

Hoptree Borer

Ontario Government Response Statement



Photo: Jean-Francois Landry

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.

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 Hoptree Borer (*Prays atomocella*) in Ontario was completed on December 7, 2018.

Hoptree Borer is a small moth with forewings that are pure white with black spots and a wingspan of 17 to 20 mm. Hoptree Borer is dependent on its host plant the Common Hoptree (*Ptelea trifoliata*), which is listed as special concern on the Species at Risk in Ontario (SARO) List.

Protecting and Recovering Hoptree Borer

Hoptree Borer is listed as an endangered species under the ESA, which protects both the insect 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 distribution of Hoptree Borer is not well known, but the species generally occurs from the southern Great Lakes region through the midwestern United States to south-central Texas, coinciding with the distribution of its larval host species, the Common Hoptree. Hoptree Borer is considered to be rare throughout its range and is not found in all locations where Common Hoptree occurs.

In Canada, Hoptree Borer are only found in Ontario and population levels and trends are generally unknown. There are seven confirmed records of the species in the province consisting of adults on the west side of Point Pelee National Park on the north shore of Lake Erie, and larval feeding damage on Common Hoptrees on Pelee Island.

Hoptree Borer is a small, highly specialized moth dependent on its only host species, the Common Hoptree, which is primarily restricted to sandy shorelines. Hoptree Borer likely deposits eggs during mid to late June, and larvae then bore into the twigs of Common Hoptree, creating a cavity in the stem. Larvae feed on leaves and other plant tissue until late summer or fall and likely overwinter in the cavity. The following spring, larvae resume feeding on young shoots of Common Hoptree until they are ready to pupate. Adults emerge shortly thereafter and lay eggs on Common Hoptree shoots. Dispersal and migration have not been documented and are likely limited by the discontinuous distribution of Common Hoptree in Ontario.

Common Hoptrees are found in seven core areas along the north shore of Lake Erie and Lake Erie islands (Middle Island, Pelee Island, the Essex County shoreline including mainland Point Pelee National Park, Walpole Island First Nation, Rondeau Provincial Park, Port Burwell Provincial Park, Regional Municipality of Niagara). Within these core areas, Hoptree Borer has only been documented on the Essex County shoreline (Point Pelee National Park) and Pelee Island. Hoptree Borer has only been found at sites where Common Hoptree grows abundantly (1,000 to 10,000 mature Common Hoptrees) on sandy shorelines and has not been found in smaller isolated Common Hoptree populations.

In 2017, Hoptree Borer's host plant, Common Hoptree, was down-listed provincially from threatened to special concern based on the Committee on the Status of Species at Risk in Ontario's (COSSARO) assessment. Focussed survey efforts resulted in a significant increase to the number of known individuals since the species was first listed in Ontario.

Undiscovered populations of Hoptree Borer may exist elsewhere in Ontario within the range of Common Hoptree as little survey effort has been dedicated to smaller moths (e.g., Hoptree Borer) in most jurisdictions. Given the population size of Common Hoptrees and proximity of other Hoptree Borer observations, further searches are warranted on Middle Island, Essex County west of Point Pelee and Pelee Island. Hoptree Borers are unlikely to be found within the remaining Common Hoptree core areas due to smaller Common Hoptree population levels, geographic isolation, unfavourable climate conditions, or a combination of these factors. Targeted surveys for Hoptree Borer in Rondeau Provincial Park and the Niagara region occurred in 2014 and indicate the species is absent in these areas. Port Burwell Provincial Park may also warrant searches due to large numbers of Common Hoptrees; however, as it is located between the Niagara and Rondeau search areas where the species was found to be absent it is thought there is a reduced likelihood that Hoptree Borer is present.

Knowledge gaps exist regarding the distribution and population levels of Hoptree Borer and the life cycle of Hoptree Borer in Canada. Current information on the biology of Hoptree Borer is largely inferred from Hoptree Borer in the United States or other closely related species. The species' dispersal capabilities, migration and adult feeding behaviour are also unknown.

The main threats identified for Hoptree Borer are habitat related and are those identified for its host species, Common Hoptree – the loss of suitable habitat from the alteration of natural dune processes from shoreline hardening, vegetation succession, and competition from invasive species such as Japanese Knotweed (*Polygonum cuspidatum*), White Poplar (*Populus alba*), Spotted Knapweed (*Centaurea maculosa*), English Ivy (*Hedera helix*), Garlic Mustard (*Alliaria petiolaris*) and Orange Daylily (*Hemerocallis fulva*). Hoptree Borer's host, Common Hoptree, may be impacted in some areas by Double-crested Cormorants (*Phalacrocorax auritus*) from deposition of guano (feces). Double-crested Cormorants are found in high numbers on Middle Island (where Common Hoptrees are found) and lands are managed federally by Parks Canada as it occurs within Point Pelee National Park. Middle Island has not yet been surveyed for Hoptree Borer.

