



Protection and Recovery of Ontario's Species at Risk

2023 Review of Progress Summary

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Cover Photo - Joe Crowley

Blunt-lobed Woodsia - Leslie Hunt



Introduction to the 2023 Review of Progress towards the Protection and Recovery of Ontario's Species at Risk

Overview

To fulfill a legislative requirement of the [Endangered Species Act, 2007](#) (ESA), the Government of Ontario publishes a Review of Progress Towards the Protection and Recovery of Ontario's Species at Risk. The Review shows how the Government of Ontario and its partners are helping to protect and recover species at risk in Ontario. In 2023, the Review included the following 11 species at risk:

- Blue Ash
- Blunt-lobed Woodsia
- Colicroot
- Eastern Small-footed Myotis
- False Hop Sedge
- Gypsy Cuckoo Bumble Bee
- Kentucky Coffee-tree
- Lowland Toothcup
- Massasauga (Carolinian population)
- Massasauga (Great Lakes – St. Lawrence population)
- Scarlet Ammannia

This document is a summary of the progress made from 2007 to 2022 for the 11 species listed above. Full-length chapters on each species are found in the 2023 Review of Progress Towards the Protection and Recovery of Ontario's Species at Risk, which is available on the Government of Ontario website at <https://www.ontario.ca/page/review-progress-towards-protection-and-recovery-ontarios-species-risk>.

False Hop Sedge - Matthew Wild

Review of Progress Towards the Protection and Recovery of

Blue Ash

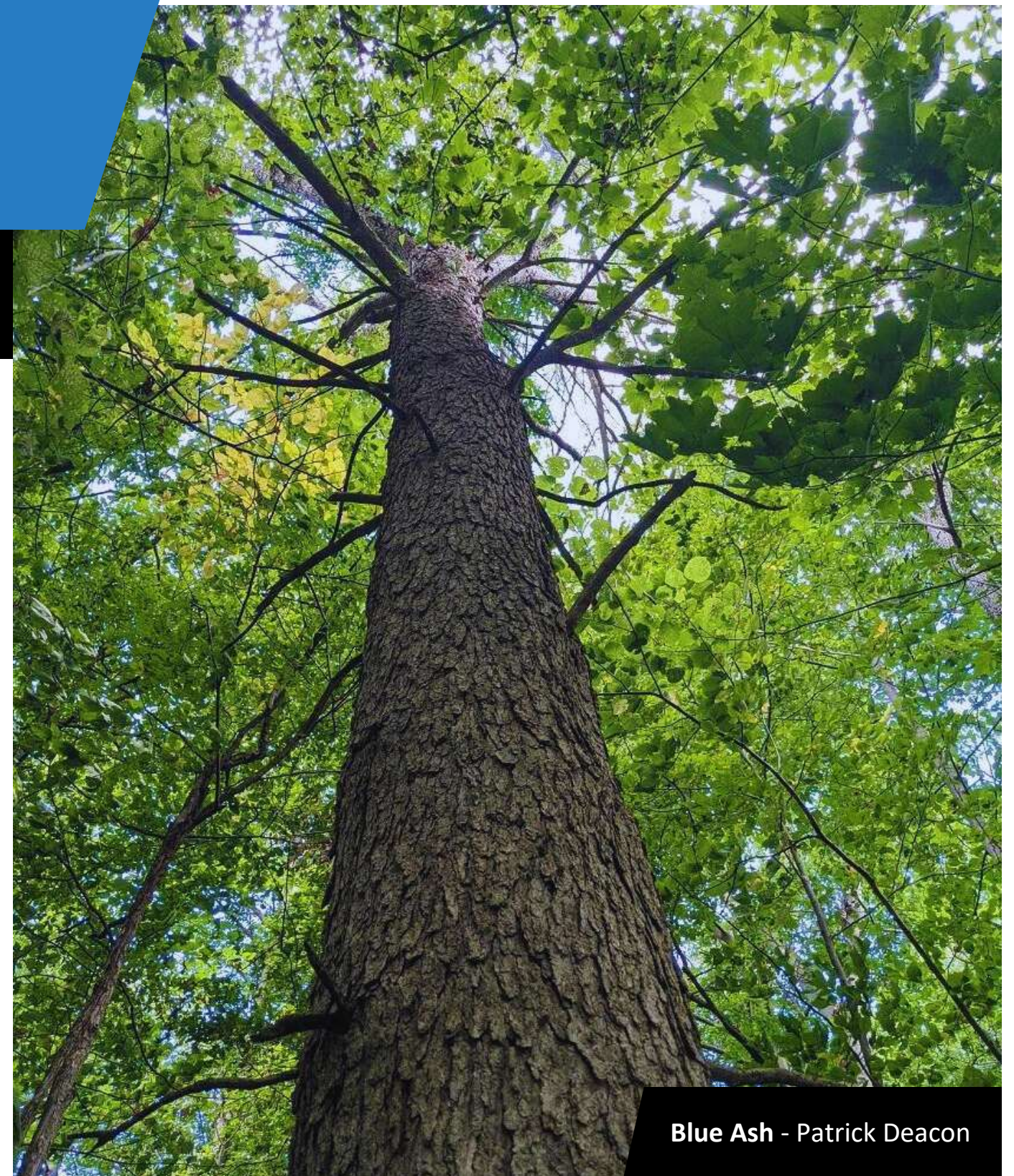
Progress towards meeting the recovery goal:

The recovery goal in the [Government Response Statement](#) (GRS) for Blue Ash in Ontario is to “maintain the distribution of the species and support increases in population abundance. The government supports investigating the necessity and feasibility of augmenting existing populations.”

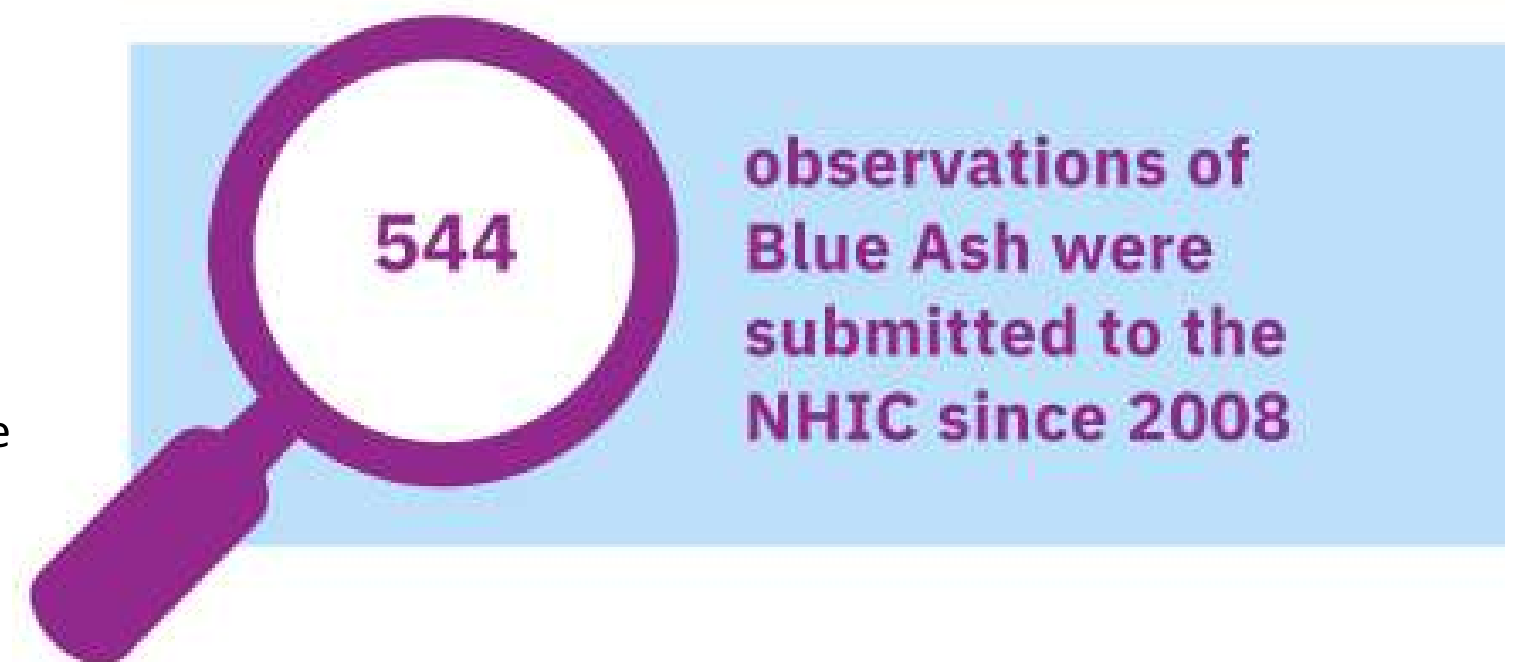
Progress has been made towards implementing the majority of the government-led actions. Progress has been made towards implementing the majority of the government-supported recovery objectives and several of the associated actions. Examples of progress include:

- Conducting research into the habitat conditions of Blue Ash to inform presence surveys at historical population locations and locations where Blue Ash is predicted to occur.
- Continued surveys and research related to the Emerald Ash Borer (*Agrilus planipennis* *Farmaire*) (EAB) that threatens Blue Ash to better understand the presence and extent of impact from EAB and to provide insight into the degree to which the species is resistant to EAB.

In alignment with the GRS, it is recommended that additional efforts be made to collaborate with federal partners on implementing protection and recovery actions for Blue Ash, including those related to genetic conservation, and to conduct research on the biology and ecology of Blue Ash including studying seed dispersal mechanisms and distances, as well as the potential effects of climate change on the species.



