



Five-lined skink
Status: special concern



THE WAY OF THE LIZARD

And the massasauga and the wood turtle, along with most of our reptile populations, which are now in rapid decline due to habitat loss, roads, poaching (turtles) and even senseless killing (snakes). Can we bring these cold-blooded creatures back from the brink?

By Douglas Hunter

On the edge of a marsh in Kinghurst Nature Reserve, south of Owen Sound, Joe Crowley now has a firm grip on his subject matter. The northern watersnake, which is about a metre long, has tried to make a run for it, so to speak, but Crowley has it by the tail. The front end of the brown-and-black reptile managed to anchor itself in the lower branches of a cedar. Firmly but gently, he grasps the snake and lifts it clear.

As the snake is freed, it turns, as only snakes can, and nips the knuckle of his index finger. Crowley doesn't flinch. "It doesn't hurt," he emphasizes, and launches opportunistically into a watersnake lesson. "They're one of the more aggressive snakes in Ontario when you try to catch them." As we continue our snake inspection of the 281-hectare reserve in Grey County, his knuckle continues to bleed slightly. Another teaching opportunity: Crowley explains that watersnake saliva contains an anticoagulant.

Crowley, a Metcalf Foundation intern, is the project leader for an Ontario Nature study of at-risk reptile species in six of the organization's nature reserves in Grey and Bruce counties. The main focus of his project (funded by the Species at Risk Stewardship Fund of Ontario's Ministry of Natural Resources [MNR] and Environment Canada's Habitat Stewardship Program for species at risk) is identifying reptile species, especially ones at risk, and mapping their habitats on and around the six reserves. The work includes coordinating volunteer help in the field and collaborating with other reptile researchers in the region, including ones at provincial and federal parks. His mapped results will be added to evolving databases on these species, in particular the Natural Heritage Information Centre database maintained by MNR. As well, he is working on public outreach, educating people about reptiles and encouraging property owners to take an interest in them, not only in helping identify the animals for databases, but also in learning to live alongside and even appreciate them.

Crowley does not actually have to capture snakes as part of his work, but he wants to be able to show the species in Kinghurst to me, up close and personal. Once he has the watersnake in hand, it is surprisingly docile, slithering through his fingers and over his forearm. I stroke the rough scales of the



Spiny softshell turtle
Status: threatened

snake's back as Crowley points out its mottled colouration and patterning. In three hours of tromping around Kinghurst, Crowley will show me ribbonsnakes, red-bellied snakes and gartersnakes galore.

It takes a half-hour of patient searching along the shore of another Kinghurst wetland for Crowley to catch an eastern ribbonsnake, the one snake species he has identified at Kinghurst that is officially "at risk." Both the Species at Risk in Ontario (SARO) list - compiled under the province's new Endangered Species Act (ESA), enacted on June 30, 2008 - and the federal Species at Risk Act (SARA) categorize the Great Lakes' population as of "special concern." The one he catches is a juvenile and only about 15 centimetres long and almost impossible to spot. I have been walking in circles on the wetland shore, searching for one, but only managing to scare up leopard frogs. Crowley wants me to see the subtle differences in colouration between a ribbon and a garter: among other things, the stripes are much more clearly defined on a ribbonsnake (hence its name), and the body, especially toward the tail, is more slender.

Most of our reptile species are categorized as at risk to some degree under provincial and federal law. The work of Crowley, his colleagues and volunteers who turn out to help is vital to improving our understanding of where reptiles are and where they should be. The process of just finding where the species is reveals much, such as when they are most active, seasonally and during the day, and the differences in breeding behaviour in distinct populations. We can also better appreciate the value of parks and nature reserves in preserving habitat, and grasp the importance of taking these little understood animals into account when making land-use decisions. And along the way, more nature enthusiasts might take greater interest in reptiles,

and people might stop reaching for a blunt object every time a harmless snake slithers through their property.

There are 27 reptile species and sub-species in Ontario, give or take a few taxonomic disputes: 18 snakes, just one lizard (the five-lined or blue-tailed skink) and eight turtles. Most of them - 18, to be exact - are at risk in this province, according to the SARO list. This does not mean that their extinction is imminent; the province categorizes none of them as "extirpated," meaning that the species no longer exists in the wild in Ontario but can still be found outside the province. The bulk of our reptile species are listed as threatened or of special concern, substantially because we just do not know much about their population numbers and recognize that negative impacts on their habitats, be they subdivisions in meadows or highways that turn reptiles into roadkill, are not going to improve their chances of long-term survival.

