

ON THE EDGE



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Letter from Randal

It was slightly over a century ago, as our ancestors contemplated the speed at which the Industrial Revolution ravaged landscapes, that conservation became a “thing”. Ever since, the conservation movement has mostly focused on legal protection and habitat conservation.

Today, as we contemplate a world in which more habitat than the combined land masses of India and China has been “conserved” for nature, yet we no longer have to scrape the bugs off our windshield after a drive in the country, it’s clear that the approaches of the 20th century will never be enough. The human footprint is now so heavy and pervasive that we can no longer imagine that nature will do just fine as long as we leave some of it alone. There is nowhere for nature to go to be alone.

In the 21st century, every last national park, conservation area, or other apparently pristine natural area left in the world is effectively a zoo. Most of our surviving gems of nature are, or will soon be, surrounded by development. Most of the species living within them are effectively trapped, like shipwreck survivors on an island. The water is polluted; invasive species run rampant; plastics which will be present for millennia have found their way into every nook and cranny. Even the chemical composition of the air has been changed. Only constant, hands-on intervention and management can keep something that resembles the original ecosystem in place and functioning.

Wildlife Preservation Canada was built for such a world. It is no accident that our Canada’s New Noah program refers to the ancient story of human intervention to save animals from a temporarily unsurvivable situation. The hope in the Noah story is that the rains eventually stopped; the floodwaters receded. So, too, we must hope that the latter half of this century will see a reversal of the situation as future generations learn to live within the limited capacity of the planet.

It is, after all, the very least we can do for them, and for the countless animals which are totally dependent on us. Thank you for making it happen.



Randal Heide
Executive Director



Established in 1985, Wildlife Preservation Canada is a non-profit charitable organization dedicated to saving critically endangered wildlife species from extinction.

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Amélie holding a Canada warbler, the songbird species she followed across North America to better understand their migration patterns.
Photo credit: Kevin Methuen

Having the opportunity to gain hands-on experience focused on endangered species management is priceless. I’m thrilled to have been selected. Getting to visit Mauritius, a place so steeped in conservation history from the dodo to the Mauritius kestrel, is an opportunity of a lifetime!

- Amélie Roberto-Charron

Canada’s New Noah

Meet ‘New Noah’ Amélie

By Sarah Matheson

Most mornings, long before the sun has peaked over the horizon, you can find Amélie trekking through the forest to get a head start on her field work. If the early bird gets the worm, a biologist must be even earlier to get the bird. It is this dedication to her field work, coupled with an impressive education and research background, that landed Amélie Roberto-Charron from Edmonton, Alberta the role of Canada’s 29th New Noah.

Amélie recently finished her Master of Science degree at the University of Manitoba studying the migration ecology of a threatened Neotropical songbird, the Canada warbler. She has carried out extensive research on these distinctive little yellow and slate-gray birds, studying them at multiple sites across their Canadian range from Alberta to New Brunswick, and following them on their migration route to Central and South America.

Working so closely with a tiny songbird may seem like a natural path for a young biologist, but Amélie was originally more interested in botany than birds, and held the role of President of the University of Alberta Botany Club. It was a fateful decision to enroll in an ornithology class during her final year of university that changed her career track, and Amélie has never looked back. Her decision to apply for the New Noah scholarship is just another step in a long line of hands-on training opportunities

that include bird banding, nest box monitoring, mammal and amphibian surveys, and conservation consulting for private industry.

Amélie is no stranger to remote field work. Her studies have already taken her to some of the most remote locations in Canada, from rocky mountains to grasslands to boreal forest. Amélie also has experience taking a lead role in conservation projects, as the executive director of the Beaverhill Bird Observatory, near Edmonton. This type of experience will prove useful when she arrives on the island of Mauritius, 16,000km away from home, and is almost immediately imbedded in one of a dozen active recovery programs.