Blue Ash - Patrick Deacon



Occurrences and distribution:

A total of 56 populations of Blue Ash have been documented in southwestern Ontario. Currently, 32 of these populations are extant, whereas the remaining 24 are considered historical.

Since 2008, the status of 20 populations changed from extant to historical based on the date that it was last observed, while no populations changed from historical to extant as their existence was confirmed through monitoring efforts. Additionally, there have been nine newly-identified populations recorded.

Government-supported stewardship projects:

Through the [Species at Risk Stewardship Program](#), the Government of Ontario has enabled its stewardship partners to conduct nine projects (by providing \$551,447 in funding) designed to contribute to the protection and recovery of multiple species at risk, including Blue Ash. Eight of these projects were designed to provide benefits to multiple species at risk (e.g., landscape-level habitat restoration, or outreach and education focusing on a certain group of species such as those present in a local region), while one project focused exclusively on Blue Ash.

The government's support helped its stewardship partners to involve 115 individuals who volunteered 6,045 hours of their time towards protection and recovery activities for species at risk, including Blue Ash. The estimated value of these voluntary contributions, as well as additional funding and in-kind support, is \$955,716.

Stewardship partners reported that through both their efforts and the efforts of their volunteers to implement GRS actions, 162.2 hectares of habitat were enhanced for Blue Ash and other species at risk that inhabit the same ecosystem or different ecosystems.

In addition, stewardship partners reported providing ecosystem-based outreach designed to benefit multiple species at risk, including Blue Ash, to 1,657 individuals.

Species at Risk Stewardship Program

By The Numbers



Supporting human activities while ensuring appropriate support for species recovery:

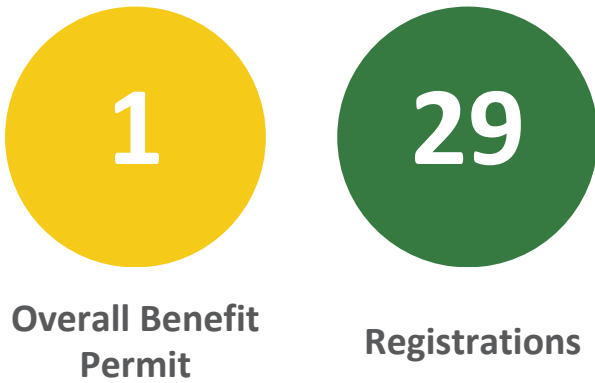
The Government of Ontario has issued one ‘overall benefit’ permit for this species under clause 17(2)(c) of the ESA.

Twenty-nine activities have been registered for the species. The activities were registered under ‘drainage works’ (section 23.9) and ‘threats to human health and safety, not imminent’ (section 23.18) under [Ontario Regulation 242/08](#) of the ESA.

Species-specific documents and guidance published by the government:

[Recovery Strategy for Blue Ash \(2017\).](#)

[Government Response Statement for Blue Ash \(2018\).](#)



Review of Progress Towards the Protection and Recovery of

Blunt-lobed Woodsia

Progress towards meeting the recovery goal:

The recovery goal in the [Government Response Statement](#) (GRS) for Blunt-lobed Woodsia in Ontario is to “maintain the current distribution in Ontario and enable increases in the abundance of Blunt-lobed Woodsia, where feasible, through habitat management. The government supports investigating the feasibility of augmenting existing populations at sites deemed to be non-viable without additional recovery efforts.”

Progress has been made towards implementing the majority of the government-led actions. Progress has been made towards implementing one of the government-supported recovery objectives and two of the associated actions. Examples of progress include:

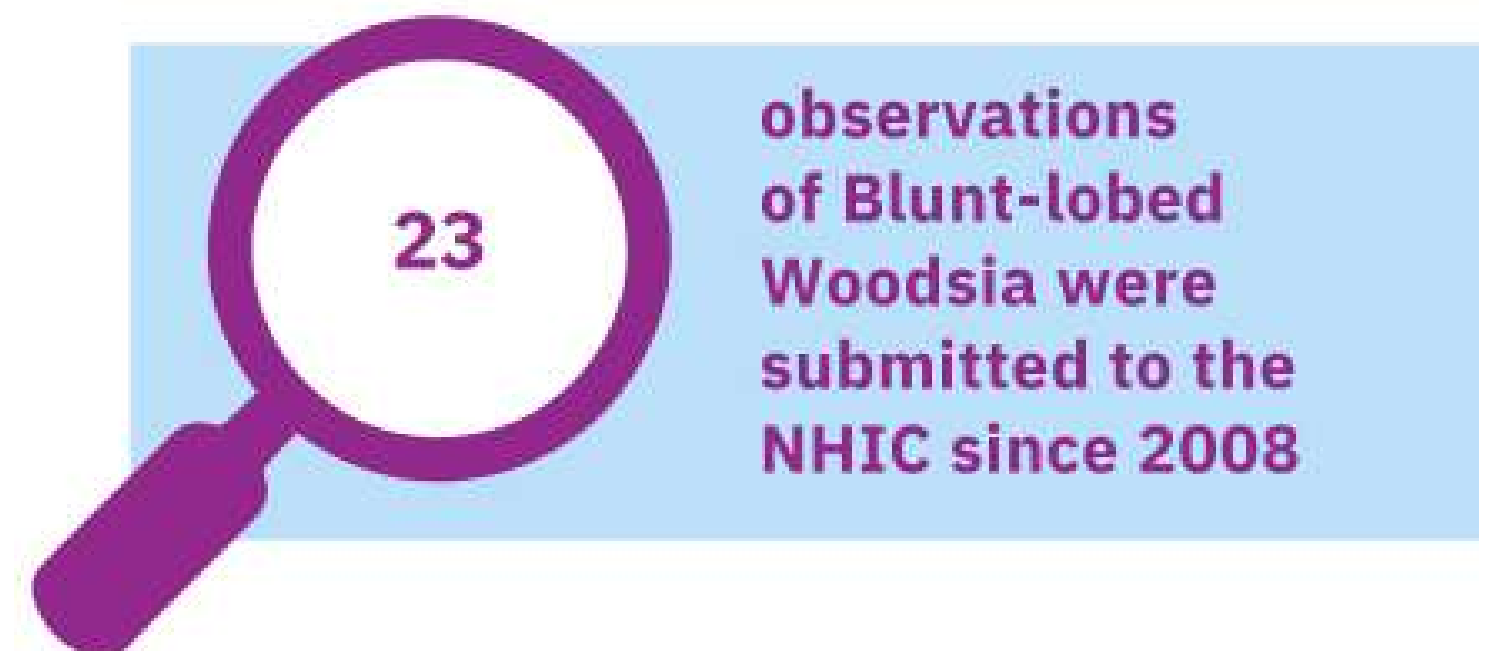
- Implementing monitoring to identify population size and threats.
- Surveys for the presence of additional populations in identified areas with suitable habitat characteristics.

In alignment with the GRS, further work is required to encourage land owners and land managers to work collaboratively to develop, implement and evaluate management plans to maintain or improve the quality of Blunt-lobed Woodsia habitat at existing sites. Additional efforts are also needed to develop and implement a standardized monitoring program to detect changes in and identify:

- population size and demographics;
- distribution of the species;
- health and reproductive success; and,
- habitat characteristics and threats at all known sites.



Blunt-lobed Woodsia - Susan J. Hewitt



Occurrences and distribution:

A total of four populations of Blunt-lobed Woodsia have been documented in eastern Ontario. Currently, all of these populations are extant.

Since 2008, the status of no populations changed from extant to historical based on the date that it was last observed.

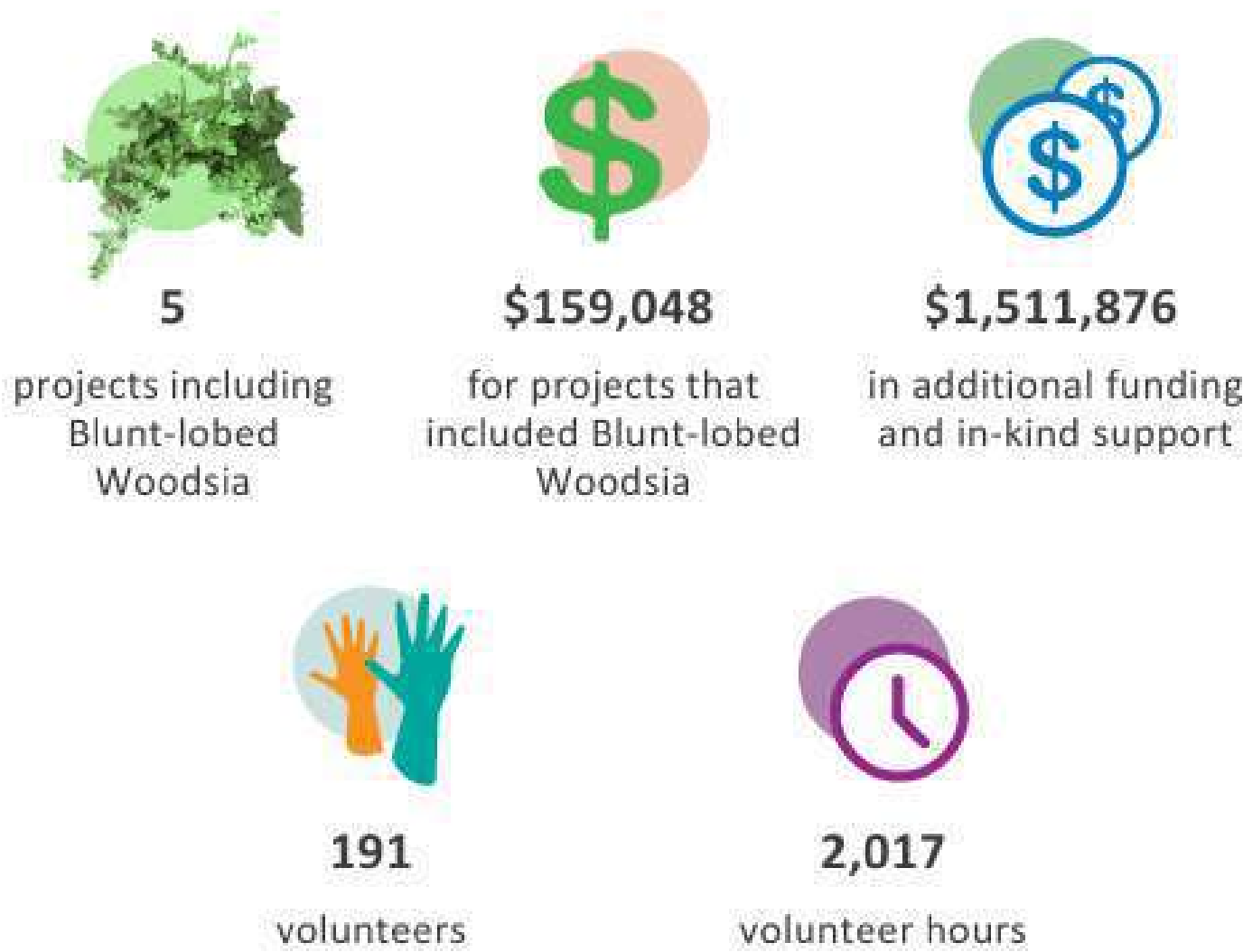
Government-supported stewardship projects:

