “the news isn't all bad” note. I am a realist, and if recent history with other Ontario species-at-risk is any indication, the prognosis for the moose is not a particularly good one. In the past several decades alone we have witnessed statistically significant declines among myriad species of native flora and fauna, many of which were once a common sight in Georgian Bay. These include freshwater clams, the whip-poor-will, all our bat species, and many insect- and fish-eating birds to name just a few. The reasons for these declines vary greatly: from habitat loss to changing agricultural practices, from the introduction of natural pathogens to competition from invasive species. But alarmingly, in the case of the moose, so many of the threats it faces are linked to climate change, the effects of which are very unlikely to be reversed. Although I do not believe that the moose is at imminent risk of extinction or extirpation from Ontario, its numbers in the eastern Georgian Bay area are likely to continue to dwindle. So if you haven't yet been lucky enough to see one in the wild, here's my suggestion—take your kids or your grandkids and go in search of one. And do it soon.

*Donald Fraser is a retired wildlife ecologist who has a summer cottage in Go Home Bay.*



*Mike Lockhart*



# Snake Surveys on West Lookout Island a Smashing Success

by Monique Aarts, Conservation Biologist, Blazing Star Environmental



*Monique holding an adult female Blanding's turtle found on West Lookout Reserve.*

It was a late-May morning when John Urquhart and I arrived at Payne Marine in Pointe au Baril where we would meet Scott Sheard, an active volunteer with the Georgian Bay Land Trust. Scott had eagerly agreed to ferry us to West Lookout Reserve to conduct a snake survey for research that Blazing Star Environmental has been conducting. After a 15-minute boat ride and some skilled maneuvering around shallow shorelines we arrived at the island.

At 10:40 we began to search when John soon found what we were looking for. There were not one, but six Northern Watersnakes all basking in the same small area. They were situated near a crack in the rock which they had likely just slithered out of to catch the morning sun. After making some notes, we continued to search. Scott soon found another Watersnake and I found another two. The most exciting observation of the day was a juvenile Eastern Foxsnake in junipers curled around its soon to be meal, a baby bird! The total snake tally for the day was: one Eastern Foxsnake, one Milksnake, 12 Northern Watersnakes and two Eastern Gartersnakes. Did I mention the area surveyed was only one hectare in size?

It wasn't just a good day for snakes; we also found two female Blanding's Turtles and a big male Snapping Turtle. One of the Blanding's Turtles was basking on the island desperately trying to warm up to help incubate her eggs. This was undoubtedly the most reptile species observed in a single survey I had conducted so far. It is obvious that West Lookout Reserve provides some exceptional habitat for local reptile populations. After this surreal morning, we had lunch on the boat before heading back to the mainland.

The data collected during surveys like these will be analyzed to calculate the detection probability of Eastern Foxsnakes,

Massasaugas, and other snakes in Ontario using the standard methods recommended by the Ontario Ministry of Natural Resources and Forestry. The data crunching will allow us to estimate the number of surveys required to be 95% sure that a snake species is absent from a specific site. This will ensure enough survey effort has been made before any site is developed in Ontario. By conducting the calculated number of surveys, snake populations will be protected from habitat destruction.

Our team was fortunate to return to West Lookout Reserve three more times over the summer. The next few surveys were just as fruitful as the first. A gaggle of Northern Watersnakes were found during every trip back. Another Milksnake and a one-eyed Blanding's Turtle were also found on return visits. Special thanks to the Georgian Bay Land Trust for allowing us to survey the island and to Emma Berton and Lauren Solecki of the Marine Patrol for the boat rides and survey assistance over the summer!



*A northern watersnake emerging from the crack where six watersnakes were observed.*



*The one-eyed Blanding's turtle observed on a return visit to the island.*

# ? Georgian Bay QUERY:

## Who were the first people to live in the Georgian Bay area?

Information for this article is taken from Martin Cooper, Peter Storck, and Ron Williamson's contributions to the Georgian Bay Land Trust's newest book, *Georgian Bay: Discovering A Unique North American Ecosystem*, available at [gbt.org/book](http://gbt.org/book).

The earliest known human habitation in this part of the world actually predates the creation of Georgian Bay as we know it by many thousands of years.

Early Paleo-Indians (distant descendants of northeast Asian peoples who migrated across the Bering land bridge and into North America at the end of the last ice age) are believed to have moved into present-day Southern Ontario shortly after 11,000 years ago, following the retreat of the ice sheet. At that time, what is now Georgian Bay was part of the larger glacial Lake Algonquin, which covered both Manitoulin Island and the Bruce Peninsula, and stretched as far east as modern Lake Nipissing in the north, and Lake Simcoe in the south, with large embayments near Alliston and in the lowlands of what is now the Holland Marsh. Several archaeological sites have been found along the shoreline of this ancient lake, in the area between Collingwood and Alliston, including one of the largest Paleo-Indian sites in North America. Evidence from these sites indicates that caribou was hunted and hare and arctic fox trapped for their furs. Paleoenvironmental data (largely fossil pollen from lake sediments) suggest that vegetation was a spruce-parkland, probably much like the tundra-boreal forest transition today. The early Paleo-Indian toolkit was based largely on a white-coloured chert that occurs in a bedrock formation south of Collingwood known as Fossil Hill.