Though the internet connection on Mauritius may be spotty at best, Amélie promises to send us regular updates from the field. You can follow her journey by reading her posts on our Blog, and tuning into her updates on social media. ✈

Since 1990, the Canada’s New Noah program has given young biologists the opportunity of a lifetime. Each year, Wildlife Preservation Canada selects one graduate student from dozens of applicants across Canada for a coveted scholarship to the Durrell Conservation Academy.



Eastern Loggerhead Shrike

Wildlife recovery in winter: what do you do when your birds migrate south?

By Hazel Wheeler

“How are the birds?”

It’s a regular conversation starter I encounter. During the spring and summer, with the excitement of the field season and captive breeding, there’s usually a lot to say, or at the very least I can show off the scars from my latest injuries incurred from banding all those young birds before release. During the winter, however, my response is less exciting: “Oh they’ve all headed south now; hopefully they’re good and will be back next year!” That’s really just part of the story though.

While wild loggerhead shrikes leave Ontario’s grasslands and pasturelands towards the end of each summer, the birds in the captive population are held year-round, and like squawking, feathered children, their care never ends. Some birds, if there is enough space at the facility where they bred, will stay put in those familiar surroundings. However, though shrikes can happily breed and coexist with a mate through the spring and

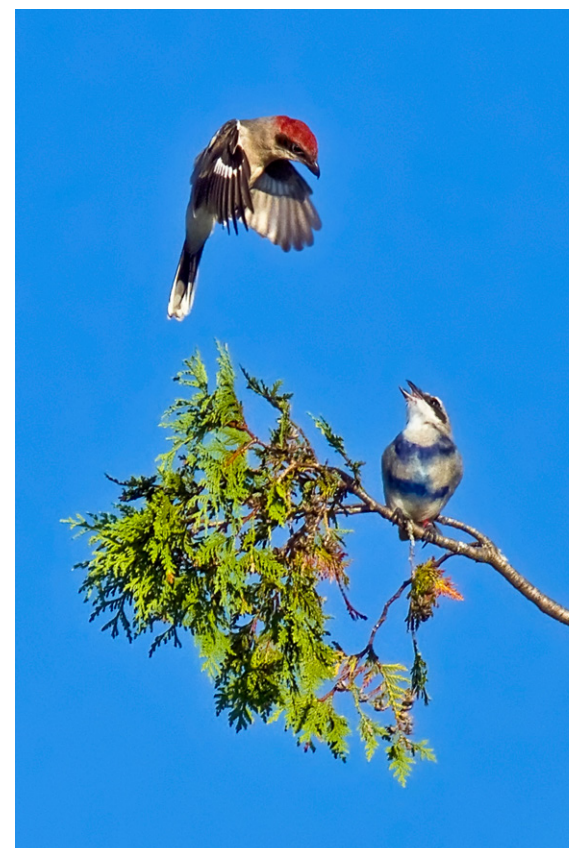
summer, these birds are fiercely independent through the winter, and need to be housed individually. This means that some birds will need to be moved up to Ottawa, where Little Ray’s Reptile Zoo supplies winter space for those birds that can’t be held at breeding facilities. Spending a winter in Ottawa may not sound like an ideal scenario for birds that migrate south each fall, but with both an outdoor area and a heated section in each enclosure, the birds are comfortable, safe, and well fed, though the snow may build up around them.

Once all the birds are comfortably housed for the winter, work quickly turns to planning for the next breeding season. We must take stock of which birds are still in the captive population, who they have mated with in past, and decide who they should mate with in future to be sure we’re maintaining a healthy genetic pool. Inbreeding is a risk with any small breeding population, so we work with experienced population biologists to ensure we’re managing this valuable, but

An adult breeding loggerhead shrike sits on a perch in one of our enclosures where it has all the comforts of home without any of the predators. **Photo credit:** Lydia Dotto

limited, population as well as we possibly can. Birds that have successfully raised nests of young in the past are kept together as much as possible, but there’s always a bit of shuffling required; though birds in the captive population certainly live longer than their wild counterparts, it is expected that a few birds will die every year (much like birds in the wild), so sometimes match-making is necessary.