"The prime cause of extirpation of reptiles in southern Ontario has been habitat loss, mainly the conversion of wetlands, natural grasslands and forests to agricultural and urban uses," Crowley explains. "Roads are part of that problem, and [their] effects are more insidious. A road on its own might not seem to take up much land, but it causes fragmentation of habitat, as well as roadkill deaths. If a road cuts through a habitat, it can make a species' population smaller and less viable, and cause extirpation."

According to the SARO list, five of our reptile species are endangered, which means the species is facing imminent extinction or extirpation: three snakes (the Lake Erie watersnake, timber rattlesnake - widely believed to be extirpated - and blue racer) and two turtles (wood and spotted). Nine species are listed as threatened - that is, it is

likely to become endangered here “if limiting factors are not reversed.” They include six snakes (eastern ratsnake, eastern foxsnake, Butler’s gartersnake, eastern hog-nosed snake, massasauga rattlesnake and queen snake) and three turtles (Blanding’s turtle, spiny softshell turtle and common musk, or stinkpot turtle). And four more species, the eastern ribbonsnake, milksnake, northern map turtle and five-lined skink, are listed as of special concern, the lowest level of risk in the SARO categories, which is reserved for species “with characteristics that make it sensitive to human activities or natural events” and are therefore at risk of becoming threatened or endangered.

That leaves only a few species that are doing well enough not to be considered at risk under SARO. Two of eight turtle species technically are in the clear (common snapping turtle and painted turtle). Only seven of 18 snakes are considered to be doing well enough not to worry about, and two of those are gartersnakes. The others are the northern watersnake, red-bellied snake, Dekay’s brown snake, smooth green snake and northern ring-necked snake. (For species listed federally as being at risk under SARA, see sidebar at right.)

We know precious little about any of our reptile populations. We know some of them, such as gartersnakes, are fairly common and that others (such as the Lake Erie watersnake, found only on the islands of western Lake Erie, including Pelee Island) are quite rare. But we have little information on the population numbers for any of them, certainly not enough to be complacent about even the species not listed under SARO or to take heart in the fact that some are in the lowest-risk SARO categories and are not endangered or extirpated. “It’s next to impossible to have population numbers for most of the species unless you’re doing an intensive, multi-year mark-recapture study,” Crowley explains. The expense involved precludes undertaking such studies.

Crowley likes to compare counting reptiles to counting birds. To compose something like the *Atlas of the Breeding Birds of Ontario*, you need a lot of effort and volunteer energy. But, as Crowley is quick to note, “There aren’t as many reptile watchers as there are bird watchers.” Indeed, a large number of at-risk reptiles inhabit Point Pelee National Park, according to sightings documented in the Ontario Herpetofaunal Summary Atlas. But the park’s website emphasizes birds, with nary a word about reptiles at risk.

Reptile watching is pretty far down the list of outdoor pastimes. For starters, reptiles are not easy to watch. They are not up in a tree or soaring through the sky. And while some turtle species can be spotted sunning on a log, snakes generally like to stay out of sight. Reptiles do not sing like birds or make noises as frogs do, which means a trained person cannot identify the reptiles in a particular area by sound (a massasauga may rattle, but only rarely, as a warning).

“Reptiles are cryptic animals,” Crowley elaborates. Being cold blooded, or ectothermic, they rely on ambient temperature to maintain their body temperature and metabolism. That requires different strategies, basking in the sun being only one of them. Snakes can stay quite warm and find food in covered areas that trap the sun’s heat. Reptiles also tend

What we’re losing

The overlap between what the provincial and federal governments consider to be at-risk species is somewhat confusing. This article focuses on species identified as at risk in the Species At Risk in Ontario (SARO) list, made under the Endangered Species Act (2007), which became law on June 30, 2008. Species at risk also fall under the purview of the federal government, through the Species at Risk Act (SARA), which became law in December 2002.