Through the [Species at Risk Stewardship Program](#), the Government of Ontario has enabled its stewardship partners to conduct five projects (by providing \$159,047.90 in funding) that have supported the protection and recovery of multiple species, including Blunt-lobed Woodsia.

The government’s support helped its stewardship partners to involve 191 individuals who volunteered 2,017 hours of their time towards protection and recovery activities for multiple species, including Blunt-lobed Woodsia. The estimated value of these voluntary contributions, as well as additional funding and in-kind support, is \$1,511,876.

Species at Risk Stewardship Program

By The Numbers



Supporting human activities while ensuring appropriate support for species recovery:

Five activities have been registered for the species. The activities were registered under ‘drainage works’ (section 23.9), ‘early exploration mining’ (section 23.10), ‘possession for educational purposes, etc.’ (section 23.15), and ‘threats to health and safety, not imminent’ (section 23.18) under [Ontario Regulation 242/08](#) of the ESA

Species-specific documents and guidance published by the government:

[Recovery Strategy for Blunt-lobed Woodsia \(2017\)](#)

[Government Response Statement for Blunt-lobed Woodsia \(2018\)](#)



Registrations



Review of Progress Towards the Protection and Recovery of

Colicroot

Progress towards meeting the recovery goal:

The recovery goal in the [Government Response Statement](#) (GRS) for Colicroot in Ontario is to “maintain the Ontario distribution and, where feasible, support increases in abundance of existing populations. The government supports investigating the feasibility of augmenting existing sites deemed to be non-viable without additional recovery efforts.”

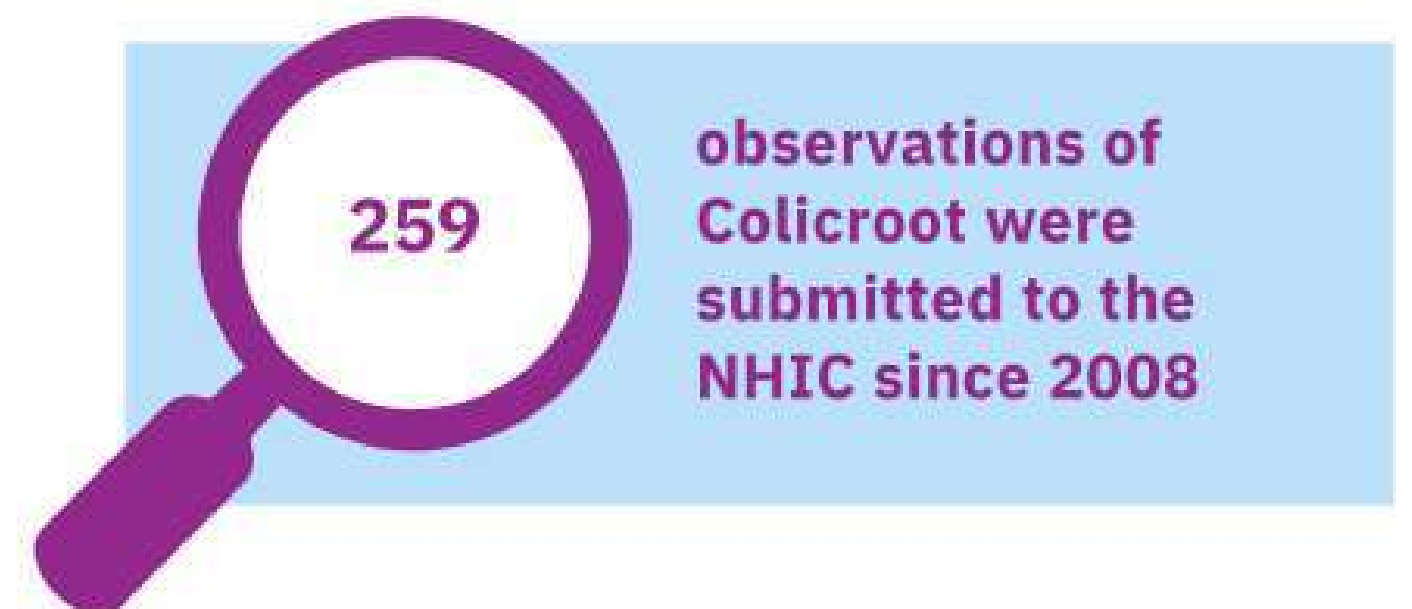
Progress has been made towards implementing all of the government-led actions. Progress has been made towards implementing most of the government-supported recovery objectives and a majority of the associated actions. Examples of progress include:

- Maintaining, enhancing, and creating acres of Colicroot habitat across various locations.
- Minimizing threats by conducting prescribed burns and invasive species removal in Colicroot habitat.
- Collaborating with stakeholders, landowners, and land managers to enhance capacity to protect species at risk including Colicroot, develop Best Management Practices, and deliver technical training and outreach on stewardship actions and property management.

In alignment with the GRS, further work is required to increase knowledge of Colicroot biology, population dynamics, habitat requirements and further refine current recovery techniques. Additional efforts are also needed to encourage the recording, sharing, and transfer of Traditional Ecological Knowledge to increase knowledge of the species historically and currently, and support future recovery efforts.



Colicroot - Tom Potterfield



Occurrences and distribution:

A total of fourteen populations of Colicroot have been documented in Southwestern Ontario. Currently, five of these populations are extant, eight populations are extirpated, and one population failed to be found. No populations of Colicroot have been newly identified since 2008.

Since 2008, the [Natural Heritage Information Centre](#) (NHIC) has received 259 records of the species based on observations made between 1892 and 2022.

Government-supported stewardship projects:

Through the [Species at Risk Stewardship Program](#), the Government of Ontario has supported 11 projects (by providing \$502,313 in funding) designed to contribute to the protection and recovery of multiple species at risk, including Colicroot.

The government’s support helped its stewardship partners to involve 226 individuals who volunteered 2,582 hours of their time towards protection and recovery activities for multiple species at risk, including Colicroot. The estimated value of these voluntary contributions, as well as additional funding and in-kind support, is \$487,310.

Stewardship partners reported that through their actions 139.50 hectares of habitat were enhanced for Colicroot and other species at risk that inhabit the same ecosystem.

In addition, stewardship partners reported providing ecosystem-based outreach designed to benefit multiple species at risk, including Colicroot, to 1,366 individuals.

Species at Risk Stewardship Program

By The Numbers



Supporting human activities while ensuring appropriate support for species recovery:

The Government of Ontario has issued three permits for this species: two ‘protection or recovery’ permits were issued under clause 17(2)(b), and one ‘social or economic benefit’ permit was issued under clause 17(2)(d) of the ESA.

Thirty-six activities have been registered for the species. The activities were registered under ‘threats to human health and safety, not imminent’ (section 23.18); ‘species protection, recovery activities’ (section 23.17); ‘drainage works’ (section 23.9) and ‘ecosystem protection’ (section 23.11) under [Ontario Regulation 242/08](#) of the ESA.

Species-specific documents and guidance published by the government:

[Recovery Strategy for Colicroot \(2017\)](#)

[Government Response Statement for Colicroot \(2018\)](#)



Review of Progress Towards the Protection and Recovery of

Eastern Small-footed Myotis

Progress towards meeting the recovery goal:

The recovery goal in the [Government Response Statement](#) (GRS) for Eastern Small-footed Myotis in Ontario is to “maintain the persistence of the species at existing locations in Ontario while filling knowledge gaps related to the species’ biology, habitat requirements, and the presence and severity of threats.” In the long-term, the government’s goal is to “support a self-sustaining Eastern Small-footed Myotis provincial population throughout its current range.”