Once pairings are set, the Shrike Keepers at the facilities get to work preparing the breeding enclosures: inspecting and repairing perches, providing fresh cedar boughs to give the birds some areas of cover, and installing mesh “nest cups”, which the birds will sometimes use to make their nest building a bit easier. By mid-April, the birds will be moved back to their breeding sites, and the whole process starts anew. Give me a few months, and I’ll show you some new scars. 🌿



Captive-bred juvenile shrikes that have just been released into the wild. The marker paint on their feathers will soon wash away, along with their memories of our staff. **Photo credit:** Lydia Dotto

A Matter of Fact

The Loggerhead Shrike

When you think of a songbird you probably think of colourful and melodic species like cardinals, robins, or warblers. You might not think of the quiet, grey and black loggerhead shrike, but despite being relatively subdued singers, the shrike does belong to the same taxonomic grouping we commonly refer to as songbirds, or Passerines (perching birds).



It’s no mistake that shrikes are considered songbirds, as they do have the connecting features of the group: a toe arrangement that allows them to perch, and overdeveloped vocal chords for singing. However, one thing that sets the shrike apart from its fellow passerines is their diet. Songbirds fall in to many dietary groups, and may be seed-eaters, fruit-eaters, insect-eaters, or a combination of all. Shrikes, however, have a taste for meat, and eat a purely carnivorous diet, which includes insects, snakes, frogs, mice, and even other birds!

Shrikes hunt and kill their food like a bird of prey, using a specially adapted beak. But since they have delicate songbird feet instead of strong talons, shrikes need help with larger food items. The solution: they impale their prey on thorns, so they can remove bite-sized pieces. This behaviour gave them the nickname “butcher bird”.

Shrikes have been in decline since the 1960s, and possible causes include habitat loss, road mortality, nest predators, and disease. The main threat, however, is still a mystery, and it is likely a combination of all of the above, both on both their breeding and wintering grounds.

Loggerhead shrikes are found throughout North America, with twelve subspecies occupying the species range. In eastern Canada, our recovery efforts focus on the eastern subspecies of Loggerhead Shrike, *Lanius ludovicianus alvarensis*, which is critically endangered with fewer than 60 breeding pairs occupying two small pockets in southern Ontario.



While the population numbers in Ontario may seem bleak, we are seeing progress. Continued research into migration patterns, along with intensive breeding and release, are the keys to helping the subspecies back from the brink. We’ll also continue to share our knowledge with other subspecies recovery programs in North America, adding to the resilience of the species as a whole. The shrike won’t be on the butcher’s block any time soon if we can help it! 🌿

Fraser Valley Wetlands

Spring fever hits British Columbia

By Andrea Giелens

Spring has sprung in British Columbia! While Mother Nature may have played a joke on us on April 1st by sending a blanket of snow, the animals were still on the move, and eager to make changes.

The Oregon spotted frog conservation breeding population began showing breeding behaviour back in February, even though there was still ice on the water. As soon as the days began to shorten in the fall, males will seek out females and attach themselves to the females' backs in a pre-breeding position called amplexus. The pair will stay in this formation until the female lays eggs, sometime in March or early April. The males have black pads on their thumbs, appropriately called nuptial pads, which help them get a strong grip around the females' neck. Together in amplexus, they are positioned perfectly to allow for external fertilization as the female releases eggs into the water.

Ever wonder how such a relatively small frog lays such a large amount of eggs? The eggs are much smaller inside



Two Oregon spotted frogs are bound together in the amplexus pre-breeding position. Soon this pair will mate and create an egg mass. **Photo credit:** Andrea Giелens

the female and once they are released into the water they swell, reaching their final size. Our frogs will lay eggs throughout April and a month later the eggs hatch. We were off to a great start with 16 egg masses laid at the beginning of April, and many more were likely laid as this newsletter went to print.