As the ice sheets continued to retreat, drainage systems changed and the next several thousand years were characterized by dramatically shifting lake levels. For much of this time, the "Great Lakes" were significantly smaller than their current size, and there are indications that extensive human activity took place around the margins (now underwater) of these much smaller lakes. This is also the time that the first archaeological evidence of settlement in northern Georgian Bay emerges, both in the La Cloche Mountains and on eastern Manitoulin Island. Unfortunately, there is no evidence as to what Late Paleo-Indians in this region hunted since no animal bone or plant material has been found. Early Archaic peoples, who occupied the region following the late Paleo-Indian occupation, probably relied on deer as well as fish. Archaeological evidence from this period is scarce, as habitation sites occurring on current lake beds would be difficult to investigate by archaeologists or washed away. Anishnaabeg oral history mentions a time of fluctuating lake levels and speaks of a land bridge between the Bruce Peninsula and Manitoulin Island.

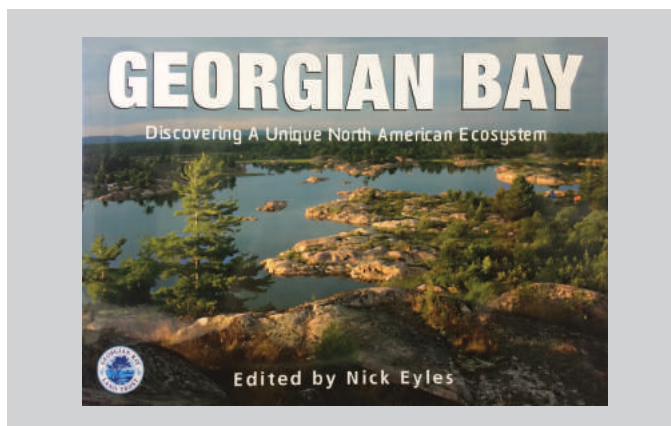
Around 4,500 years ago environmental conditions shifted yet again, and the Great Lakes began to take on the forms that are recognizable to us today. Hardwood forests developed

around southern Georgian Bay, with boreal forests and a mixed transition area to the north. The area's inhabitants adapted themselves to these new environments, with Shield Archaic people established in the north, and Laurentian Archaic in the south and west. They trapped and hunted deer, porcupine, beaver, and hare, and there is evidence near Collingwood of seasonal fishing for whitefish, catfish, sucker, and drum. Interaction between groups also increased during this period, creating a complex social landscape that laid the foundation for emerging cultural and political developments.

By 2,500 years ago, cultural and economic ties connected people across large areas of southeastern Canada and the eastern United States. Relatively distant groups came together for shared burial ceremonies, in which valuable materials from remote places were included in gravesites. Groups also produced specialized trade goods for wide distribution. A large cache of these has been found at what's known as the Baxter Site, an approximately 2,000 year old late summer/fall camp near the mouth of the Severn River. This is also the time that ceramic cooking and storage vessels made their way to Ontario from the southeastern United States, indicating a shift in diet towards more cooked plants.

The transition away from hunting and gathering and towards maize farming as a main source of nutrition ushered in sweeping lifestyle changes for much of the population. Settlement layout, trade relations, and family structure all underwent a transformation as communities reorganized themselves around a farming lifestyle. These changes were taking place in southern Ontario around 1,000 years ago, and in the southern Georgian Bay area by the late 13th century. In northern Georgian Bay, where the soil was poor, hunting continued to dominate and goods were traded with the southern agriculturalists.

Many of the First Nations who continue to inhabit the Georgian Bay region share this vibrant history. More information about the most recent millennium of indigenous history on Georgian Bay, both pre- and post-colonization, can be found in *Georgian Bay: Discovering A Unique North American Ecosystem*.





# Tracking Migratory Birds in Eastern Georgian Bay

By Brooks Greer, Land Protection Program Manager, GBLT

This past spring, the Georgian Bay Land Trust joined a fast-growing scientific research network for which our widely spaced coastal holdings are perfectly suited and situated.

The Motus Wildlife Tracking System is a collaborative and coordinated hemispheric system for tracking migratory animals, and is arguably the world's most ambitious wildlife tracking initiative. Its purpose is to facilitate landscape-scale research, and to provide education on the ecology and conservation of migratory animals.

