

Five-Year Review of Progress Towards the Protection and Recovery of Ontario's Species at Risk

2016



ontario.ca/speciesatrisk

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To fulfill a commitment of the *Endangered Species Act, 2007* (ESA), the Ministry of Natural Resources and Forestry (MNR) publishes a Five-Year Review of Progress Towards the Protection and Recovery of Ontario's Species at Risk. The Review shows how the MNR and its partners are helping to protect and recover species at risk in Ontario. In 2016, the Review included the following 27 species at risk:

- **American White Pelican**
- **Bent Spike-rush**
- **Common Five-lined Skink**
(Carolinian and Southern Shield populations)
- **Cucumber Tree**
- **Eastern Foxsnake**
(Carolinian and Frontenac Axis populations)
- **Forked Three-awned Grass**
- **Fowler's Toad**
- **Gray Ratsnake**
(Carolinian and Georgian Bay populations)
- **Hoary Mountain-mint**
- **Kidneyshell and Northern Riffleshell**
- **Northern Barrens Tiger Beetle**
- **Pale-bellied Frost Lichen**
- **Queensnake**
- **Rapids Clubtail**
- **Rayed Bean, Round Hickorynut, Round Pigtoe, Salamander Mussel, Snuffbox**
- **Small Whorled Pogonia**
- **Virginian Mallow**
- **Wavy-rayed Lampmussel**
- **Wood-poppy**

This document is a summary of the progress made from 2007 to 2015 for the 27 species listed above. Full-length chapters on each of the 27 species are found in the 2016 Five-Year Review of Progress Towards the Protection and Recovery of Ontario's Species at Risk [www.ontario.ca/page/five-year-review-progress-towards-protection-and-recovery-ontarios-species-risk], which is available on the Government of Ontario website.

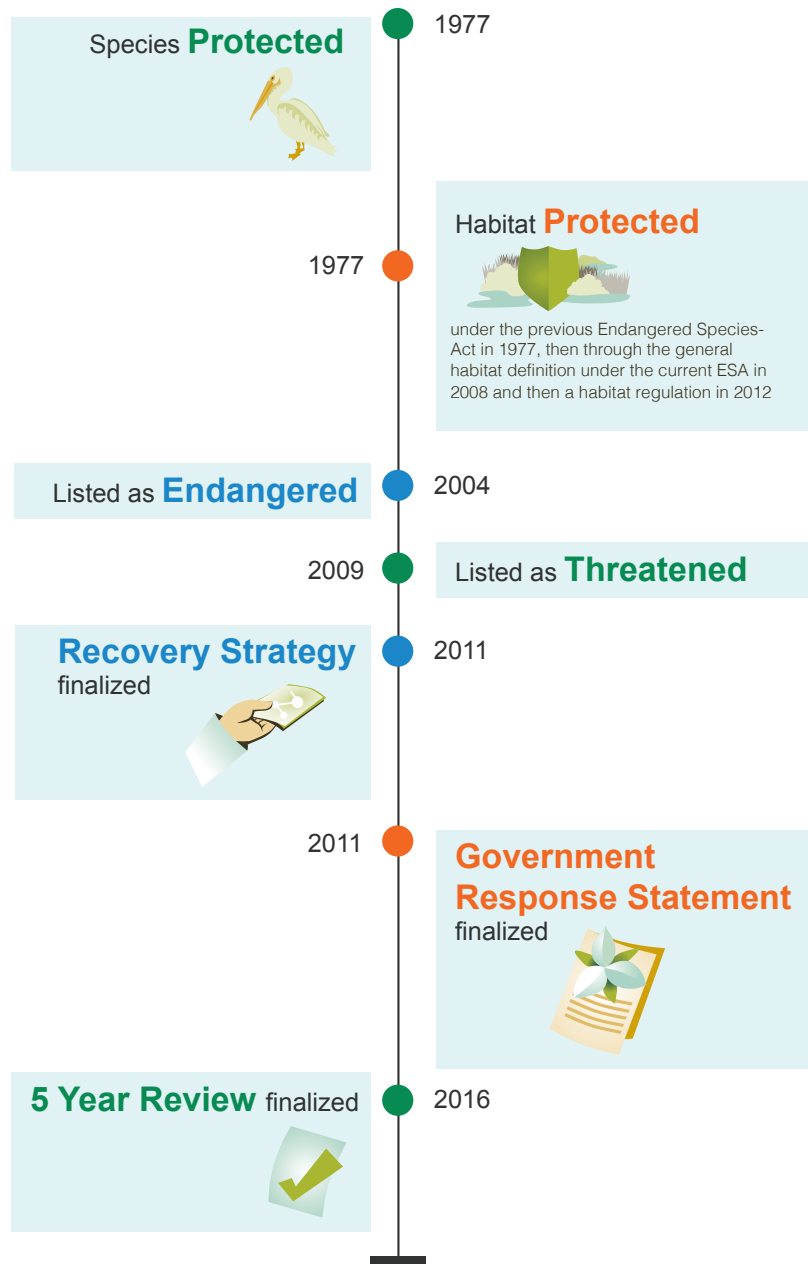
Five-Year Review of Progress Towards the Protection and Recovery of **American White Pelican**