Under SARA, species that the Committee on the Status of Endangered Wildlife in Canada identifies as being at risk are submitted to the Governor General in Council (the Governor General, acting on advice of Cabinet) for consideration for inclusion on Schedule 1 of SARA. Species are categorized according to the same classifications used in Ontario: extirpated, endangered, threatened or of special concern. Once a species is on Schedule 1, measures to protect and recover the species are implemented. A recovery strategy must be posted on a public registry for comment prior to implementation.

To date, 15 reptiles in Ontario have been listed on Schedule 1. The SARA classification usually agrees with the SARO classification used in Ontario. The timber rattlesnake, however, is listed as extirpated in Ontario on Schedule 1 of SARA, but is considered endangered under SARO. SARA has also placed the blue racer and spotted turtle in Ontario on Schedule 1’s endangered list. Threatened species in Ontario on Schedule 1 are the eastern foxsnake, Butler’s gartersnake, massasauga rattlesnake, eastern ratsnake, eastern hog-nosed snake, queen snake, spiny softshell turtle, stinkpot turtle and Blanding’s turtle. Species of special concern are the milksnake, eastern ribbonsnake and northern map turtle.

To learn more about SARO and inspect the species list, go to www.mnr.gov.on.ca/en/Business/Species. To access the SARA public registry, go to www.sararegistry.gc.ca

Douglas Hunter



Eastern ratsnake
Status: threatened

The guardians

Last May, Ontario's Ministry of Natural Resources announced funding for six stewardship projects for species-at-risk protection. All but one (involving protection of a piping plover nest site in the Sauble Beach area) has a significant degree of focus on reptiles. Friends of MacGregor Point Provincial Park is running an outreach project to increase public awareness and knowledge about at-risk reptiles in the park and the surrounding Bruce County area. Ausable Bayfield Conservation Foundation is restoring and enhancing river buffers and wetlands in support of 15 SARO-listed species, including the queen snake. Huron County Stewardship Council is pursuing similar habitat restoration in support of species that include the wood turtle and queen snake, and received an additional grant to monitor wood turtles and enhance their habitat. And Ontario Nature received funding for its Reptiles at Risk surveys, mapping habitats for SARO-listed reptiles on and around its six nature reserves in Bruce and Grey counties. The surveys will be used to identify focus areas for habitat restoration, potential natural corridors to connect fragmented populations and key habitat areas as priorities for protection.

Douglas Hunter



Wood turtle
Status: endangered

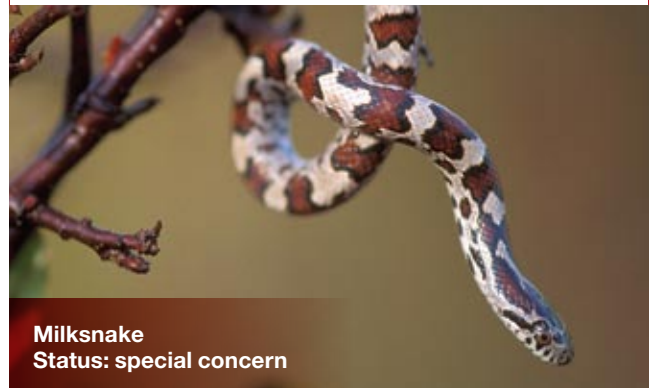
Fitting in

Given the dislike many people have of reptiles, why should the general public care about reptile species whose populations are at risk? Of what value are reptiles?

As predators, reptiles eat everything from worms, insects and rodents to frogs and fish. "Turtles play an important role as scavengers in keeping wetlands clean," Crowley notes. "Snakes control rodent populations, milksnakes especially, and rattlesnakes too."

But justifying the existence of reptiles on the basis of their prey is hazardous. Someone worried about declining amphibian numbers may become indifferent to negative impacts on watersnakes if their demise appears to help leopard frogs. The emphasis in ecological thinking these days is likely to be on the integrity of the whole, leading to the belief that we should not tinker with individual elements, particularly when we do not have a very good idea of species' population numbers and the consequences of allowing them to decline or become extirpated. This is particularly true of reptiles, since we know so little about their numbers and at what point stresses on a population will trigger problems at a system-wide level. Notes Crowley: "I had a professor in my undergrad years who called it 'rivet popping.' A plane can lose a few rivets, but you can only lose so many before the whole thing falls apart."

Douglas Hunter



Milksnake
Status: special concern

to be active at particular times of day. When the weather is rainy or too overcast, you probably won't find them.