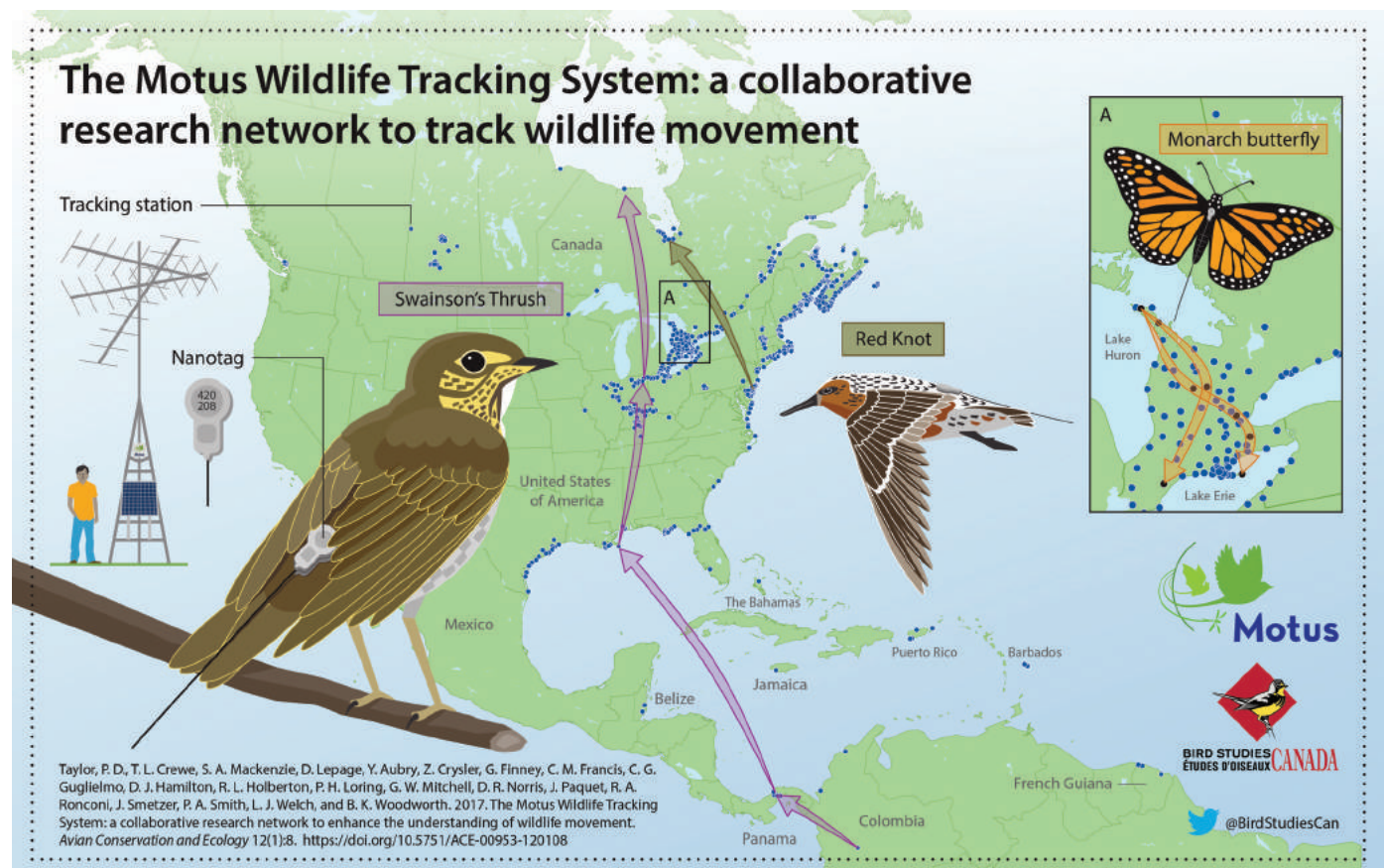
The Motus program belongs to Bird Studies Canada (BSC), in partnership with Acadia University and collaborating researchers and organizations such as the GBLT.

At the time of writing, the system currently comprises more than 350 automated receiving stations operating in 17 countries, and more than 150 research and conservation projects have tracked more than 10,000 animals of well over 100 species (approximately 100 bird, 10 bat, and 2 insect species). The work to date has culminated in more than 30 publications and 100 popular news stories, which are summarized on the Motus website ([motus.org](http://motus.org)).

The populations of many bird species and guilds (related bird “families”) are on a steep decline. The direct causes are largely unknown, but migratory animals are up against climate change and the attendant violent storms during their migrations; critical food availability that is no longer coinciding with spring travel and actual nesting; and the negative effects of mass agriculture and pesticide use. Motus is developing a database and brand new knowledge about animal behaviour that will help to inform habitat conservation in the entire Western Hemisphere in the years to come.

The Motus project is providing critical new details about the movement ecology of migratory species and the connectivity between breeding, migratory, and wintering habitats. This information is vital to conservation efforts of species across their ranges, and will identify priority habitats for protection.