Potential threats to Hoptree Borer include control measures for Gypsy Moth (*Lymantria dispar dispar*) from ground and aerial spraying of the pesticide BtK (*Bacillus thuringiensis var. kurstaki*) and competition for resources from other insects. Several insect species are dependent on Common Hoptree and feed on the twigs, leaves and nectar, and the direct impacts of the interspecific competition for resources to Hoptree Borer and its host are unknown. Hoptree Borer may also be impacted by higher predation pressure from migratory birds on Point Pelee.

Given that Hoptree Borer is a specialist species that relies on its only host, Common Hoptree, recovery efforts for Hoptree Borer will focus on maintaining and protecting habitat including its host species, the Common Hoptree, in areas where Hoptree Borer is found while filling knowledge gaps related to the species' biology, ecology and population level/trends. Further surveys in suitable habitat will improve knowledge of the distribution of Hoptree Borer and inform priority areas for recovery implementation. Ecosystem-focussed recovery efforts (including research) are encouraged for Hoptree Borer and its host to ensure threats are mitigated effectively and in consideration of complex ecological relationships.

Government's Recovery Goal

The government's goal for the recovery of Hoptree Borer is to maintain the distribution of the species at existing locations in Ontario by filling knowledge gaps and managing threats to the species and to its host species.

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 cooperation 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 Hoptree Borer, the government will directly undertake the following actions:

- Continue to monitor and manage provincially protected areas with Hoptree Borer and Common Hoptree in a manner consistent with park management plans (e.g., Fish Point Provincial Park).
- Explore taking appropriate management actions in accordance with provincial policy direction on cormorants to support protection and recovery for Hoptree Borer and its host, Common Hoptree.
- Work with partners and stakeholders to support pollinator health in Ontario through actions such as integrated pest management and education.
- Collaborate with federal partners, such as Parks Canada, Environment and Climate Change Canada and Canadian Wildlife Service to implement protection and recovery actions for Hoptree Borer and its host species on federal lands.
- 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.
- Continue to implement the *Ontario Invasive Species Strategic Plan* (2012) to address the invasive species (e.g., Garlic Mustard) that threaten Hoptree Borer.
- Educate other agencies and authorities involved in planning and environmental assessment processes on the protection requirements under the ESA.
- Encourage the submission of Hoptree Borer data to the Ontario's central repository through the citizen science project that they receive data from (i.e., iNaturalist.ca) and directly through the Natural Heritage Information Centre.
- Undertake communications and outreach to increase public awareness of species at risk in Ontario.
- Continue to protect Hoptree Borer and its habitat through the ESA.
- Support conservation, agency, municipal and industry partners, and Indigenous communities and organizations to undertake activities to protect and recover Hoptree Borer. Support will be provided where appropriate through funding, agreements, permits (including conditions) and/or advisory services.
- Encourage collaboration, and establish and communicate annual priority actions for government support in order to reduce duplication of efforts.
- Conduct a review of progress toward the protection and recovery of Hoptree Borer 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 Hoptree Borer. 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: Inventory and Monitoring

Objective: Increase knowledge of the distribution, abundance and habitat conditions of Hoptree Borer and its host species.

The population size and trends for Hoptree Borer are generally unknown and very few individuals have been found. To improve knowledge of Hoptree Borer distribution, surveys and inventory are required in suitable areas where Common Hoptree are found in larger stands on sandy shorelines, particularly Middle Island, Essex County west of Point Pelee, unsurveyed areas of Pelee Island and at Port Burwell Provincial Park. Implementation of a standardized monitoring program for Hoptree Borer and its host will improve knowledge of population sizes and trends over time. Surveys and monitoring should be appropriately timed for Hoptree Borer. In addition, identifying and documenting threats affecting Hoptree Borer and its host, Common Hoptree, will improve our understanding of the extent and severity of threats and enable management approaches to be adjusted accordingly.

Actions:

1. **(High)** Conduct surveys in suitable habitat to identify any new populations of Hoptree Borer in priority areas (e.g., Middle Island, Essex County west of Point Pelee, Pelee Island, and Port Burwell Provincial Park).
2. **(High)** Develop and implement a standardized monitoring program at locations where Hoptree Borer and its host species are known to occur. The monitoring program will document and assess:
 - presence and absence of Hoptree Borer;
 - health of Common Hoptree (including presence of pests and disease);
 - the distribution, population size and trends and extent of feeding damage of other insect species specializing on Common Hoptree;
 - type, quality, and extent of suitable habitat; and,
 - presence and significance of threats to both Hoptree Borer and Common Hoptree.