Our recovery strategy is to hold back a portion of the tadpoles to raise them over the summer in our facility. This allows us to monitor their growth rate alongside tadpoles we have collected from the wild. We want to ensure that our captive bred tadpoles develop along a similar timeline and produce healthy animals. The rest of the tadpoles will be released to wild populations and restoration sites to bolster the number of individuals in future breeding seasons.

The warm spring weather has also awoken our tiny Taylor's checkerspot butterfly larvae. These larvae entered diapause (like hibernation for larvae) in mid-August and have not moved all winter. Now they are out and about eating as much as they can. In mid-March, we released 135 larvae to the remaining wild population on Denman Island, keeping back 100 to breed and lay eggs in our program this year. They will shed once or twice more before forming a chrysalis and completing metamorphosis. Once emerged as adults, they have about 4 weeks to breed and lay the next generation of larvae.

Both our frogs and butterflies have a lot they need to accomplish in our short spring and summer, and it seems like they are eager to get going! 🐸



Taylor's checkerspot butterfly larvae on the the move to find food on Denman Island. **Photo credit:** Bonnie Zand

Want to follow along with our recovery work as it happens?

The Wildlife Preservation Canada Blog is a hub for firsthand stories from the biologists on the front line of conservation.



Bookmark the Blog site today and never miss an update about your favourite animals.

wildlifepreservation.ca/blog



Thank you.

Wildlife Guardians are a special group of dedicated individuals who make it possible for our conservation teams to help endangered animals throughout the year by providing recurring monthly donations.

Just because our field work stops in November, that doesn't mean that we can afford to take the winter off. Wildlife Guardians help us feed and care for hundreds of animals through the winter months. Winter is also when we do much of our scientific work: studying data collected in the summer, planning for improvements next season, and writing reports to share our new knowledge with other caretakers of endangered species around the world. We would like to extend a warm thank you to all of our Wildlife Guardians who supported us last winter, and give special mention to those who joined the program in 2017.

Kyle Ahluwalia	Elizabeth Churcher	Cynthia Leslie	John Seeback
Janice Banigan	Rizzanne Dapitan	Sandra Lowry	Steve Spring
Cindy Barr	Harriet Dent	Harold Mills	Jay Wilson
Borka Boyle	Sonia Dyett	Dianne Lee Moore	Peggy Wilson
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If you would like to become a Wildlife Guardian, please return the enclosed card with your payment details, or donate safely online at: **wildlifepreservation.ca/guardians**

Native Pollinator Initiative

New people, new ideas – exciting expansions to the Native Pollinator Initiative!

By Genevieve Rowe

The Native Pollinator Initiative team has had a busy start to the year! With new hires, new protocols, and new knowledge, there's a lot to talk about. Here's a look at some of what's got us excited for 2018!



A yellow-banded bumble bee (*Bombus terricola*) snacks on dandelion nectar and becomes covered in pollen in the process. Bumble bees and other pollinators are responsible for one third of all plant pollination, and are a critical part of their ecosystem. **Photo credit:** Sarah Johnson

Our bumble bee identification skills just keep getting better!

While our lead biologist Sarah Johnson might already be (pun intended) a pro, I had an opportunity to join her at the Canadian Bumble Bee Identification Course at the Royal Saskatchewan Museum in early April. Led by Dr. Cory Sheffield, an expert in Canadian bee identification and diversity, we both received a hands-on opportunity to get intimate with the bumble bee species that we will encounter in the field this year. Bumble bee identification uses a unique combination of physical features to determine the species, and sometimes all you get is one quick glance. As someone coming from a background in bee taxonomy, I could not have been more in my element examining every detail of the bumble bees!

Our captive breeding protocols are getting overhauled!

