

Eastern Banded Tigersnail

Ontario Government Response Statement



Photo: Annegrit Nicolai

Protecting and Recovering Species at Risk in Ontario

Species at risk recovery is a key part of protecting Ontario's biodiversity. The *Endangered Species Act, 2007* (ESA) is the Government of Ontario's legislative commitment to protecting and recovering species at risk and their habitats.

Under the ESA, the Government of Ontario must ensure that a recovery strategy is prepared for each species that is listed as endangered or threatened. A recovery strategy provides science-based advice to government on what is required to achieve recovery of a species.

Generally, within nine months after a recovery strategy is prepared, the ESA requires the government to publish a statement summarizing the government's intended actions and priorities in response to the recovery strategy. The response statement is the government's policy response to the scientific advice provided in the recovery strategy. In addition to the strategy, the government response statement considered (where available) input from Indigenous communities and organizations, stakeholders, other jurisdictions, and members of the public. It reflects the best available local and scientific knowledge, including Traditional Ecological Knowledge where it has been shared by communities and Knowledge Holders, as appropriate and may be adapted if new information becomes available. In implementing the actions in the response statement, the ESA allows the government to determine what is feasible, taking into account social, cultural and economic factors.

The Recovery Strategy for the Eastern Banded Tigersnail (*Anguispira kochi kochi*) in Ontario was completed on July 22, 2019.

Eastern Banded Tigersnail is a large terrestrial snail that has distinctive dark bands around its yellow-brown shell. The shell has an opening in the centre when viewed from below. The shell size, thickness, colour and visibility of bands can vary.

Protecting and Recovering Eastern Banded Tigersnail

Eastern Banded Tigersnail is listed as an endangered species under the ESA, which protects both the snail and its habitat. The ESA prohibits harm or harassment of the species and damage or destruction of its habitat without authorization. Such authorization would require that conditions established by the Ontario government be met.

Globally, the Eastern Banded Tigersnail occurs in North America, from southwestern Ontario, south to Tennessee, east to Pennsylvania and West to Missouri. In Canada, the species is found in Ontario on Pelee Island and Middle Island in Lake Erie. The species has also been known to occur on Middle Sister Island, East Sister Island, and North Harbour Island and Hen Island in Lake Erie; however, no recent observations have been documented at these locations. The species is presumed to be extirpated from East Sister, Middle Sister and North Harbour islands as suitable habitat no longer remains. Suitable habitat remains on Hen Island; however, this location has not been recently surveyed as access is limited. An unverified record of the species has also been documented near Alvinston (Lambton County).

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) report in 2017 estimates the Ontario population to be approximately 800,000 mature individuals. The highest density of the species (measured in 2018) was found at the Fish Point Provincial Nature Reserve on Pelee Island, which has a much higher abundance compared to all other sites.

Eastern Banded Tigersnail is an air-breathing, egg-laying terrestrial snail that possesses both male and female reproductive organs. Very little is known about the biology, genetics, and habitat requirements of the Eastern Banded Tigersnail in Canada. Based on related gastropods, it can be assumed that sexual maturity is reached after two to three years and their lifespan is up to 10 years. Mating likely occurs multiple times per year and eggs are deposited in shallow holes excavated in moist soil.

The species is found in moist forest environments with substantial leaf litter, decaying logs, and rich soil suitable for hibernation, aestivation (dormancy) and egg-laying. Information on home range size, dispersal ability and key habitat use requires further investigation.

Threats to Eastern Banded Tigersnail are poorly understood. Climate change may be a significant threat as the species has low tolerance to fluctuating environmental conditions. The risk of extreme temperatures resulting in spring frost are a threat at all sites. Double-crested Cormorants (*Phalacrocorax auritus*) are presumed to be the main reason for the extirpation of Eastern Banded Tigersnail on Middle Sister and East Sister islands and have decreased the amount of available forest habitat on

Middle Island. Invasive species such as Garlic Mustard (*Alliaria petiolata*), non-native earthworm (e.g., genus *Amyntas*) and other gastropod species such as Dusky Arion (*Arion subfuscus*), Grovesnail (*Cepaea nemoralis*), Orange-banded Arion (*Arion fasciatus*), and Grey Fieldslug (*Deroceras reticulatum*) may also negatively affect native snail populations by altering the soil composition, reducing the leaf litter layer and competing for habitat and food resources. Prescribed burns occur in the species' habitat and this management tool may directly and indirectly affect the survival of Eastern Banded Tigersnail by modifying the litter layer and changing the soil conditions following burns. Further research is required to determine the extent and severity of these threats and how they can be mitigated. Other threats may include predation by Wild Turkeys (*Meleagris gallopavo silvestris*), trampling from recreational trail use on Pelee Island, barriers to dispersal (trail widening, roads and service corridors), invasive earthworms, and pollution.