Motus collects data showing the movements of selected priority animal species by means of electronic transmitting tags. The tags' signals are picked up by strategically located receiving stations (towers, in our case) ranged over North and South America, all the way from Uruguay to the Canadian







*Endangered Kirtland's Warblers are among the birds being tracked by Motus.  
Photo by Doug Greenberg*

high Arctic. Each tag has a unique signal which identifies the individual specimen; this identification can be linked to information collected at its capture such as when and where it was tagged, species, gender, and body condition. The “array” of receiving stations is expanding quickly as the program develops momentum with partners and conservation organizations.

The GBLT is uniquely positioned to fill a large hole in the Motus coverage area; until we installed receiving towers this spring there were none on eastern Georgian Bay. Since when given the choice birds prefer to fly over land than over water, the massive Georgian Bay coast may provide some interesting and concentrated “hits” at the tower locations. Integrating Georgian Bay results with information being gathered by other adjacent regional towers will add greatly to the overall database, and to the further understanding of bird movements and seasonal habitat requirements.

Some of the species being tracked in southern Ontario and the Georgian Bay area are the endangered Kirtland's Warbler, Gray-Cheeked and Swainson's Thrushes, Barn and Cliff Swallows and Common Nighthawks, and also a signature Georgian Bay bird whose beautiful call we all know, the White-throated Sparrow. Many species of shorebirds are also being tracked from the Canadian Arctic and eastern seaboard. Tagging for species that are likely to be detected in Georgian Bay is carried out at strategic locations in the province including James Bay, the Bruce Peninsula, and Long Point on Lake Erie.

The eastern Georgian Bay area was identified as a glaring gap in the overall Motus receiving tower array. The GBLT has since installed two receiving stations, one on the Port Severn Wetlands property and the other on Brébeuf Island off the west side of Beausoleil. Next up is a third at the northern tip of Giant's Tomb Island. Together the three stations will create a “fence” capturing the signals of any tagged birds moving through this large segment of coastal southern Georgian Bay, and the towers will receive signals from a generous inland area as well. Our GBLT Motus towers are each equipped with three positioned antennae that can receive from a radius of 15 kilometres.

As funding permits, we will be making strategically-positioned GBLT properties available for further Motus receiving stations. A tower installation can cost between \$5,000 to \$7,000, depending on its configuration, and individual bird tags cost over \$200 and will typically last and transmit a signal for about a year. The straps attaching the tags to the specimens are intentionally thin, and eventually deteriorate and fall off.

The broader Motus project also includes tagging and tracking of butterflies, dragonflies, and bats to better understand their migration patterns and the threats they face. A Georgian Bay favourite, the Monarch Butterfly is now a Motus-tracked species; specimens of their “migrant generation” are netted and tagged late in the season prior to their departure for Mexico.

We are excited about our involvement with the Motus project, and it is a natural fit for the GBLT. Protected properties contributing to scientific research and helping to conserve bird, bat, and insect species makes perfect sense, and is something we should all be proud of.

*With thanks to Stuart Mackenzie, Migration Program Manager,  
Bird Studies Canada*



*Motus Wildlife Tracking Station installed at the  
GBLT's Port Severn Wetlands property*

# Three New Protected Properties

By Brooks Greer, Land Protection Program Manager, GBLT

## Portage Island Reserve, Cognashene

Portage Island Reserve is a beautiful steep-sided five acre property located in north-central Cognashene.

The property is located directly adjacent to a section of Georgian Bay Islands National Park, a park that is spread out in several portions over the southern reaches of the Bay. The large 7,500 acre Cognashene Lake Conservation Reserve's southern boundary is less than a kilometre to the north of the property, lying just beyond the cottage lots on the north side of Freddy Channel. Together, this makes up a large protected area containing every local representative vegetation community type and species, and so protects habitat for all local species. The Portage Island property adds a further measure of connectivity to a large and crucial protected area.

Portage Island Reserve includes a variety of important habitats, including a generous and high quality coastal meadow marsh shoreline, open rock barrens, shrubbed rock barrens, and



mixed forest communities. A staff visit to the property yielded sightings of several Northern Map Turtles, a very wary—and listed at risk—turtle species that inhabits open water shoreline.

We would like to thank Rob and Val Thompson for their wonderful gift to the GBLT and to Georgian Bay at large.

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## McGregor Bay - La Cloche Mountains Reserve, Killarney

Located on the north side of the Blue Ridge peninsula dividing Baie Fine on the south from McGregor Bay on the north, the McGregor Bay - La Cloche Mountains property is nine acres spread over three mainland lots and a small island just offshore. The beautiful 485 square kilometre Killarney Provincial Park lies at the eastern, inland end of this peninsula. The McGregor Bay property is one of very few that was privately owned, and thus available for development, on the entire peninsula.