This spring, we had an opportunity to visit one of North America's premier bumble bee rearing labs with the United States Department of Agriculture (USDA) Agricultural Research Service (ARS) in Logan, Utah. Picking the brains of renowned experts in the field, including Dr. Jamie Strange and Dr. Amber Tripodi, will allow us to make some key changes to our captive breeding protocols by incorporating new procedures, better materials, and smarter husbandry strategies. We are excited to see how these changes will translate to a more successful breeding program this year!

You can follow along with our yellow-banded bumble bee captive breeding program by regularly tuning into our Blog. We'll share all the highs and lows of the process, so you'll feel like you are right there with us in the lab.

Working with declining species has its challenges... but bee scientists are adaptable and always persevere in the face of adversity!

In 2017, we encountered a heartbreaking setback for our conservation breeding program – we experienced unprecedented levels of queen mortality in the lab, and were unable to immediately identify the cause. Fortunately, Dr. Amber Tripodi was generous enough to share her expertise in bumble bee pathogen detection during our visit to the USDA-ARS Bee Lab. We were able to successfully dissect two of our 2017 queens that met an untimely end, and believe it or not, we detected two different types of diseases, one in each bee. One of the queens clearly died from an extensive fungal infection, and the other harboured a thriving nematode (small worm), that prevented the queen from successfully reproducing. We are sad to find out that some of our bees were quite sick, but also excited about adding pathogen testing to our program, and the potential for these results to help us answer questions about bumble bee population decline! 🐝

Many hands make... more work as the pollinator team grows

By Genevieve Rowe

Hi, I'm Genevieve! I've recently joined the Native Pollinator Initiative team to manage our bumble bee programs in Ontario - and I couldn't be more thrilled about my new role!

Over the past decade I've been extremely lucky to have had an opportunity to support conservation efforts for iconic species around the world. As a volunteer working with at-risk lemur species in Madagascar, I was part of a program whose mission integrates hands-on conservation research with community initiatives and environmental education. While volunteering on a project in Honduras to conserve the Uta stansburiana (spiny-tailed iguana), I gained hands-on experience with captive breeding programs for critically endangered species.

My masters research centred primarily around updating the taxonomic descriptions of Canadian non-*Osmia* Osmiini (Hymenoptera: Megachilidae) - an incredibly biologically diverse group of bees.

This has meant undertaking a detailed examination of the species that compose the tribe in Canada: a deeper look at both the observable traits and the molecular evidence that help us to differentiate one species from another. Since my first bee-collecting trip in 2011, I have spent countless hours in the field collecting and monitoring rare pollinators, in some of Canada's rarest ecosystems.

I am excited to apply my skillset to conserving at-risk bumble bees, and to help develop species-specific recovery strategies in my new role. I am eager for the opportunity to continue to work with renowned experts in the fields of pollination ecology and conservation biology, and to get creative in developing new and improved strategies and protocols for saving critically endangered species. It is a honour to take part in this important work, and to be part of an ever-evolving, and ever-improving, scientifically-based conservation organization! 🐝

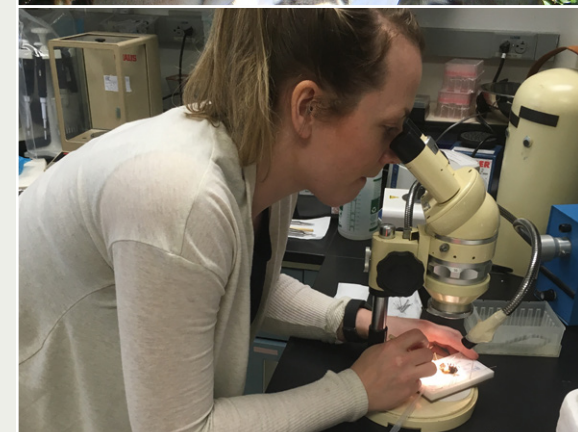


**HELP KEEP OUR
QUEENS SAFE**

We are excited to start testing our bees for pathogens, and a donation from you would get us one step closer to buying important (but costly) equipment, like microscopes!