Focus Area: Research

Objective: Improve knowledge of Hoptree Borer and its host species, threats, and interactions with other Common Hoptree specialists.

Knowledge gaps exist in the life cycle of Hoptree Borer related to the duration of the egg, larval and adult stage, egg laying behaviour, and adult feeding habits. Knowledge gaps continue to exist regarding factors that may affect Common Hoptree recruitment at sites where Hoptree Borer are found. Addressing these knowledge gaps will support the recovery of the larval host plant and in turn support the persistence of Hoptree Borer in Ontario. In addition, several insect species such as the Hoptree Leaf-roller Moth (*Agonopterix pteleae*) and Hoptree Barkbeetle (*Phloeotribus scabricollis*) are specialist herbivores on Common Hoptree. Sudden increases in their population sizes could potentially threaten Hoptree Borer indirectly by completely defoliating the host species and directly by competing with Hoptree Borer. Filling knowledge gaps related to the interaction of Hoptree Borer and other specialist insect species relying on Common Hoptree will support effective, ecosystem-focussed recovery efforts.

Actions:

3. **(High)** Investigate the biology of Hoptree Borer including:
 - the life cycle of the species (e.g., adult feeding habits, egg laying behaviour); and,
 - Hoptree Borer dispersal and migration capabilities.
4. Conduct research to improve knowledge on Hoptree Borer ecology, habitat and threats such as:
 - identifying important predators and parasites;
 - the interaction of Hoptree Borer and other specialist insect species that rely on Common Hoptree (e.g., Hoptree Leaf-roller Moth and Hoptree Barkbeetle); and,
 - underlying factors that influence the severity, frequency, and extent of feeding damage of other specialist insect species on Common Hoptrees (e.g., climatic conditions) where Hoptree Borer is present.
5. Investigate impacts of pesticide use in locations where Hoptree Borer is present.
6. Research factors that influence recruitment of the larval host (Common Hoptree) to help improve natural regeneration at sites where Hoptree Borer are found or likely to occur. Some factors include:
 - sex ratios;
 - seed production and dispersal;
 - habitat suitability;
 - survivorship and longevity; and,
 - germination.

Focus Area: Management and Habitat Protection

Objective: Maintain or improve the quality of habitat available for Hoptree Borer and its host species, and reduce threats to the species and its host.

Hoptree Borer is known to occur on private land, protected areas and on publicly accessed land. As a result, a collaborative approach to habitat management and protection will support coordinated implementation of actions, improve efficiency and prevent duplication of efforts. Major threats to Hoptree Borer and its host includes altered coastal processes, habitat succession and invasive species resulting in the loss of suitable habitat. Landowners and land managers are encouraged to work collaboratively to mitigate threats of altered coastal processes and manage native and non-native vegetation while minimizing impacts to Hoptree Borer, and its host, Common Hoptree. Minimizing further shoreline hardening will allow the natural movement of sediment into the water and encourage the transport of sediment to beaches where the host species grows.

Actions:

7. **(High)** Work collaboratively with municipalities, conservation partners, land owners and land managers to mitigate threats and develop, implement and evaluate management plans to maintain or improve the quality of Hoptree Borer habitat and that of its host species. Actions may include:
 - managing vegetation to improve habitat quality (e.g., controlling invasive species posing a direct threat)
 - minimizing the use of pesticides and minimizing the use of herbicides on the host species and nectar sources at locations where Hoptree Borer is present; and,
 - where feasible, minimizing further shoreline hardening and barriers that block the natural movement of sediment where Hoptree Borer and its host are present.
8. As opportunities arise, work with local land owners and community partners to support the securement of habitat of Hoptree Borer through existing land securement and stewardship programs.

Focus Area: Awareness

Objective: Increase public awareness of Hoptree Borer to protect and recover the species and its host.

Collaborative efforts are needed to support the persistence of both Hoptree Borer and its host, Common Hoptree. As Hoptree Borer is found on public lands, protected areas and private lands, awareness is a key factor in supporting recovery of the species. By increasing local awareness, individuals can become active stewards and learn how modifying activities can help to protect the species and its host.

Actions:

9. Collaborate with organizations, landowners, land managers, and Indigenous communities and organizations to promote awareness of Hoptree Borer and its host by sharing information on:
 - 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 host including reducing use of pesticides.

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 the program 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 coordinated 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 if no time is specified. The review will help identify if adjustments are needed to achieve the protection and recovery of Hoptree Borer.

Acknowledgement

We would like to thank all those who participated in the development of the Recovery Strategy for the Hoptree Borer (*Prays atomocella*) 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

1-800-565-4923

TTY 1-855-515-2759

www.ontario.ca/environment