As far north up the shore as it is, the McGregor Bay property's vegetation species demonstrate a further step towards the boreal forest zone from southern Georgian Bay. Species at risk that were already known to be present on or nearby to the McGregor - La Cloche property were Bald Eagle, Barn Swallow, and Monarch Butterfly. A property inventory conducted this past August turned up Algonquin Wolf (an exciting and altogether new species for a GBLT property), Wood Thrush, and Eastern Wood-Pewee.

Wolves are a rare sight on Georgian Bay and are very wary of humans, but the largely undeveloped nature of the Killarney region means that it is one of the few areas left in southern Ontario where they can be found, outside of Algonquin Park itself.



McGregor Bay - La Cloche was headed for sale and subsequent development before a group of concerned American cottagers stepped in and saved this wonderful new addition to the Land Trust's holdings, located at the very top of Georgian Bay.

Thank you so much to the McGregor Bay - La Cloche Mountains Reserve donors, who have provided the new property's dedication:

*Lynn & Ned Jessen, Angel Lillard & Bill Detmer, and Paula & Jim Preschlack donated 9 acres of land along the south shore of McGregor Bay to the Georgian Bay Land Trust in August 2017, in honour of Paula & John Lillard, and Pauline & Louis Polk, Sr.*



## Life Interest Property, Severn Township

*Also known as residual interest, a life interest gift is an arrangement where a donor irrevocably gives real estate or personal property to a charity while retaining the right to use the property for life, or for a term of years. When the property's title passes to the organization (with the donor's life or other interest registered on title), the donor receives an immediate donation receipt for the present value of the donated residual interest.*

In June of this year, the GBLT received its first donation of a Life Interest property. The donation is a pretty four acre inland parcel located upstream from Lock 45, the outlet of the Trent-Severn System at Port Severn.

The Severn Township area is outside of the GBLT's traditional geographic scope, but is similar in landscape, and adjacent to the Port Severn area. The property is located in the transition area, also referred to as the "contact zone", between the Precambrian bedrock that defines the Canadian Shield and the Paleozoic

bedrock that characterizes southern Ontario. This creates an interesting assemblage of species at the extremes of their southern and northern ranges, resulting in an area with high biodiversity in vegetation community types, flora, and fauna.

Almost the entirety of the property is dominated by dense Sugar Maple and Eastern Hemlock forest, and it borders on a productive wetland on one side. The Ontario Ministry of Natural Resources and Forestry's Natural Heritage Information Centre indicates the presence of 14 significant species in the mapping block into which the property falls; these include Eastern Massasauga Rattlesnake, Five-lined Skink and Stiff Yellow Flax. The property donors report further sightings of Whip-poor-wills and Monarch Butterflies, and the adjacent waterfront property provides habitat for Snapping Turtles and Little Brown (Myotis) Bats.

Since through the terms of a Life Interest donation the donors will retain exclusive use of the property for the rest of their lives, they have requested that their names not be publicized. The Land Trust would like to thank the donors for their conservation-mindedness and generosity.

### Georgian Bay Snapshot

Hangin' at Hangdog  
Brigitte Martin Cook  
(@briiidge)



Summer 2017 wasn't all clouds! Thanks Brigitte for capturing this classic Georgian Bay July day.

Submit your best Georgian Bay shots to [info@gbt.org](mailto:info@gbt.org), or use **#GBLandTrust** on Instagram, for a chance to be featured in the next Georgian Bay Snapshot.



# Monitoring Massasauga Maternity Wards on Georgian Bay's Rock Barrens

by Glenda Clayton, Species at Risk Coordinator, Georgian Bay Biosphere Reserve



*Multiple females share this prime gestation site. Photo by Jeremy Rouse*

It may be hard to think of rock barrens as nurseries, but for numerous species at risk, eastern Georgian Bay's rock barrens are preferred birthing sites. This includes birds, such as the Common Nighthawk and Eastern Whip-poor-will, and reptiles, like the Five-lined Skink and Massasauga Rattlesnake.

In our area, "table" rocks—large, approximately one square metre in size, flat table-like rocks—are often preferred gestation sites. The rocks have space for the snake to retreat underneath, and will usually be surrounded by grass or low-lying shrubs such as juniper. The chosen rocks are also exposed to sunlight for most of the day, providing a good range of temperatures so female Massasaugas can incubate their young.

Massasaugas give live birth, unlike some of Ontario's other snakes that produce eggs. The pregnant female will travel to the gestation site usually in mid-May and remain there until the young are born, typically early to mid-August. Gestating Massasaugas will feed very little during this time period and live off their fat reserves. After giving birth, the mother does not display any maternal instincts and will leave her gestation location after a few days. She will then eat as much as she can before hibernation, typically by early to mid-October.

A female rattlesnake reaches maturity at four to five years old and she will only give birth every two to three years. She will return to the same site to give birth, and some sites are shared by multiple females. The slow reproductive rate of the Massasauga rattlesnake makes protecting existing gestation sites very important for the long-term survival of the species.

