

2023 Ontario Envirothon Provincial Presentation Scenario

Theme: Reducing Adult Mortality in Species-at-Risk Turtles

Goal: Develop a mitigation strategy that can reduce adult turtle mortality in along a well-travelled highway.

Background:

All eight of the turtle species found in Ontario are federally listed as species-at-risk. They share many major threats, including habitat loss & fragmentation, predation, and road mortality. There are many conservation efforts that focus on early life stages of turtles, but few that focus on adult mortality. However, increases in adult turtle mortality rates can seriously impact population resiliency. Due to their life cycle (i.e. high juvenile mortality, slow maturation) the unexpected loss of breeding adults can be devastating. Very small increases in the mortality rate of adult turtles can lead to the decline of a population.

A small area 10 km east of a large city in Eastern Ontario has had 24 observations of turtles within roughly 1.14 km² reported to the Toronto Zoo's Turtle Tally Community Science program (an initiative that records observations of turtles from members of the public) within the span of four (4) years. Most of the observations submitted are of adult turtles on or near Highway 2, where the speed limit is 80km/hr. There are currently no mitigation measures in place to reduce or prevent turtle mortality in this area. Highway 2 is heavily used, as it is the only road access to a popular marina. The area also contains a healthy wetland home to many species as well as farmlands and forests.

Turtles regularly wander over land to search for mates, new territory, or to move between wetlands or other aquatic habitats. As such, they can be found in May, June, and July crossing the highway to travel from one part of their habitat to another. Given the high number of turtles found in a small area, and the increasing volume of traffic, residents and community groups want to implement a plan to protect the turtles in this area.

Your teams task is to develop a comprehensive mitigation strategy that is aimed at protecting and preserving the adults within this area and, if successful, could serve as a model to be applied elsewhere in the province.

Elements of your implementation plan must include considerations such as generating public awareness and support, signage to warn drivers of wildlife that may be near/on the roads, perhaps seasonal road closures and/or barriers to keep wildlife off of fences, etc., while balancing limited resources such as cost. For this project, your community group has a budget of up to \$100,000 over 3 years.

Additional Details & Considerations

- Landscape/Habitat features to consider include: location of wetlands, the road and road types, the location of a marina, and proximity to residential areas (as seen on accompanying map).
 - For more information on turtles and roads, [read this article](#).
- Budget: proposals should be mindful of a budget of up to \$100,000.
- Your solution should consider the viewpoints of multiple stakeholders such as:
 - Local Indigenous peoples and communities
 - [Ministry of Transportation Ontario](#) (MTO)
 - NGOs such as [EcoKare International](#), [Turtles Kingston](#)
 - [Cataraqui Conservation Authority](#)
 - City Council/local government
 - Local residences and business owners
- Consider questions such as, how does the solution engage with/appeal to potential stakeholders, residents concerned with road impacts and the vitality of their local wetlands?
- Are there other species in the area which may be negatively impacted by protecting turtles?
- Monitoring

Your Task:

Your teams task is to develop a comprehensive mitigation strategy that is aimed at protecting and preserving the adults within this area with a budget of \$100,000. If successful, could serve as a model to be applied elsewhere in the province.

We encourage you to think "outside the box" and try to come up with novel ideas, methods, and/or applications. You have been provided with data from Ontario Turtle Tally, including information on where the turtles were found in this area and what behaviour they were exhibiting, so that you can get a sense of what scenarios lead to human-turtle interactions or sightings.

Your team should consider how your proposed solution will address the issue of adult turtle mortality and be prepared to explain the

Appendix I: Species Specific Information

Midland Painted Turtle

- Food Sources: Algae, invertebrates, fish, frogs, carrion and vegetation.
- Nesting: Females nest from May to early July, choosing open, south-facing, sloped areas with sandy-loamy and/or gravel substrate within 200 m of water.
- Habitat Types: Slow moving, relatively shallow and well-vegetated wetlands and water bodies with abundant basking sites and organic substrate.
- Threats: Main threats include: habitat loss, road mortality (particularly during nesting periods), and nest predation by subsidized predators (e.g. Raccoon, Skunk) in areas where these predators are hyper-abundant. Other threats include: poaching for pet trade or human consumption, introduction of exotic or invasive species, fishing by-catch (including drowning in commercial fishing traps), and chemical contamination of aquatic habitats.

Northern Map Turtle

- Food Sources: Mollusks, insects, fish.
- Nesting: Females nest in late May or June, choosing sites that are typically in sandy, open-canopy habitats within a few hundred metres of water.
- Habitat Types: Large rivers and lakes with slow-moving water and a soft bottom. They require high-quality water that supports the female's mollusc prey.
- Threats: Main threats include: Poor water quality that affects prey abundance, habitat loss (particularly with respect to basking and nesting sites), road mortality to nesting females. Other threats include: boat propeller stickers, fishing by-catch, boat traffic disrupting basking and nesting behavior, nest predation by subsidized predators and poaching for pet trade or human consumption.

Snapping Turtle

- Food Sources: Aquatic plants, invertebrates, fish, frogs, snakes, small turtles, aquatic birds and relatively fresh carrion.
- Nesting Behaviors: Females nest in late May or June, choosing open-canopy habitats with high sun exposure, such as in forest clearings, meadows, shorelines, rock outcrops, agricultural fields and the shoulders of roads. The nest sites are typically within a few hundred metres of a wetland or water body.
- Habitat Types: The snapping turtle occurs in almost any freshwater habitat. Typical water bodies used by snapping turtles include fens, bogs, swamps, marshes, permanent or temporary ponds, and shallow bays of lakes and rivers.
- Threats: Main threats include: habitat loss, road mortality (particularly with respect to nesting females).. Other threats include: nest predation by subsidized predators, hunting for human consumption or killed due to widespread misconceptions that they are dangerous to swimmers, introduction of exotic invasive species, fishing by-catch, and chemical contamination of aquatic habitats.



Legend

Turtle Sightings by Species

- Midland Painted Turtle
- Northern Map Turtle
- Snapping Turtle
- Unknown Turtle