Donate just a few dollars today, and invest in the future of our breeding program. Every little bit helps.

www.wildlifepreservation.ca/donate



Whether she's in the field or the lab, Genevieve feels right at home with species recovery work. **Photo credits:** Steve Ackroyd / Sarah Johnson

Ojibway Prairie Reptile Recovery

Frostbitten rattlers sound the alarm!

By Jonathan Choquette

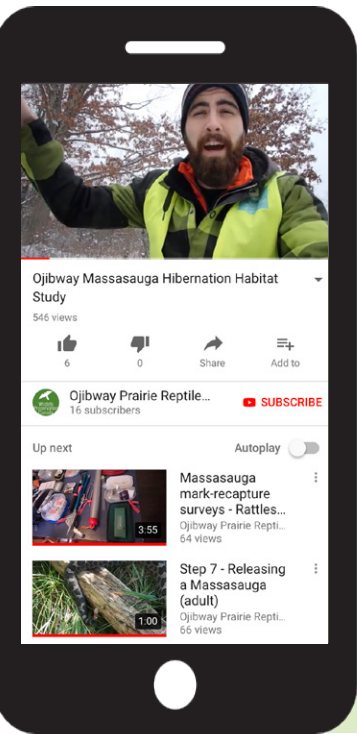
Winter is now over, which means here in Windsor, Ontario we are wrapping up our Hibernation Habitat Study. This past season marks the third year of this important project at the Ojibway Prairie Complex and Greater Park Ecosystem. We have been busy monitoring dozens of study sites, each equipped with a frost tube and groundwater well, which allows us to record detailed variations in frost depth and groundwater levels over the winter. This information in turn will help us to identify locations with suitable hibernation habitat for massasaugas, an ectotherm (i.e., “cold-blooded” creature) that must hibernate underground to escape the winter chill.



One of the hibernation habitat study sites, showing frost tube (left) and groundwater well (right). Metre stick and water level meter allow us to record well height and groundwater depth, respectively. Photo credit: A. Hand. Inset: Massasauga rattlesnake Photo credit: D. Noble

Winters are a tough time for a rattlesnake. These animals aren’t equipped to simply dig their own burrows; massasaugas must find and make use of existing holes or burrows created by other animals (such as chimney crayfish and chipmunks) to get underground. Even if these snakes did have arms, they would be too busy using them to pray that the burrow they chose was deep enough to escape the frost’s deadly penetration, and dry enough to avoid the suffocating floods caused by winter rains and snowmelts. Our work is necessary because to bring a species back to an area from which it has disappeared, we must first confirm that suitable habitat for all its life processes is still present (eg. potential hibernation sites). Only then can we identify the best locations for releasing new animals.

The Ojibway Prairie Reptile Recovery program (OPRREC) has been tasked with the challenge of recovering the Ojibway population of massasaugas, while providing benefits to a suite of the other species at risk that depend on the tallgrass prairie to thrive. OPRREC is taking place within the Ojibway Prairie Complex and Greater Park Ecosystem, in the City of Windsor and Town of LaSalle, Ontario. Your ongoing support is critical to OPRREC’s success and in keeping Ontario’s tallgrass prairie alive and teeming with life! 🌱



The Ojibway team hosts regular video blogs from the field. In the video shown here, Eric demonstrates how data is collected for the Hibernation Habitat Study in southern Ontario.

Visit the *Ojibway Prairie Reptile Recovery* YouTube channel for details.

Native Pollinator Initiative

Building bees into business

By Sarah Matheson

Sustainability may have become a buzz word in the wine and food industry, but these days brands are more often taking it one step further and putting their money where their mouths are!