The species is limited by its low tolerance to fluctuating temperature and humidity and heavily relies on moist refuges that buffer these fluctuations. The species is also limited by its low dispersal ability and is unlikely to colonize new areas as current habitat patches are severely fragmented.

Given the limited distribution of Eastern Banded Tigersnail in Ontario and that the knowledge gaps associated with the species' life history, habitat use, interspecific interactions and threats are substantial, the government will focus efforts on maintaining and enhancing habitat to improve connectivity and increasing our knowledge of the species including its distribution, biology, habitat requirements and threats.

Government's Recovery Goal

The government's goal for the recovery of Eastern Banded Tigersnail is to maintain the current distribution in existing locations in Ontario by filling knowledge gaps, reducing threats and maintaining and enhancing habitat to improve connectivity.

Actions

Protecting and recovering species at risk is a shared responsibility. No single agency or organization has the knowledge, authority or financial resources to protect and recover all of Ontario's species at risk. Successful recovery requires inter-governmental co-operation and the involvement of many individuals, organizations and communities. In developing the government response statement, the government considered what actions are feasible for the government to lead directly and what actions are feasible for the government to support its conservation partners to undertake.

Government-led Actions

To help protect and recover Eastern Banded Tigersnail, the government will directly undertake the following actions:

- Continue to protect Eastern Banded Tigersnail and its habitat through the ESA.
- Undertake communications and outreach to increase public awareness of species at risk in Ontario.
- Continue monitoring and managing provincially protected areas with Eastern Banded Tigersnail in a manner consistent with park management plans (e.g., Fish Point Provincial Park).
- Educate other agencies and authorities involved in planning and environmental assessment processes on the protection requirements under the ESA.
- For populations that occur on Pelee Island, explore opportunities to work collaboratively with the Township of Pelee, including the Pelee Island Environmental Advisory Committee, the federal government and local partners to integrate approaches to stewardship, implement recovery actions and explore integrated approaches to managing species at risk.
- Encourage the submission of Eastern Banded Tigersnail data to Ontario's central repository through the NHIC (Rare species of Ontario) project in iNaturalist or directly through the Natural Heritage Information Centre.
- Continue to support conservation, agency, municipal and industry partners, and Indigenous communities and organizations to undertake activities to protect and recover Eastern Banded Tigersnail. Support will be provided where appropriate through funding, agreements, permits (including conditions) and/or advisory services.
- Collaborate with federal partners, such as Parks Canada, Environment and Climate Change Canada and Canadian Wildlife Service to implement protection and recovery actions for Eastern Banded Tigersnail on federal lands.
- Continue to implement the Ontario Invasive Species Strategic Plan (2012) to address the invasive species (e.g., garlic mustard) that threaten the Eastern Banded Tigersnail.
- Explore taking appropriate management actions in accordance with provincial policy direction on cormorants to support protection and recovery for Eastern Banded Tigersnail.
- Conduct a review of progress toward the protection and recovery of Eastern Banded Tigersnail within five years of the publication of this document.

Government-supported Actions

The government endorses the following actions as being necessary for the protection and recovery of Eastern Banded Tigersnail. Actions identified as “high” may be given priority consideration for funding under the Species at Risk Stewardship Program. Where reasonable, the government will also consider the priority assigned to these actions when reviewing and issuing authorizations under the ESA. Other organizations are encouraged to consider these priorities when developing projects or mitigation plans related to species at risk.

Focus Area: Research and Monitoring

Objective: Increase knowledge of Eastern Banded Tigersnail distribution in Ontario, improve knowledge of species biology, their habitat and site-specific threats.

Standardized surveys and monitoring will improve our knowledge of the distribution of Eastern Banded Tigersnail. Monitoring their status, habitat conditions and site-specific threats will help fill knowledge gaps and inform future recovery efforts. In addition, further understanding of species biology such as dispersal ability, life history, and genetics is required to support protection and management of the species and its habitat. Additional research is also needed to identify the extent and severity of the impact of climate change and invasive species, to help inform appropriate management actions.

Actions:

1. **(High)** Develop, implement and promote a standardized survey and monitoring protocol throughout the species’ known range in Ontario. Identification material should be included to accurately distinguish the species from other snails. Survey and monitoring activities should document and monitor:
 - species presence/absence;
 - species abundance;
 - habitat use and conditions; and,
 - site-specific threats.
2. **(High)** Conduct research to improve knowledge on Eastern Banded Tigersnail biology, ecology, and habitat such as:
 - habitat requirements;
 - dispersal ability and home range size;
 - life history and genetics;
 - adaptive strategies (e.g., reproduction, feeding, dispersal) in response to changing climatic conditions; and,
 - the interaction of Eastern Banded Tigersnail with non-native terrestrial gastropods.