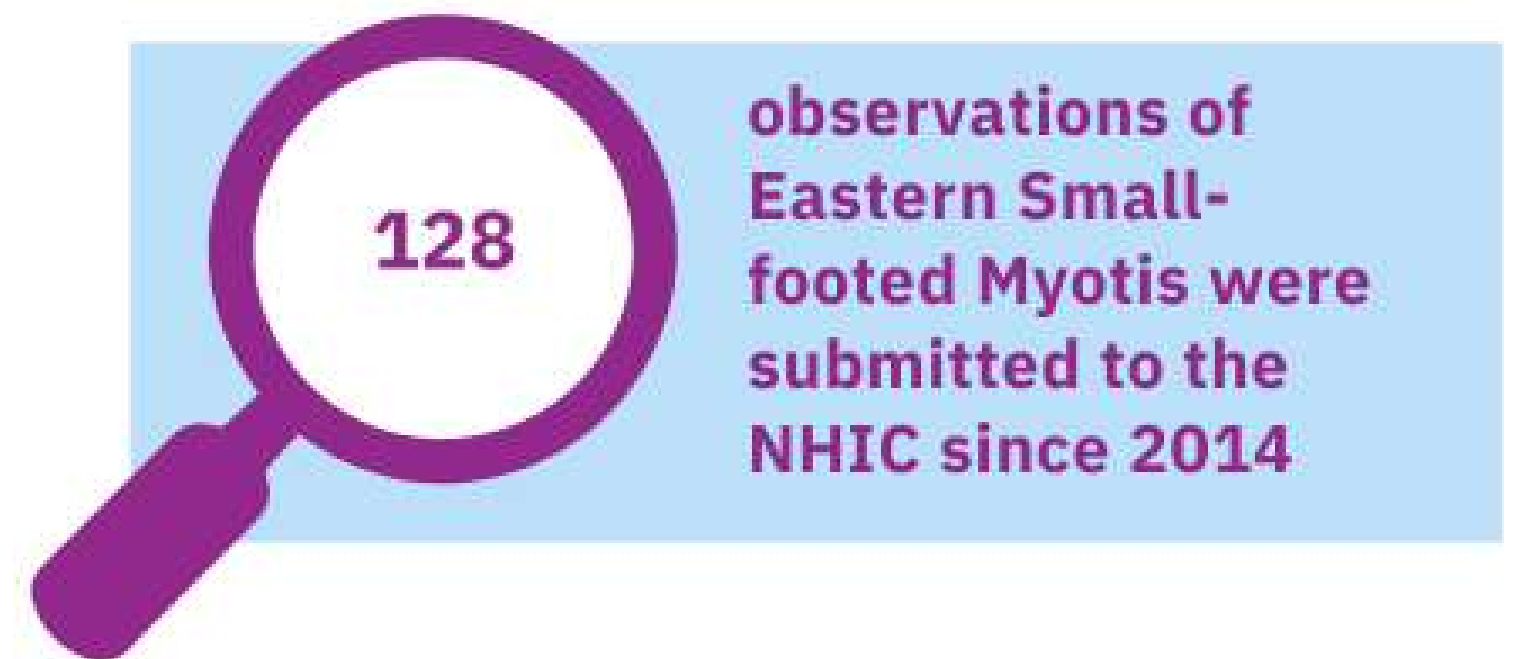
Progress has been made towards implementing all of the government-led actions. Progress has been made towards implementing all of the government-supported recovery objectives and all of the associated actions. Examples of progress include:

- Identifying, surveying, and monitoring roosting and maternity sites for Eastern Small-footed Myotis at varying scales.
- Filling knowledge gaps on seasonal distribution and roost selection of Eastern Small-footed Myotis through acoustic monitoring and roost exit surveys.
- Investigating the effects of White-Nose Syndrome (WNS) on Eastern Small-footed Myotis survival.

In alignment with the GRS, further work is required to maintain and update WNS decontamination protocols, coordinate national-level WNS monitoring, and identify related data gaps and data management needs. Additional efforts are also needed to collaborate with other organizations to evaluate and where appropriate implement monitoring to assess the potential impacts of WNS at hibernacula, and determine the feasibility of implementing monitoring to assess impacts of the disease at summer roost sites for Eastern Small-footed Myotis.



Eastern Small-footed Myotis - Ken Allison



Occurrences and distribution:

A total of forty populations of Eastern Small-footed Myotis have been documented in several locations across Ontario, especially Southern Ontario. Currently, 26 of these populations are extant, whereas the remaining 14 are considered historical.

Since 2008, twenty-one populations of Eastern Small-Footed Myotis have been newly-identified, while five populations were reconfirmed as extant.

Since 2014, the [Natural Heritage Information Centre](#) (NHIC) has received 128 records of the species based on observations made between 1949 and 2022.

Government-supported stewardship projects:

Through the [Species at Risk Stewardship Program](#), the Government of Ontario has supported 21 projects (by providing \$1,358,569 in funding) designed to contribute to the protection and recovery of multiple species at risk, including Eastern Small-footed Myotis. Twenty of these projects were designed to provide benefits to multiple species at risk (e.g., landscape-level habitat restoration, or outreach and education focusing on a certain group of species such as those present in a local region), while one project focused exclusively on Eastern Small-footed Myotis.

The government's support helped its stewardship partners to involve 849 individuals who volunteered 12,038 hours of their time towards protection and recovery activities for species at risk, including Eastern Small-footed Myotis. The estimated value of these voluntary contributions, as well as additional funding and in-kind support, is \$1,778,869.

Stewardship partners reported that through their actions approximately 117 hectares of habitat were enhanced for Eastern Small-footed Myotis and other species at risk that inhabit the same ecosystem.

In addition, stewardship partners reported providing ecosystem-based outreach designed to benefit multiple species at risk, including Eastern Small-footed Myotis, to 2,847,440 individuals.

Species at Risk Stewardship Program

By The Numbers



Supporting human activities while ensuring appropriate support for species recovery:

The Government of Ontario has issued nineteen permits for this species. Two ‘human health or safety’ permits were issued under clause 17(2)(a), six ‘protection or recovery’ permits were issued under clause 17(2)(b), six ‘overall benefit’ permits were issued under clause 17(2)(c), and five ‘social or economic benefit’ permits were issued under clause 17(2)(d) of the ESA.

One-hundred and twenty activities have been registered for the species. The activities were registered under ‘drainage works’ (section 23.9), ‘ecosystem protection’ (section 23.11), ‘transition – development ongoing when species first listed, etc.’ (section 23.13), ‘pits and quarries’ (section 23.14), ‘possession for educational purposes, etc.’ (section 23.15), ‘species protection, recovery activities’ (section 23.17), ‘threats to health and safety, not imminent’ (section 23.18), and ‘wind facilities’ (section 23.20) under [Ontario Regulation 242/08](#) of the ESA.

Species-specific documents and guidance published by the government:

[Recovery Strategy for Eastern Small-footed Myotis \(2017\)](#)

[Government Response Statement for Eastern Small-footed Myotis \(2018\)](#)



Review of Progress Towards the Protection and Recovery of

False Hop Sedge

Progress towards meeting the recovery goal:

The recovery goal in the [Government Response Statement](#) (GRS) for False Hop Sedge in Ontario is to “to maintain the Ontario distribution of the species and support the persistence of self-sustaining populations. The government supports investigating the feasibility of augmenting existing populations.”

Progress has been made towards implementing all of the government-led actions. Progress has been made towards implementing one of the government-supported recovery objectives and two of the associated actions. Examples of progress include:

- Developing and implementing a standard monitoring protocol for the collection of data in Ontario.
- Developing and implementing a standard presence survey protocol to survey additional areas identified as having suitable habitat and potential for additional populations.

In alignment with the GRS, further work is required to conduct research to determine specific site conditions optimal for the health and sustainability of False Hop Sedge, including amount of canopy openness and soil moisture and study the species’ population dynamic and structure. Additional efforts are also needed to develop, implement and evaluate the effectiveness of habitat management techniques to maintain or improve the quality of habitat available for False Hop Sedge.



False Hop Sedge - Jay Horn

58

**observations of
False Hop Sedge
were submitted to
the NHIC since 2008**

Occurrences and distribution:

A total of nineteen populations of False Hop Sedge have been documented in Southern Ontario. Currently, sixteen of these populations are extant, whereas the remaining three are considered historical or possibly extirpated.

Since 2008, the status of one population changed from extant to historical based on the date that it was last observed. No populations changed from historical to extant; however, three were reconfirmed extant through survey efforts after a period of 16 to 17 years. Eleven populations of False Hop Sedge have been newly identified since 2008.

Since 2008, the [Natural Heritage Information Centre](#) (NHIC) has received over 58 records of the species based on observations made between 1902 and 2022.

Government-supported stewardship projects:

Through the [Species at Risk Stewardship Program](#), the Government of Ontario has enabled its stewardship partners to conduct two projects (by providing \$93,865 in funding) that have supported the protection and recovery of multiple species at risk, including False Hop Sedge. One of these projects was designed to provide benefits to multiple species at risk (e.g., landscape-level habitat restoration projects, outreach and education focusing on a certain group of species such those present in a region), while the other project focused exclusively on False Hop Sedge.

The government's support helped its stewardship partners to involve 45 individuals who volunteered 212 hours of their time towards protection and recovery activities for species at risk, including False Hop Sedge. The estimated value of these voluntary contributions, as well as additional funding and in-kind support, is \$92,116.

Species at Risk Stewardship Program

By The Numbers



1

project including
False Hop Sedge



1

project for False Hop
Sedge exclusively



\$93,865

for projects that included
False Hop Sedge



\$92,116

in additional funding
and in-kind support



45

volunteers



212

volunteer hours

Supporting human activities while ensuring appropriate support for species recovery:

Three agreements were entered into for False Hop Sedge. These agreements were enabled through [Ontario Regulation 242/08](#) (prior to the July 1, 2013 amendment).