Nearly 90% of all flowering plants require insects for pollination, and one in three bites of food come from plants that have been pollinated by insects. But it wasn’t until the steep decline of bees and butterflies in the last decade that companies started to realize they had to protect pollinators for the sake of their business. “Bee-friendly” products popped up all over the place, and a cultural shift slowly emerged where consumers are now increasingly particular about supporting brands that give back to pollinator initiatives.

Incorporating bees into the business model isn’t just good for publicity, it’s also good for the bottom line. Bonterra Organic Vineyards, located in the Mendocino region of California, has taken a holistic approach to their wine-making operations and considers bees to be just as important as the rest of their natural partners.

Since their grapes aren’t treated with any pesticides or chemical fertilizers, they plant cover crops to help suppress weeds and add nitrogen back into the soil. Pollinators love the flowers in these cover crops, and

become regular patrons of the vineyards, supporting the health of both the grapes and cover crops.

In addition to their commitment to organic farming practices, Bonterra became a corporate supporter of Wildlife Preservation Canada’s pollinator program in 2017. Proceeds from select bottles of wine across Canada go towards our conservation breeding research for bumble bee species in decline. We are extremely grateful for their ongoing commitment to our work.

Bonterra isn’t working alone to help Canadian pollinators. Burt’s Bees has been contributing to our pollinator program for several years and is working in partnership with Bonterra to double their impact. Look for specially marked Bonterra and Burt’s Bees products in stores, and feel proud that your purchase will be giving back to the pollinators that give us so much. 🌱

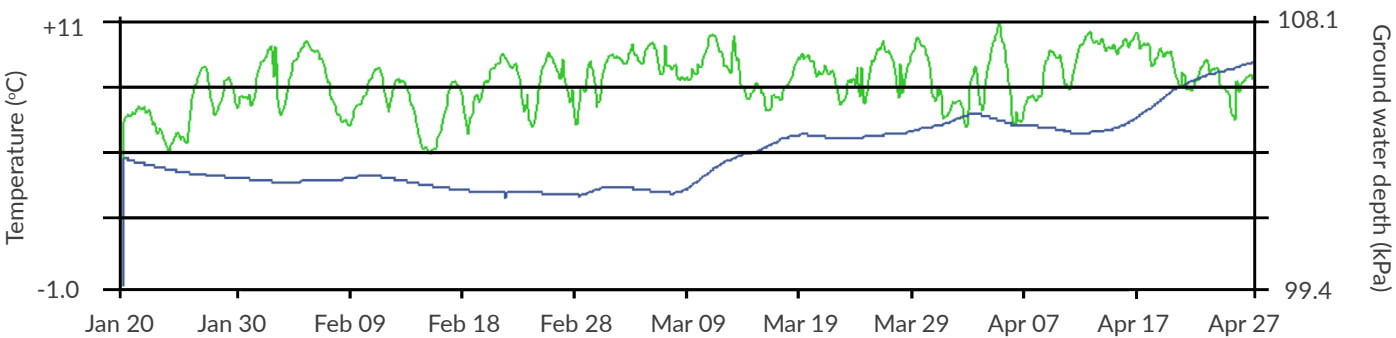
Native Pollinator Initiative supported by:



Bumble bees are natural pairing with vineyards. Photo credit: Bonterra

Location, location, location.

Massasauga rattlesnakes are some of the most particular home buyers. Their overwintering sites, known as hibernacula, must be flood-proof and frost-free over the entire hibernation period. The graph below shows groundwater data that was collected using an automatic water level logger during the coldest months of 2016. The ground water temperature (shown in blue) remains relatively constant compared to the ground water level (shown in green), which fluctuates considerably. Ground water level (equivalent) is initially recorded as atmospheric pressure (kPa) and later converted to centimeters.



“

You cannot begin to preserve any species of animal unless you preserve the habitat in which it dwells. Disturb or destroy that habitat and you will exterminate the species as surely as if you had shot it. So conservation means that we have to preserve forest and grassland, river and lake, even the sea itself.

- Gerald Durrell
Founder, Wildlife Preservation Canada

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