Generally, people do not want to look for reptiles at all. But some will vigorously seek them out. One of the greatest threats to turtles is poaching. The problem is so serious that Crowley does not want to reveal even general locations where spotted turtles, an endangered species, have been identified, because he knows from experience that once word gets out, people will come to poach them.

"There's an underground trade," confirms Mark Carabetta, Ontario Nature's conservation science manager. "People who look for spotted turtles are pretty savvy. They can look at the species range map and check the habitat in a particular area like a nature reserve and key in on it."

Out of fear and ignorance, some people kill snakes without hesitation, even snakes whose patterning and colouration look only vaguely rattlesnake-like, such as the foxsnake, the milksnake, the hog-nosed snake and the watersnake. That predilection is what makes outreach educational programs so important. Snakes will not hurt you (except perhaps

when you handle them) and generally avoid humans.

While outreach and public education programs have improved people's attitude toward massasaugas, sometimes the well-meaning public has done more harm than good. Cottagers are known to relocate massasaugas they find on their property, but if they move the animals too far, they might as well kill them with a shovel. These snakes are creatures of habit, and if they cannot find their way back to where they previously hibernated (their hibernaculum) for the next winter, they are doomed. "We move a fair number of them for public safety reasons," says Andrew Promaine, an ecologist at Georgian Bay Islands National Park. "It's been our experience that they can be moved about 500 metres. It seems to allow them their space, and they don't lose track of their overwintering site. We tag them, and we know they're surviving." He notes that "they don't like being around where people are," and that simply moving them away from a trail can create a sufficient buffer zone.

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To learn more about reptiles

The Canadian Forest Service (CFS), part of Natural Resources Canada, provides an online study titled "Bioclimatic mapping of Ontario reptiles and amphibians" (cfs.nrcan.gc.ca/subsite/glfc-amphibians). A collaboration between the CFS in Sault Ste. Marie, the Natural Heritage Information Centre of the Ontario Ministry of Natural Resources (MNR) and the University of Guelph, the study's bioclimatic mapping of Ontario species serves as a resource in large-scale conservation planning. The study presents mapping profiles for 43 different species and sub-species of reptiles and amphibians, describing where they were known to be or have been, and where they could or ought to be.

Other Sources

- The Royal Ontario Museum, in cooperation with MNR, offers an informative portal (www.rom.on.ca/ontario/risk.php) to information about species at risk in Ontario.
- To learn more about the eastern massasauga rattlesnake, visit the website of the Eastern Massasauga Rattlesnake Recovery Team (www.massasauga.ca).
- Georgian Bay Biosphere Reserve (www.gbbr.ca) offers online information about 10 reptile species at risk in its area, as well as a form for reporting sightings.
- Trent-Severn Waterway National Historic Site of Canada (www.waterwaywildlife.com) provides information on the 11 reptile species at risk along its 386-kilometre chain of lakes and rivers.



Massasauga rattlesnake
Status: threatened

Late in our walk through Kinghurst, the path takes Crowley and I through open meadow covered with wildflowers. We follow a loose stone fence, a relic of the farm long ago abandoned. Over the course of the summer, Crowley has been able to identify at-risk snake species at four of the six Ontario Nature reserves in his study area. He has found ribbonsnakes at Kinghurst, Lyal Island and Baptist Harbour, massasaugas at Lyal Island, Bruce Alvar and Baptist Harbour, and milksnakes at Bruce Alvar and Baptist Harbour.

Eyeing the stone fence and field, Crowley remarks on how it is good potential habitat for milksnakes, which he has not found yet at Kinghurst. But a man who is leasing a neighbouring property says he has seen one, and his description is credible. "I'm not ready to give up on them here yet," Crowley says of the phantom milksnakes.

"Cryptic" is the word that regularly comes up in discussing the province's reptiles. Before this day, I would not have known that milksnakes might be living in an old stone wall, or the pattern difference between a ribbonsnake and a gartersnake, or that a watersnake has sharp teeth but will not bother you unless you try to pick it up. Thanks to Crowley's tour of Kinghurst, its snakes are now a bit less cryptic. 🐍

Douglas Hunter has written about loons, cormorants and cougars for ON Nature. His latest book, *God's Mercies*, was a finalist for the Nereus Writers' Trust Non-Fiction Prize and for the Governor General's Literary Awards.

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