Twelve activities have been registered for the species. The activities were registered under ‘ecosystem protection’ (section 23.11), ‘possession for educational purposes, etc.’ (section 23.15), ‘species protection, recovery activities’ (section 23.17), and ‘threats to health and safety, not imminent’ (section 23.18) under [Ontario Regulation 242/08](#) of the ESA.

Species-specific documents and guidance published by the government:

[Recovery Strategy for False Hop Sedge \(2017\).](#)

[Government Response Statement for False Hop Sedge \(2018\).](#)



Review of Progress Towards the Protection and Recovery of

Gypsy Cuckoo Bumble Bee

Progress towards meeting the recovery goal:

The short-term recovery goal in the [Government Response Statement](#) (GRS) for Gypsy Cuckoo Bumble Bee in Ontario is to “support the persistence of the species and its host species at existing locations in Ontario while filling knowledge gaps related to the species’ distribution and the presence and severity of threats.” In the long-term, the government’s goal is to “support a self-sustaining Gypsy Cuckoo Bumble Bee population in Ontario by reducing threats to the species and its habitat and encouraging the expansion of populations into suitable areas of its current and known historic range. The government supports investigating the necessity and feasibility of reintroduction, and of augmenting existing populations of Gypsy Cuckoo Bumble Bee and their host species.”

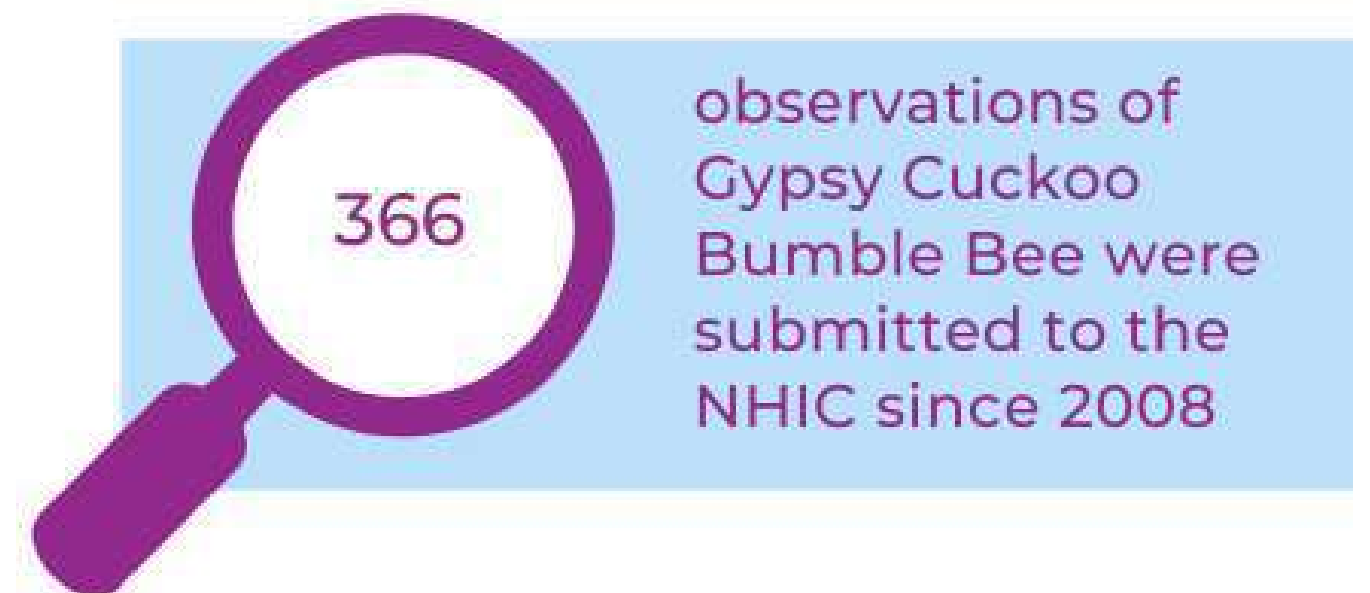
Progress has been made towards implementing all of the government-led actions. Progress has been made towards implementing all of the government-supported recovery objectives and several of the associated actions. Examples of progress include:

- Developing and implementing a standardized survey and monitoring program for Gypsy Cuckoo Bumble Bee and its host species.
- Developing identification tools for the Gypsy Cuckoo Bumble Bee and its host species.
- Engaging volunteers throughout the province to participate in citizen science surveys and monitoring efforts for native bumble bees including Gypsy Cuckoo Bumble Bee.

In alignment with the GRS, further work is required to develop, promote and implement best management practices and develop habitat creation and enhancement guides and initiate or continue habitat management efforts. Additional efforts are also needed to encourage the recording, sharing and transfer of Traditional Ecological Knowledge of the Gypsy Cuckoo Bumble Bee.



Gypsy Cuckoo Bumble Bee - Sheila Colla



Occurrences and distribution:

A total of eighty-seven populations of Gypsy Cuckoo Bumble Bee have been documented throughout Ontario. Currently, one of these populations is extant, whereas the remaining 86 are considered historical. Since 2016, nine populations have changed from extant to historical based on a lack of recent observations.

Since 2008, the government's central repository at the [Natural Heritage Information Centre](#) (NHIC) has received 366 records of the species based on observations between 1883 and 2008.

Government-supported stewardship projects:

Through the [Species at Risk Stewardship Program](#), the Government of Ontario has enabled its stewardship partners to conduct 11 projects (by providing \$479,921 in funding) that have supported the protection and recovery of multiple species at risk including Gypsy Cuckoo Bumble Bee (e.g., landscape-level habitat restoration, or outreach and education focusing on a certain group of species such as those present in a local region).

The government's support helped its stewardship partners to involve 164 individuals who volunteered 1,552 hours of their time towards protection and recovery activities for species at risk, including Gypsy Cuckoo Bumble Bee. The estimated value of these voluntary contributions, as well as additional funding and in-kind support, is \$863,256.

Stewardship partners reported that through their actions 38.7 hectares of habitat were enhanced for Gypsy Cuckoo Bumble Bee and other species at risk that inhabit the same ecosystem.

In addition, stewardship partners reported providing ecosystem-based outreach designed to benefit multiple species at risk, including Gypsy Cuckoo Bumble Bee, to 2,419 individuals.

Species at Risk Stewardship Program

By The Numbers



11

projects including
Gypsy Cuckoo
Bumble Bee



\$479,921

for projects that
included Gypsy
Cuckoo Bumble Bee



\$863,256

in additional
funding and in-kind
support



164

volunteers



1,552

volunteer hours



2,419

people received
outreach



39

hectares of habitat
enhanced

Supporting human activities while ensuring appropriate support for species recovery:

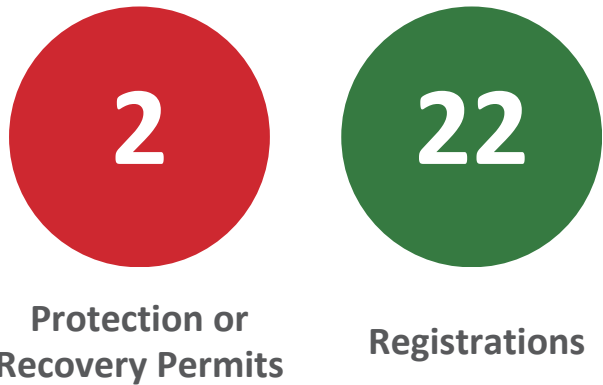
The Government of Ontario has issued two permits for this species; both were ‘protection or recovery’ permits issued under clause 17(2)(b) of the ESA.

Twenty-two activities have been registered for the species. The activities were registered under ‘threats to human health and safety, not imminent’ (section 23.18) and ‘early exploration mining’ (section 23.10) under [Ontario Regulation 242/08](#) of the ESA.

Species-specific documents and guidance published by the government:

[Recovery Strategy for Gypsy Cuckoo Bumble Bee \(2017\)](#)

[Government Response Statement for Gypsy Cuckoo Bumble Bee \(2018\)](#)



Review of Progress Towards the Protection and Recovery of

Kentucky Coffee-tree

Progress towards meeting the recovery goal:

The recovery goal in the [Government Response Statement](#) (GRS) for Kentucky Coffee-tree in Ontario is to “maintain the provincial distribution of the species within its natural range in Ontario and to enable increases in abundance by addressing barriers to reproduction. The government supports augmenting single-sex populations where feasible and investigating the necessity and feasibility of augmenting mixed-sex populations”.

