

Community Update: Reptile Conservation in Carling Township

From May – October 2022, the Georgian Bay Biosphere (GBB) continued our road ecology surveys in the Township of Carling (TOC). Three times a week, Biosphere staff could be seen biking in search of alive and dead reptiles on the road. In 2022, GBB staff completed 61 road surveys on a 2.6km stretch of road - that's a total of 317 km biked! We are grateful to project partners Wasauksing First Nation and Shawanaga First Nation, on whose traditional lands this research is being conducted.

Why Survey Roads for Reptiles?

Road mortality is one of the greatest threats to reptiles-at-risk today. Both snakes and turtles use roadways to access habitat on either side of the road, and thus are frequently hit by passing vehicles. They may also use roads to bask, absorbing heat from the pavement as they can't regulate their own body temperatures. In addition, female turtles have an especially high risk because they often use road shoulders to lay their eggs in the soft gravel making them susceptible to vehicle strikes and their nests easily found by predators. Most turtle nests naturally have low hatching success, and for some species it can take a female up to 60 years to replace herself in a population (i.e. have one egg of hers hatch and survive to a reproductive age). Therefore, the loss of female turtles on roads can have serious impacts to local turtle populations.



Within the Biosphere region, you can find twelve different species of reptiles-at-risk, including species such as Foxsnakes (Endangered) and Blanding's Turtles (Threatened). The information collected from road ecology surveys help us to identify "hotspots" or common crossing points of reptiles along the road. This helps us to identify areas that pose a great risk for reptiles, and allows us to recommend road improvements and mitigation measures that will assist in better protecting these vulnerable species.

Why are Reptiles Important?

Turtles help keep waters clean and healthy as many species, especially Snapping Turtles, are scavengers who consume dead plants or animals at the bottom of lakes and wetlands. This helps to aid in decomposition and reduces bacteria levels. Snakes are carnivores whose diets include animals such as rodents and insects. By consuming rodents, research has shown that snakes help to control many rodent-borne diseases. They also help to reduce the risk of Lyme disease by ingesting the ticks found on these rodents. Last but not least, a snake's diet helps to control agricultural and garden pests that feast on crops and gardens. Give thanks to a snake the next time your veggie garden has less pests!

Road Survey Results

In the 2.6 km assessed in 2022, we found a total of 24 snakes, 3 turtles, and 33 turtle nests. Of these observations, 7% were found alive, 38% were found dead, and 55% were documented turtle nests.

During these road surveys, several reptiles-at-risk on the road were found, including Massasauga Rattlesnakes (Threatened), Blanding's Turtles (Threatened), and Snapping Turtles (Special Concern). Notably, outside of road surveys our Biosphere staff also found an Eastern Foxsnake (Endangered) in the area. With 9 total reptile species observed, it's clear that the land surrounding this area is home to a variety of reptile species. Without mitigation measures put in place, the effects of roads for these species may continue to threaten their local populations.



Wildlife Fence Pilot

Road mortality monitoring found that the wetland, which is bisected by this road, was a 'hotspot' for reptile mortality, use, and a designated provincially significant wetland. Unfortunately, there is no proven method to effectively divert or attract snakes or turtles away from roads other than fencing. To protect reptiles from roads we need physical barriers, like fences, to direct reptiles towards crossing structures (e.g. culverts), which they can then use to safely bypass the road. Without fencing to direct wildlife towards these crossings, they continue to cross the roads normally and risk getting hit by cars. Studies have also shown that blunt fence ends will move mortality 'hotspots' to the place where the fence ends, which is why you may notice curved fence ends attempting to redirect wildlife back towards crossings.

The design of a fence differs depending on the local species. In 2021 the TOC and GBB partnered to mitigate the hotspot while coinciding with culvert replacements. Our target species for this project are large-bodied species such as Eastern Foxsnakes, Massasauga Rattlesnakes, Snapping Turtles, and Blanding's Turtles. When designing the fencing for this area, we had to consider that Foxsnakes, a Threatened species, are excellent climbers and require a vertically straight fence that is a minimum of 2 meters in height and with an overhang (as per provincial guidelines). The concave design could be shorter because Foxsnakes have more difficulty climbing smooth and curved surfaces, however this has never been tried before making this a new design needing testing and monitoring. The TOC Public Works department also preferred a design that placed the fence at grade where the ditch is located, so that it would not impede or be destroyed by road maintenance (e.g. grading, snow plowing). When considering species needs alongside other important factors such as aesthetics, road terrain, road maintenance, seasons/weather, potential for yearly maintenance, and long-term maintenance, this at-grade, concave design had the potential to check all those required boxes.



This fence is a pilot design for species like Foxsnakes and other climbing snakes, and testing this design will help us learn how to use the same or similar designs in other areas, including other parts of Ontario, across Canada, and the United States. We are grateful that townships like Carling are willing to support and pilot projects like these that value, support, and reduce threats to species at risk.

What is New in 2023?

The following maintenance activities are planned by the TOC for later this year:

1. Add more sand where settling over the winter has taken place. (Completed)
2. Add small gravel to the road shoulder areas.
3. Add a layer of topsoil to encourage some growth of small plants.
4. Transplant specifically chosen native plants and shrubs to begin revegetation.
5. Later this fall, we plan to seed the road shoulders with native grasses and flowers that will also help with stabilization and overall remediation.

Beginning in spring 2023, Sabrina Lounsbury, a graduate student from Laurentian University will work with GBB on evaluating design effectiveness. Evaluation is important because learning the benefits, as well as the shortcomings, of this pilot design are key to learning how to make it better.

This will include determining:

- If the fencing effectively reduces mortality at the identified hotspots through road surveys;
- Fence effectiveness at directing reptiles towards safe crossings/culverts;
- Behavioral studies to determine how reptiles interact with the fence;
- Reptile usage of crossings/culverts and what other wildlife may be using them; and
- Maintenance needs, structural durability, and performance of structure over time, including the effects of freeze-thaw cycles, and public works activities;
- Reptile populations in the wetland complex.



What if I Find a Reptile on the Road?

If safe to do so, help move the species off the road. Approach from behind and move the animal to the other side of the road in the direction it was heading.

If you come across an injured turtle on the road, you can help by carefully placing the injured turtle in a dry, well ventilated container with a lid. Injured turtles can be taken to the Ontario Turtle Conservation Centre (OTCC) for veterinary care. After receiving the necessary care and rehabilitation, turtles will be returned to the area they were found. Learn more about how you can help save injured turtles at: www.ontarioturtle.ca.

For more information, check out these resources on our website:

- Turtle Guide <https://www.gbbr.ca/wp-content/uploads/2020/07/Turtles-on-Roads-Guide.pdf>
- Article on turtles and roads

<https://www.gbbr.ca/why-did-the-turtle-cross-the-road>

Report your Observations for Conservation!

An on-the-go app, iNaturalist, is free to use and can be used wherever you go! All species observations are welcome to the Georgian Bay Biosphere project. More information on how to join the project can be found at: <https://www.inaturalist.org/projects/georgian-bay-biosphere>

Thank you! Miigwech!

The Georgian Bay Biosphere

Be prepared to help injured turtles!

Contact the Georgian Bay Biosphere to purchase a Turtle Trauma Kit. This kit includes everything to help you get injured turtles to a wildlife centre for veterinary care.

Turtle kits can be purchased online for \$20 at:
<https://www.gbbr.ca/product/turtle-trauma-kit/>