3. Conduct surveys in suitable habitat to determine whether there are unknown populations of Eastern Banded Tigersnail.
4. Investigate the effects and severity of known and potential threats to Eastern Banded Tigersnail and identify potential mitigation measures as appropriate, which may include:
 - investigating the potential effects of climate change on the species and its habitat and options for mitigation (e.g., refuge areas and other habitat enhancement measures);
 - examining the potential effects of Double-crested Cormorants and Wild Turkeys on the species and/or their habitat;
 - investigating the potential effects of non-native earthworms on the species and their habitat; and,
 - investigating the species' response to habitat management actions (e.g., prescribed burns, mechanical vegetation removal).

Focus Area: Habitat and Threat Management

Objective: Maintain and improve the habitat for Eastern Banded Tigersnail and increase the level public awareness and engagement in protecting and recovering the species.

The Eastern Banded Tigersnail may be impacted by several threats including climate change, invasive species, predation, recreational activities (e.g., trail development), and pollution. As knowledge gaps are being filled on the extent and severity of these threats, management efforts should be focused on maintaining or enhancing habitat and minimizing threats to support the protection and recovery of this species. Identifying and targeting areas for habitat restoration and/or enhancement that are vulnerable to threats such as flooding, fire, and development would help to further reduce threats at occupied sites.

On Pelee Island, Eastern Banded Tigersnail is located within protected areas. Conservation organizations and local partners have been actively involved in the ongoing maintenance and restoration of these areas (e.g., prescribed burns) to support multiple species at risk. In addition, many private landowners have undertaken efforts to preserve natural habitat on the island. As prescribed burns may impact Eastern Banded Tigersnail, working collaboratively on these efforts will promote the protection and recovery of this species.

Actions:

5. **(High)** Work collaboratively with municipalities, conservation partners, landowners and land managers to mitigate threats and develop, implement and evaluate management plans to maintain and/or improve the quality of Eastern Banded

Tigersnail habitat. Actions may include:

- identifying opportunities for habitat restoration and/or enhancement including creating refuge areas and encouraging connectivity, where there are willing partners;
- applying appropriate techniques informed by research to remove invasive plants (e.g., garlic mustard) if posing a direct threat to the species and monitoring success of management actions at identified sites;
- minimizing impacts from human-caused disturbances (e.g., recreational trail use); and,
- working with partners to minimize the impacts of prescribed burns taking place in Eastern Banded Tigersnail habitat.

Focus Area: Stewardship and Outreach

Objective: Increase the level public awareness and engagement in protecting and recovering the species.

Increasing public awareness of this species and encouraging participation in management will also contribute towards recovery efforts. Involvement of volunteers including species experts, naturalists and land stewards should also be encouraged to maximize efforts.

Actions:

6. Engage volunteers to participate in surveys for this species to determine its presence or absence using citizen science programs (e.g., iNaturalist).
7. Develop education and outreach material to promote the awareness of the species at existing locations. Information should include:
 - how to identify the species;
 - the species' habitat requirements;
 - protection afforded to the species and its habitat under the ESA; and,
 - actions that can be taken to avoid or minimize impacts to the species and its habitat including preventing trampling.

Implementing Actions

Financial support for the implementation of actions may be available through the Species at Risk Stewardship Program. Conservation partners are encouraged to discuss project proposals related to the actions in this response statement with Ministry of the Environment, Conservation and Parks staff. The Ontario government can also advise if any authorizations under the ESA or other legislation may be required to undertake the project.

Implementation of the actions may be subject to changing priorities across the multitude of species at risk, available resources and the capacity of partners to undertake recovery activities. Where appropriate, the implementation of actions for multiple species will be co-ordinated across government response statements.

Reviewing Progress

The ESA requires the Ontario government to conduct a review of progress towards protecting and recovering a species no later than the time specified in the species' government response statement, or not later than five years after the government response statement is published. The review will help identify if adjustments are needed to achieve the protection and recovery of Eastern Banded Tigersnail.

Acknowledgement

We would like to thank all those who participated in the development of the Recovery Strategy and Government Response Statement for the Eastern Banded Tigersnail (*Anguispira kochi kochi*) in Ontario for their dedication to protecting and recovering species at risk.

For additional information:

Visit the species at risk website at ontario.ca/speciesatrisk
Contact the Ministry of the Environment, Conservation and Parks
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www.ontario.ca/environment