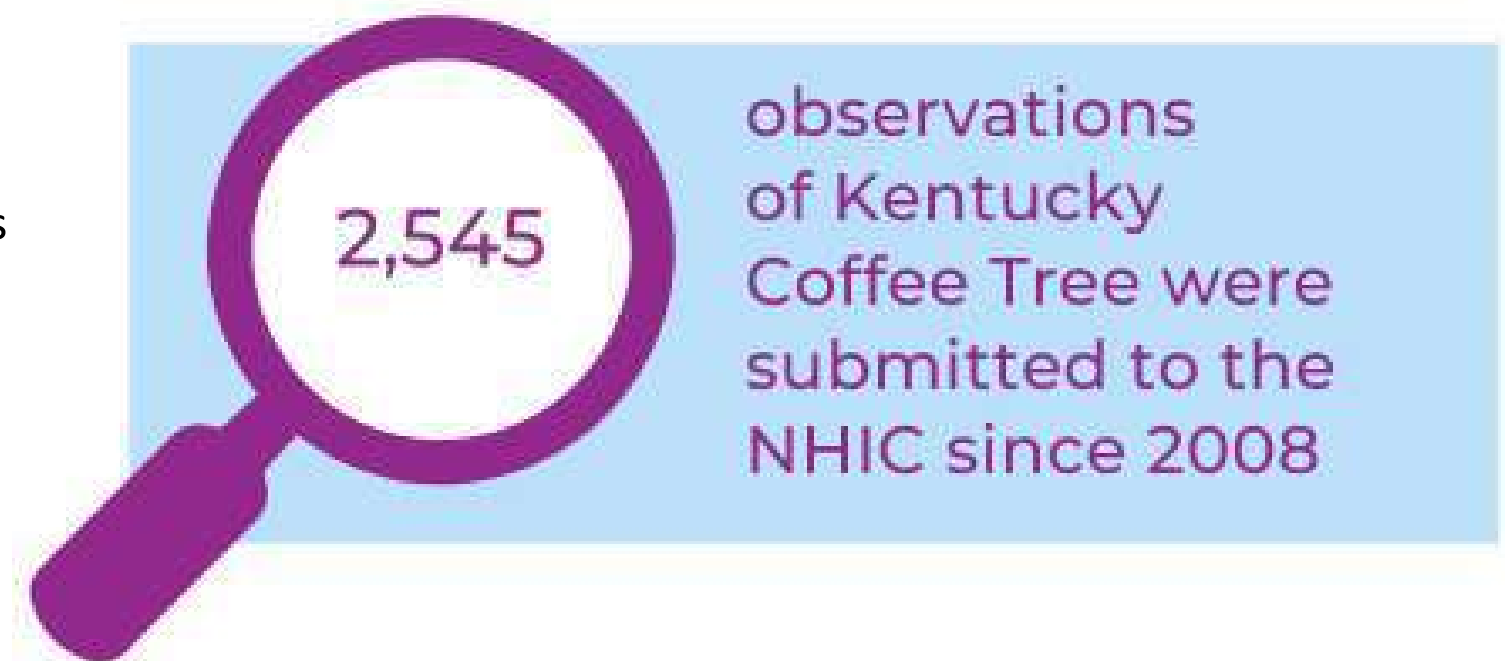
Progress has been made towards implementing all of the government-led actions. Progress has been made towards implementing all of the government-supported recovery objectives and some of the associated actions. Examples of progress include:

- Conducting inventory to determine population status and viability at historical and extant locations.
- Evaluating the genetic variation and structure of North American Kentucky Coffee-trees.
- Increasing awareness of Kentucky Coffee-tree among landowners and other citizens.

In alignment with the GRS, further work is required to assess single-sex populations to evaluate the feasibility of augmentation, develop and implement best management practices to conduct road and railway maintenance where Kentucky Coffee-tree is present, and manage water regimes and flood control in a manner that benefits the species (e.g., replicating natural flood cycles).



Kentucky Coffee-tree - Ryan Sorrells



Occurrences and distribution:

Kentucky Coffee-tree occurs in southwestern Ontario, with an estimated range of approximately 8,200 square kilometres based on recent observations. Since 2008, the species has been observed in 57 squares where it was not previously known to occur and at six squares previously thought to be historical.

Since 2008, the [Natural Heritage Information Centre](#) (NHIC) has received 2,545 records of the species based on observations between 1891 and 2022.

A recent assessment of the Kentucky Coffee-tree population has determined that the number of mature trees in Ontario is stable (COSSARO 2021).

Government-supported stewardship projects:

Through the [Species at Risk Stewardship Program](#), the Government of Ontario has enabled its stewardship partners to conduct nine projects (by providing \$875,065 in funding) that have supported the protection and recovery of multiple species at risk, including Kentucky Coffee-tree. Eight of these projects were designed to provide benefits to multiple species at risk (e.g., landscape-level habitat restoration, or outreach and education focusing on a certain group of species such as those present in a local region), while one focussed exclusively on Kentucky Coffee-tree.

The government's support helped its stewardship partners to involve 796 individuals who volunteered 21,578 hours of their time towards protection and recovery activities for species at risk, including Kentucky Coffee-tree. The estimated value of these voluntary contributions, as well as additional funding and in-kind support, is \$1,240,257.

Stewardship partners reported that through their actions 84.3 hectares of habitat were enhanced for Kentucky Coffee-tree and other species at risk that inhabit the same ecosystem.

In addition, stewardship partners reported providing ecosystem-based outreach designed to benefit multiple species at risk, including Kentucky Coffee-tree, to 2,855 individuals.

Species at Risk Stewardship Program

By The Numbers



Supporting human activities while ensuring appropriate support for species recovery:

The Government of Ontario has issued 17 permits for this species: three ‘human health and safety’ permits were issued under clause 17(2)(a), nine ‘protection and recovery’ permits were issued under clause 17(2)(b), four ‘overall benefit’ permits were issued under clause 17(2)(c) and one ‘social or economic benefit’ permit was issued under clause 17(2)(d) of the ESA.

Fifteen agreements were entered into for Kentucky Coffee-tree. These agreements were enabled through [Ontario Regulation 242/08](#) (prior to the July 1, 2013 amendment).

Sixty-four activities have been registered for the species. The activities were registered under ‘threats to human health and safety, not imminent’ (section 23.18), ‘drainage works’ (section 23.9), ‘ecosystem protection’ (section 23.11), and ‘species protection, recovery activities’ (section 23.14) under [Ontario Regulation 242/08](#) of the ESA.

Species-specific documents and guidance published by the government:

[Recovery Strategy for Kentucky Coffee-tree \(2017\)](#)

[Government Response Statement for Kentucky Coffee-tree \(2018\)](#)



Review of Progress Towards the Protection and Recovery of

Lowland Toothcup

Progress towards meeting the recovery goal:

The recovery goal in the [Government Response Statement](#) (GRS) for Lowland Toothcup in Ontario is to “maintain the distribution and abundance of the species at locations where it occurs in Ontario, and where feasible, enable natural increases in abundance by reducing threats to the species and its habitat.”

Progress has been made towards implementing a majority of the government-led actions. Progress has been made towards implementing one of the government-supported recovery objectives and one of the associated actions. Examples of progress include:

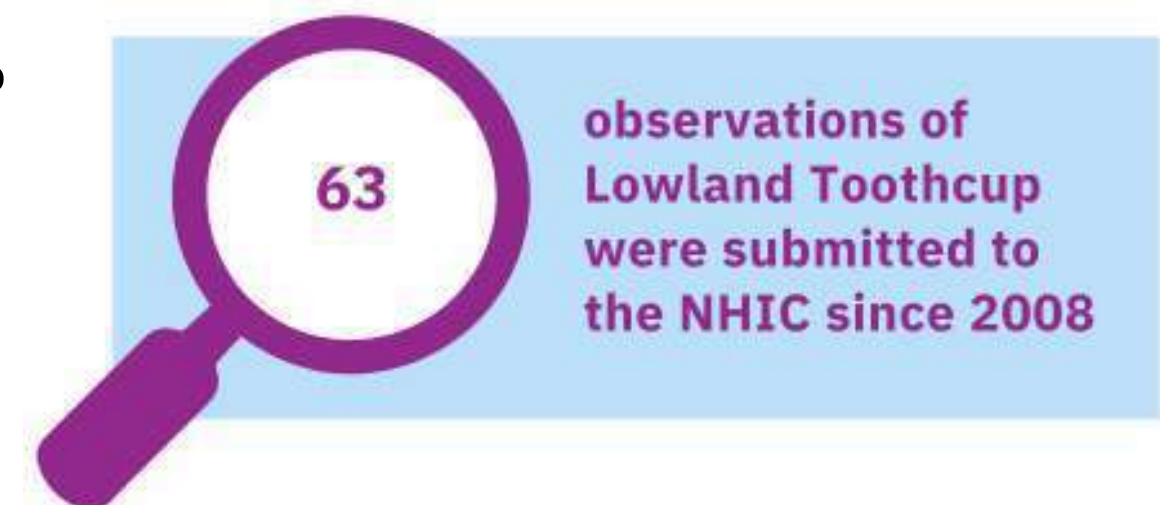
- Promoting awareness among landowners, land managers and land users, about Lowland Toothcup by sharing information on how to identify the species, the species’ habitat requirements, protection afforded to the species and its habitat under the ESA, and actions that can be taken to avoid or minimize impacts to the species and its habitat.

In alignment with the GRS, further work is required to encourage land owners and land managers to implement approaches to reduce the impacts of shoreline development and recreational activities on Lowland Toothcup and its habitat (including areas where the species may be present only as seed). Approaches may include:

- redirecting shoreline developments (e.g., docks, structures or boat storage) and recreational activities (e.g., trails) away from the habitat of the species;
- installing signage to alert land users to the presence of the species and, where necessary and appropriate, installing physical barriers (e.g., fencing) to prevent trampling by humans or vehicles; and,
- installing signage to alert boat operators to the presence of the species and the need to minimize boat wake and avoid dragging boats ashore in the habitat of the species.



Lowland Toothcup - Kathy McAleese



Additional efforts are also needed to work collaboratively with land owners and land managers, in cooperation with the municipality, to develop, implement and evaluate habitat management plans to enable suitable water level fluctuations (natural or artificial) to occur in the species' habitat, at appropriate times for the species, where feasible. Further efforts are also required to increase knowledge of the distribution, abundance and habitat conditions of Lowland Toothcup in Ontario through inventory and monitoring, and increase knowledge of the biological and habitat requirements of Lowland Toothcup through research.

Occurrences and distribution:

Three populations of Lowland Toothcup have been documented in Central Ontario. Currently, two of these populations are extant, whereas the remaining population is extirpated. No populations of Lowland Toothcup have been newly identified since 2008.