Fortunately after 30 years of research, a number of gestation sites have been identified along eastern Georgian Bay. This research has been led by a number of organizations including Georgian Bay Islands National Park, Toronto Zoo, Ontario Ministry of Natural Resources (Parry Sound), Killbear Provincial Park, Magnetawan First Nation, Wildlife Preservation Canada, and several others including university-

based researchers. Gestation sites are considered to be "Category 1" habitat under Ontario's Endangered Species Act. This means they have the lowest tolerance to alteration. Hibernation sites are also considered as "Category 1" habitat.

The winter weather of 2014/15 proved to be deadly for Massasaugas. The lack of snow combined with extreme cold resulted in higher than normal fatality rates at many hibernation sites. This led to a discussion about the need to coordinate monitoring to help detect changes in populations.

In 2016, Georgian Bay Biosphere Reserve (GBBR) initiated the coordinated monitoring of known Massasauga gestation sites with key organizations throughout the range of eastern Georgian Bay's Massasauga population. Gestation sites were chosen to monitor rather than hibernation sites for a number of reasons including the availability of seasonal staff to assist in monitoring and, depending upon the type of hibernation sites, there is a risk that snakes could be inadvertently harmed by the increase in foot traffic. Rock barrens are fortunately very durable! We also select sites that are relatively easy to access to ensure the likelihood of long term monitoring.

In the summer of 2016, GBBR staff contacted Brooks Greer, Land Protection Program Manager with the Georgian Bay Land Trust, to determine if there were records of gestation sites on GBLT's properties. Brooks had just returned from several properties in the Go Home Bay area where he and Alison Howson, of the Ontario Land Trust Alliance, had been searching for reptiles. Several sites had been noted as potential gestation sites. These were confirmed by GBBR staff and were monitored throughout the summer by GBLT summer staff. In 2017, GBBR staff visited several Land Trust properties in the Pointe au Baril area and identified additional potential gestation sites. These will continue to be monitored by GBLT staff or property stewards.

As a threatened species, a Massasauga recovery strategy was developed and can be found online at [ontario.ca/page/recovery-strategy-massasauga](http://ontario.ca/page/recovery-strategy-massasauga). The goal for Bruce Peninsula and Georgian Bay regions is to maintain the existing distribution and genetic structure of the local populations. Coordinated monitoring of Massasauga gestation sites throughout eastern Georgian Bay will enhance our ability to detect reproduction and population trends as well as changes to gestation habitat throughout the region due to factors such as forest succession.

You can help! Please report your sightings of Massasaugas. If you are aware of a potential gestation site, please consider visiting the site two to four times per year to see if the site is occupied. Remember that a site may go several years without use since the female will only be pregnant every second to third year.



*Thank you Nick Harrison and Mel Webb*

## GBLT's 2017 Summer Students



The two GBLT Summer Student positions were very capably filled this year by Melissa Webb from Cognashene and Nicholas Harrison from Go Home Bay.

The students were kept hopping all summer, stewarding and greeting visitors to the Big Three southern properties: American

Camp, Southeast Wooded Pine, and the Lizard. They provided support and transport at our many southern events, cut several Phragmites patches, guided Ontario Land Trust Alliance herpetologists to our properties to conduct reptile and bat surveys, and helped at regattas and picnics. They also presented seven sessions of Conservation Quest, our kids' environmental awareness program, to hundreds of southern Georgian Bay campers.

Nick and Mel were a genuine pleasure to work with. Mel's offbeat sense of humour and outgoing personality served her well over the summer months, and she managed to overcome a morbid fear of Georgian Bay reptiles, as witnessed by the photo. Nick's well-developed work ethic and ready-for-anything attitude were big assets to the organization. Both are blessed with the gift of lateral thinking, which not only resolved a lot of situations over the summer but will be with them throughout their lives.

## Yoga on the Rocks

Is there any better place to practice yoga than an island on Georgian Bay? Getting there isn't always easy, and the rocks aren't always flat, but there's something pretty powerful about holding a tree pose in the presence of a defiantly upright white pine. So discovered the participants at this summer's inaugural Yoga on the Rocks, held on Southeast Wooded Pine and American Camp islands.

Instructor Angela Granziera led participants through a series of poses chosen to emphasize our connection to the natural world and the importance of community. Angela's inclusive, flexible approach meant that all ages and skill levels felt welcomed and challenged, and the unique Georgian Bay terrain became an asset rather than a hindrance. Participants quite literally saw the Bay from a new perspective (upside down) and left feeling both energized and grounded. Thank you to Angela for a wonderful class and a chance to connect with the earth and each other.

Yoga on the Rocks will continue in Summer 2018! Please stay tuned and plan to join us.