Since 2008, the [Natural Heritage Information Centre](#) (NHIC) has received 63 records of the species based on observations made between 2004 and 2022.

Government-supported stewardship projects:

Through the [Species at Risk Stewardship Program](#), the Government of Ontario has supported one project designed to contribute to the protection and recovery of multiple species at risk (e.g., landscape-level habitat restoration, or outreach and education focusing on a certain group of species such as those present in a local region), including Lowland Toothcup.

Species at Risk Stewardship Program

By The Numbers



Supporting human activities while ensuring appropriate support for species recovery:

Three activities have been registered for the species. The activities were registered under ‘threats to health and safety, not imminent’ (section 23.18) under [Ontario Regulation 242/08](#) of the ESA.

Species-specific documents and guidance published by the government:

[Recovery Strategy for Lowland Toothcup \(2017\).](#)

[Government Response Statement for Lowland Toothcup \(2018\).](#)



Review of Progress Towards the Protection and Recovery of

Massasauga (Carolinian and Great Lakes – St. Lawrence populations)

Progress towards meeting the recovery goal:

The recovery goal in the [Government Response Statement](#) (GRS) for Massasauga (Carolinian population) in Ontario is “to increase the likelihood of securing and maintaining the current regional distribution of the species in Southern Ontario. The government supports the implementation of population management actions (e.g., augmentation through captive-breeding and release), and associated evaluation and adaptation, at the Ojibway Prairie Complex. The government supports continued investigation, evaluation, and if appropriate, implementation of population management actions (e.g., head-starting) for the Wainfleet Bog subpopulation.”

The recovery goal in the GRS for Massasauga (Great Lakes – St. Lawrence population) in Ontario is “to maintain self-sustaining populations across the current distribution of the species through strategic habitat management (including connectivity) and threat mitigation.”

Progress has been made towards implementing all of the government-led actions. Progress has been made towards implementing all of the government-supported recovery objectives and all of the associated actions. Examples of progress include:

- The development and implementation of a comprehensive recovery program for the Massasauga (Carolinian population) at Ojibway Prairie. This work, which was led by Wildlife Preservation Canada and supported through the Species at Risk Stewardship Program, has been systematically addressing most of the GRS actions for this subpopulation. These efforts include a long-term survey and monitoring program, a captive-breeding and release initiative, habitat restoration and creation, threat mitigation, and extensive outreach and education work to promote recovery and address threats such as persecution and illegal collection.
- Several projects carried out by 8Trees Inc. at Wainfleet Bog, which have included surveys and monitoring, research, and threat mitigation activities. This work has provided crucial information on species abundance and population trends and has been instrumental in reversing the recent population decline at this site.
- The implementation of threat mitigation techniques to help reduce the impact of road mortality at several sites across the range of the Massasauga (Carolinian and Great Lakes – St. Lawrence population). For example, the installation of 4 km of snake exclusion fence, four open-grate ecopassages, and six ‘brake-for snake’ signs in Killbear Provincial Park have reduced Massasauga mortality on roads and increased habitat connectivity.



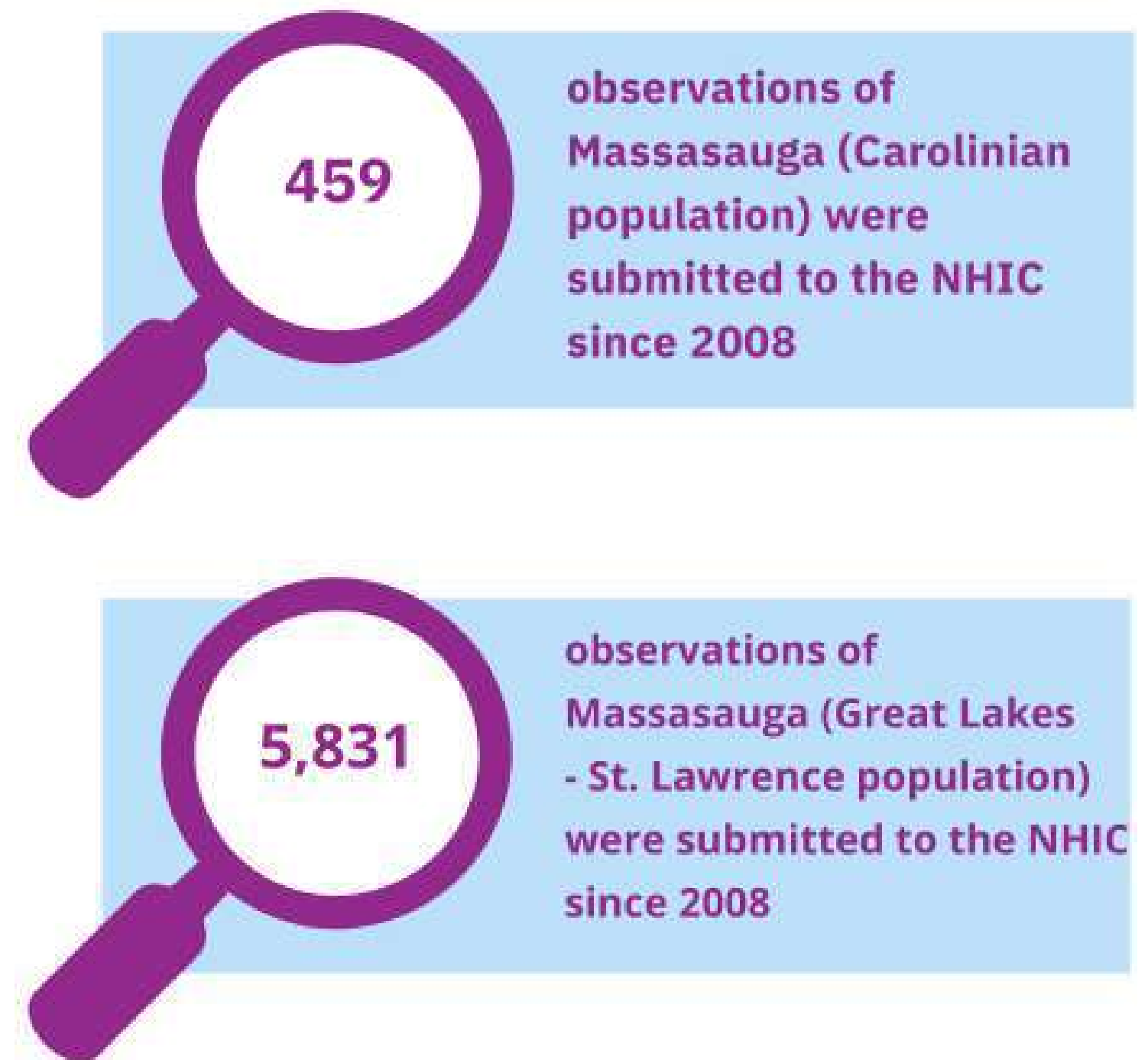
In alignment with the GRS, further work is required to improve the viability of Massasauga (Carolinian population) subpopulations at Ojibway Prairie and Wainfleet Bog. This requires the continuation of ongoing population management approaches, including a captive-breeding and release program at Ojibway Prairie, as well as targeted threat mitigation techniques at Wainfleet Bog. Additional efforts are also needed to develop, implement, and evaluate best management practices to reduce the impacts of threats to the species. In the case of widespread and pervasive threats such as road mortality and climate change, this will require collaborative efforts between government, non-government organizations, researchers, stakeholders, and the public to develop and implement innovative and effective solutions at both local and landscape scales.

Occurrences and distribution:

Massasauga (Great Lakes – St. Lawrence population) is relatively widespread and locally abundant along eastern shore of Georgian Bay and on the Northern Bruce Peninsula, with an estimated range of approximately 15,600 square kilometres based on recent observations. The [Natural Heritage Information Centre](#) (NHIC) has received over 12,700 records of the species based on observations made between 1889 and 2022.

Occurrence information for Massasauga (Great Lakes – St. Lawrence population) has been assessed at a landscape scale using 10 by 10-kilometre grid “squares” to approximate the species’ distribution. The squares were used to estimate where the species has been recently observed (i.e., has been observed within the past 20 years) as well as squares where the species is considered historical (i.e., has not been observed within the past 20 years). Since 2008, the species has been observed in 12 additional squares where it was not previously known to occur and in 40 squares that were previously considered to be historical. Additionally, nine squares have changed from extant to historical based on a lack of observations in the past 20 years.

Massasauga (Carolinian population) has an extremely small distribution in Southern Ontario and is only found in two locations: Wainfleet Bog on the Niagara Peninsula and the Ojibway Prairie complex in the City of Windsor and Town of Lasalle. The [Natural Heritage Information Centre](#) (NHIC) has received over 949 records of the species based on observations made between 1960’s and 2022. Although there are currently two subpopulations of the species that are considered extant, there have been no observations of the species in the Ojibway Prairie complex since 2019 despite considerable search effort, suggesting that this subpopulation is functionally extirpated.



Government-supported stewardship projects:

Through the [Species at Risk Stewardship Program](#), the Government of Ontario has enabled its stewardship partners to conduct 59 projects (by providing \$3,696,125 in funding) that have supported the protection and recovery of multiple species at risk, including Massasauga (Carolinian and Great Lakes – St. Lawrence populations). Fifty-two projects (\$2,849,287) focused on multiple species at risk, including Massasauga (Carolinian and Great Lake – St. Lawrence populations, five projects (\$743,422) focussed exclusively on Massasauga (Carolinian populations) and two projects (\$103,416) focused exclusively on Massasauga (Great Lakes – St. Lawrence population).

The government’s support helped its stewardship partners to involve 2,472 individuals who volunteered 31,795 hours of their time towards protection and recovery activities for species at risk, including Massasauga (Carolinian and Great Lakes – St. Lawrence population). The estimated value of these voluntary contributions, as well as additional funding and in-kind support, is \$5,890,846.

Stewardship partners reported that through both their efforts and the efforts of their volunteers to implement GRS actions, 800.5 hectares of habitat were enhanced for Massasauga (Carolinian and Great Lakes – St. Lawrence population) and other species at risk that inhabit the same ecosystem or different ecosystems.

In addition, stewardship partners reported providing ecosystem-based outreach designed to benefit multiple species at risk, including Massasauga (Carolinian and Great Lakes – St. Lawrence population), to 433,238 individuals.

Species at Risk Stewardship Program

By The Numbers



Supporting human activities while ensuring appropriate support for species recovery:

The Government of Ontario has issued 49 permits for Massasauga (Carolinian and Great Lakes – St. Lawrence population): Forty-three ‘protection or recovery’ permits were issued under clause 17(2)(b), and six ‘overall benefit’ permits were issued under clause 17(2)(c) of the ESA.

Seventeen agreements were entered into for Massasauga (Carolinian and Great Lakes – St. Lawrence population). These agreements were enabled through [Ontario Regulation 242/08](#) (prior to the July 1, 2013 amendment).

One hundred and ninety-two activities have been registered for Massasauga (Carolinian and Great Lakes – St. Lawrence population). The activities were registered under ‘species protection, recovery activities’ (section 23.17), ‘threats to human health and safety, not imminent’ (section 23.18), ‘pits and quarries’ (Section 23.14), ‘drainage works’ (section 23.9), ‘ecosystem protection’ (section 23.11), ‘possession for educational purposes, etc.’ (section 23.15), and ‘transition – development ongoing when species first listed, etc.’ (section 23.13) under [Ontario Regulation 242/08](#) of the ESA.

Species-specific documents and guidance published by the government:

[*General Habitat Description for Massasauga \(Carolinian and Great Lakes – St. Lawrence population\) \(2013\)*](#)

[*Recovery Strategy for Massasauga \(Carolinian and Great Lakes – St. Lawrence population\) \(2016\)*](#)

[*Government Response Statement for Massasauga \(Carolinian and Great Lakes – St. Lawrence population\) \(2018\)*](#)



Protection or Recovery Permits



Overall Benefit Permits



Agreements



Registrations

Massasauga (Carolinian)



Massasauga (Great Lakes – St. Lawrence)



Review of Progress Towards the Protection and Recovery of

Scarlet Ammannia

Progress towards meeting the recovery goal:

The recovery goal in the [Government Response Statement](#) (GRS) for Scarlet Ammannia in Ontario is to “maintain the distribution of the species at locations where it occurs in Ontario, and where feasible, enable natural increases in abundance by reducing threats to the species and its habitat. The government supports investigating the feasibility of augmenting populations located on conservation lands, where suitable habitat is available.”

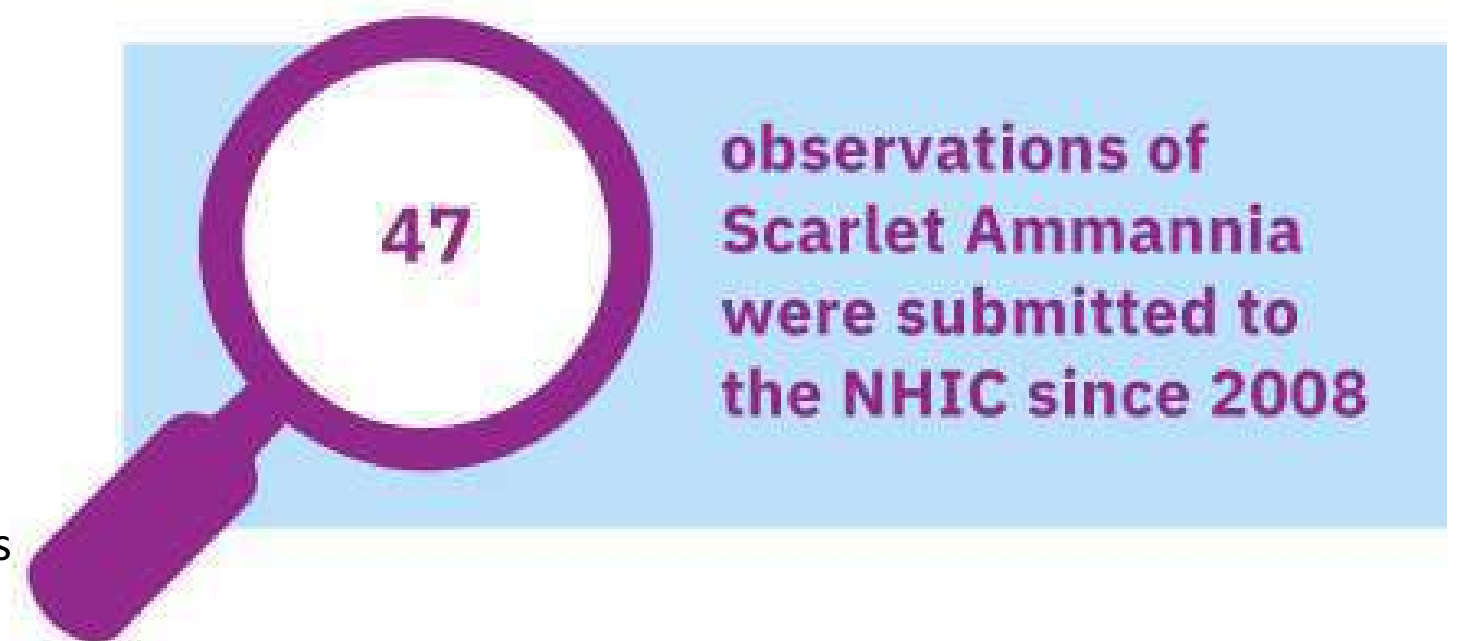
Progress has been made towards implementing the majority of the government-led actions. Initial progress has been made towards implementing all of the government-supported recovery objectives and five of the associated actions. Examples of progress include:

- Conducting targeted surveys for Scarlet Ammannia during low water years where populations occur and in areas where it has been reported or predicted to occur.
- Conducting studies to better understand the habitat conditions required by Scarlet Ammannia.
- Conducting research on Scarlet Ammannia biology, including seed ecology such as dispersal mechanisms and germination requirements.

In alignment with the GRS, further work is required to work collaboratively with land owners, land managers and municipalities to develop, implement and evaluate habitat management plans to improve habitat conditions for the species. Plans may include practices such as enabling suitable natural or artificial water level fluctuations to occur in the species’ habitat; and, encourage land owners and land managers to identify and implement approaches to reduce the impacts of shoreline development, recreational activities and other land uses (e.g., agriculture) on Scarlet Ammannia and its habitat. Additional efforts are also needed to conduct studies to better understand methods to improve habitat conditions, including developing and evaluating methods to improve habitat conditions such as restoring suitable hydrological disturbances (natural or artificial), removal of competing or invasive plants, or modifying agricultural practices to be compatible with Scarlet Ammannia persistence.



Scarlet Ammannia - Mihai Costea



Occurrences and distribution:

Nine populations of Scarlet Ammannia have been documented in Ontario, all in Essex County. Currently, eight of these populations are extant, whereas the remaining one satisfies conditions to be considered historical. Since 2008, the presence of Scarlet Ammannia was reconfirmed at two locations after 12 and 16 years, respectively, as a result of seed bank studies. Four populations of Scarlet Ammannia have been newly identified since 2008.

The [Natural Heritage Information Centre](#) (NHIC) has received 47 records of the species based on observations made between 1974 and 2022.

Government-supported stewardship projects:

Through the [Species at Risk Stewardship Program](#), the Government of Ontario has enabled its stewardship partners to conduct 10 projects (by providing \$464,069 in funding) that have supported the protection and recovery of multiple species, including Scarlet Ammannia. Five projects (\$307,110) focused on multiple species at risk, including Scarlet Ammannia (e.g., landscape-level habitat restoration projects, outreach and education focussing on a certain group of species such as those present in a region), while the other five projects (\$156,959) focused exclusively on Scarlet Ammannia.

The government’s support helped its stewardship partners to involve 161 individuals who volunteered 7,847 hours of their time towards protection and recovery activities for species at risk, including Scarlet Ammannia. The estimated value of these voluntary contributions, as well as additional funding and in-kind support, is \$404,259.

Stewardship partners reported that through their actions 188.8 hectares of habitat were enhanced for Scarlet Ammannia and other species at risk that inhabit the same ecosystems.

In addition, stewardship partners reported providing ecosystem-based outreach designed to benefit multiple species at risk, including Scarlet Ammannia, to 26,114 individuals.

Species at Risk Stewardship Program

By The Numbers



Supporting human activities while ensuring appropriate support for species recovery:

The Government of Ontario has issued three permits for this species; all three were ‘protection or recovery’ permits issued under clause 17(2)(b) of the ESA.

One agreement was entered into for Scarlet Ammannia. This agreement was enabled through [Ontario Regulation 242/08](#) (prior to the July 1, 2013 amendment).

Seven activities have been registered for the species. The activities were registered under ‘species protection, recovery activities’ (section 23.17) and ‘threats to health and safety, not imminent’ (section 23.18) under [Ontario Regulation 242/08](#) of the ESA.

Species-specific documents and guidance published by the government:

[Recovery Strategy for Scarlet Ammannia \(2017\).](#)

[Government Response Statement for Scarlet Ammannia \(2018\).](#)