## Thank you TD Friends of the Environment Foundation for continued support of kids' environmental education



**TD Friends of the  
Environment  
Foundation**

The Georgian Bay Land Trust's Conservation Quest program continues to grow thanks to the ongoing support of the TD Friends of the Environment Foundation. This summer nearly 500 children at summer camps, recreation programs, and public events throughout eastern Georgian Bay had the opportunity to learn about the world around them and how they can protect it

through a series of fun, hands-on activities. From meeting snakes and turtles, to identifying bird songs, to navigating a board game demonstrating helpful and unhelpful human behaviour in nature, kids had a great time engaging with their environment and thinking about their place in it. Thank you to the Georgian Bay Biosphere Reserve, Georgian Bay Islands National Park, and TD Friends of the Environment Foundation for helping to bring this program to life!

## Congratulations to Janny Vincent, Recipient of the GBLT Philanthropy Award



*Bill Loughheed and Janny Vincent*

The Georgian Bay Land Trust has been so lucky to have Janny Vincent as a supporter, leader, and friend over many years. Janny's sincere love of Georgian Bay is matched by her incredible dedication to community service and the value she places on investing in a good cause. This year, we honour Janny with the GBLT Philanthropy Award in recognition of her

extraordinary contributions to conservation over many years.

In addition to serving as Board Chair from 2013-2017, Janny has been a significant financial supporter of the Land Trust's work before, during, and after her tenure. She has shown time and again that her commitment to conservation extends well beyond her own backyard, making generous contributions to land protection projects both near and far from her

cottage in Sans Souci. All three of our largest community-driven fundraising projects—Sandy Island, Little McCoy, and the Steamboat Channel Reserve—benefitted from Janny's enthusiastic willingness to help out a good cause.

Janny also recognizes that the work of a Land Trust doesn't stop at land protection, but includes environmental education and community building programs. Alongside fellow board member Dr. Nick Eyles, Janny spearheaded the GBLT's recent book, *Georgian Bay: Discovering A Unique North American Ecosystem*, which has brought to life Georgian Bay's environment, history, and culture for over 500 readers around the Bay. This book would not have been possible without Janny's hard work and support. Janny has also gone above and beyond to host and sponsor numerous events for the Land Trust, and she is always one of the first to lend a helping hand wherever it is needed. Her consistent and dependable support has been invaluable and is so much appreciated by the GBLT and the community at large.

Thank you, Janny, for the incredible legacy you have left for the wilderness of Georgian Bay.

## Welcome new Board member Cindy Tripp to the Fundraising Committee

*by David Doritty, Fundraising Chair, GBLT*



Cindy Tripp is a financial services executive and one of the founding partners of GMP Securities L.P., where she was Co-Head and Managing Director, Institutional Trading. In this and previous roles, Cindy has overseen institutional trading, retail trading, securities lending, foreign exchange, and risk management. While at GMP

Cindy also initiated, implemented, and managed enterprise software and IT systems, drawing on both her business acumen and technical understanding. Cindy is a former member of the Board of Directors of the Toronto Financial Services Alliance. She is a Bishop Strachan School (BSS) Old Girl, a former Boarder, a past parent, and has been a member of the BSS Board of Governors since 2010, serving the past four years as Chair.

Under Cindy's chairmanship, BSS has just completed the largest fundraising project in the school's history, the "Intersection Campaign", raising an incredible \$33.1 million.

Cindy has cottaged on Wabek Island in Cognashene since 1997, sharing it with her husband Anthony Boright, their three kids Annie, John, and Andrew and two chocolate Labradors.

## Thank You and Good Bye, departing Board member Peter Cooper



*Peter Cooper departed the GBLT Board this past spring after more than ten years of tireless service. He has been a huge asset to the Land Trust since he joined us in 2007. He has worn many hats at different times. Peter served as GBLT Board Chair in 2012-13, and as Chair of the Fundraising Committee from his*

*joining through 2011. He headed staff search committees, recruited and advised on Board member recruitment, and has served as a Steward at both the Lizard and American Camp. Peter is a fixture at GBLT events and meetings, waving the flag and promoting the cause.*

*Always helpful, always upbeat, cheerful and outgoing, Peter has been invaluable to our organization. Peter, we thank you and will miss you.*





*Trees' resilience to climate change is increased in large, intact forests, like this one on the Jean G. Northey Conservation Reserve*

Good conservation planning maintains habitat connectivity and natural corridors that bolster resilience to climate change to the benefit of our natural area's species and its ecosystems. Land Trust planning involves prioritizing dry "uplands" as well as "wetlands" (coastal and inland wetlands in our case). Ninety-six percent of our natural area's wetlands are inland and keeping such habitats intact and connected is crucially important in providing species resilience and allowing adaptation to climatic shifts. For example, larger and deeper inland wetlands and shaded wetlands within forests remain wet for longer periods during dry spells, and species may need to reach these refuges. This requires both their maintenance and connectivity. Using resistance modelling followed by field proofing, research scientists are measuring how species move between connected habitats including inland wetlands. GBLT hopes to support further studies by scientists to answer some of the questions regarding wetland connectivity, notably for the Bay's five species of at-risk turtles.

#### ***Allow species to move along temperature gradients***

Proper conservation planning that enables and maintains connectivity between areas of different temperatures has been modelled by scientists and is shown to allow species to move along temperature gradients and thus stay within the same temperature zone. Conservation planning and mapping for our region will identify corridors and barriers across which species may or may not move as climates change.

#### ***Maintain flyways for migratory birds***

Migrating birds use corridors. It is thought that climate change is at least partly responsible for declining population numbers among many migratory bird species, and knowledge of the patterns of these migratory birds is needed to inform conservation planning and assist in reversing present trends. The GBLT's participation in the Motus Wildlife Tracking Program (see page 8) will lead to a better understanding of bird movement through our area and help identify priority corridors for protection. Identifying and mapping habitats used during migration through GBLT's natural area is part of a hemisphere-wide effort to help scientists understand migration and enable conservation responses.

#### ***Birds and biotic wetland connectivity***

Migrating birds aid the dispersal of aquatic plant species by transporting their seeds between wetlands. In the face of climatic shift, these contributions to species migration and species richness are very important. We know that biotic connection among wetlands frequented by waterfowl is efficient only within a short range. This means that the distribution of wetlands in space is a very important consideration at regional levels. Conservation programs need to operate on a flyway level and consider waterfowl movements and migration as functional processes that greatly contribute to species migration and species richness.



*A Merganser takes flight. As birds travel between wetlands, they aid aquatic plant dispersal, contributing to species migration and richness. Photo by Bob Snider*

As our climate changes over the coming years and decades, the natural world will find itself under increasing stress. Plants and animals alike will need to adapt in order to survive, and the resiliency of ecosystems will be tested. Strategic conservation planning and land management practices will play an essential role in creating the conditions necessary to give our environment a fighting chance. Please join us as we work to keep Georgian Bay and its surrounding area healthy and resilient for the years to come.



gblt.org

WINTER 2018

# WINTEREVENTS

PROTECTING the WILDERNESS of our UNIQUE ARCHIPELAGO

## Upcoming Events

### Winterlude

*Conservation Science: Bird and Butterfly Migration around Georgian Bay*

Wednesday, March 7th, 2018

5 pm reception | 6 pm talk

Bishop Strachan School | 298 Lonsdale Road, Toronto

Free – our thank you to you!

Animal migration patterns are a topic of increasing scientific and conservation interest, as scientists work to halt population declines and prepare for a changing climate. Important research on bird and insect migration is being done right here in Ontario, and the GBLT is proud to contribute to this through our participation in the Motus Wildlife Tracking Program (see page 8). The better we understand how these threatened animals are using and moving through our area, the better we can plan to protect their habitats and flyways.

On March 7th, join us to learn first-hand about some of the work being done in the Georgian Bay area by scientists at the University of Guelph. Elora Grahame (M.Sc. Candidate, Integrative Biology) will present some of the research conducted by the Norris Lab, especially that which focuses on migratory connectivity as it relates to birds and butterflies. An upcoming study investigating the reproductive success and survival of breeding Eastern Whip-poor-wills and Common Nighthawks near Georgian Bay will also be discussed. See you there!



For more information about upcoming events please visit [gblt.org/events](http://gblt.org/events).

## Tribute GIFTS

Received from May 27th – November 6th, 2017

### In Memory

Sascha Armour  
Carol Cassie Barrett  
Al Edward  
Bob & Barbara Harris  
Wendy Hoogveen  
Jean Hughes  
Emily Noel Koetsier  
Dr. Thomas Lofft  
Bob McClean  
Peter McConville

### In Honour

Fred Beck  
Paula & John Lillard  
Lorraine Lowe  
Bill McCoy  
Ian McGibbon  
Keith Milne  
Pauline & Louis Polk, Sr.

## Sponsors

Thanks to our generous sponsors



Georgian Bay Land Trust  
120 Eglinton Ave. E., Suite 1000  
Toronto, ON M4P 1E2  
[gblt.org](http://gblt.org) | [info@gblt.org](mailto:info@gblt.org) | 416.440.1519

The Georgian Bay Land Trust acts to preserve the wilderness lands of eastern Georgian Bay and the North Channel through strategic conservation planning, land securement, conservation research, and education.

We are a registered Canadian charity (#13195 8811 RR0001)



### LandScript Editor

Laura Sunderland, [landscript@gblt.org](mailto:landscript@gblt.org)

### Executive Director

Bill Lougheed, [bill.lougheed@gblt.org](mailto:bill.lougheed@gblt.org)

### Land Protection Program Manager

Brooks Greer, [brooks.greer@gblt.org](mailto:brooks.greer@gblt.org)

### Senior Development Officer

Janet Tinsley, [janet.tinsley@gblt.org](mailto:janet.tinsley@gblt.org)

### Communications & Office Administrator

Sarah Koetsier, [sarah.koetsier@gblt.org](mailto:sarah.koetsier@gblt.org)