The recovery goal in the government response statement (GRS) for American White Pelican is to maintain, and allow for the natural increase of, successfully breeding pelicans and colonies in Ontario while minimizing threats to their recovery. Progress has been made toward both government-led and government-supported actions for the species through activities such as:

- Survey and monitoring work using methods that minimized human disturbance;
- Data analysis to learn more about the effects of habitat degradation on pelican breeding success; and
- Analysis to confirm the viability of American White Pelican populations.

More work needs to be done on some GRS actions, such as research to determine the species' level of tolerance for human disturbances near its breeding colonies, and providing information about the species that targets specific audiences including landowners, land managers and the fishing community.



Provincial status:

American White Pelican is classified as threatened under the *Endangered Species Act, 2007* (ESA). It was listed as endangered under the previous Endangered Species Act and retained this status in 2008 when the ESA came into force. American White Pelican was re-assessed as threatened, and its status was updated on the Species at Risk in Ontario List in 2009. American White Pelican has received species and habitat protection since 1977. In addition, in 2012, the government finalized a habitat regulation for the species.



Government-supported stewardship projects:

Through the **Species at Risk Stewardship Fund**, the Ministry of Natural Resources and Forestry (“the Ministry”) has enabled its stewardship partners to conduct a total of four projects (\$90,148) that have supported the protection or recovery of multiple species at risk, including American White Pelican.

The Ministry’s support helped its stewardship partners to involve 71 individuals who volunteered 1,372 hours of their time toward protection or recovery activities for species at risk, including American White Pelican. The estimated value of these voluntary contributions, as well as additional funding and in-kind support, is \$60,058.

Stewardship partners reported providing outreach on multiple species at risk, including American White Pelican to 47 individuals.

Species at risk stewardship fund:



\$0

for American White Pelican exclusively



\$90,148

for multi-species projects that included American White Pelican



\$60,058

in additional funding and in-kind support



4 projects

included the American White Pelican



71

volunteers



1,372

volunteer hours



47 people

received outreach



1

protection or
recovery permit

4

registrations

121

observations of
this species were
submitted to the
NHIC since 2008

Supporting human activities while ensuring appropriate support for species recovery:

To date, the Ministry has issued one permit under section 17(2)(b) of the Act ('protection or recovery'), and has not entered into any agreements for American White Pelican.

Four activities have been registered for this species. The activities were registered under 'Wind facilities' (section 23.20) under *Ontario Regulation 242/08* of the ESA.

Occurrences and distribution:

Twelve populations of American White Pelican have been documented in northwestern Ontario and two populations in southwestern Ontario. Currently, 13 of these populations are extant, and one is considered extirpated. Seven new populations have been added to the provincial record of observations since 2008, including one new population which has been identified based on observations made prior to 2008. The estimated viability of one population which was previously considered to have poor viability, has improved, and its viability is now considered to be good or fair.

Species-specific documents and guidance published by the government:

- Recovery Strategy for American White Pelican (2011)
- American White Pelican: Ontario Government Response Statement (2011)
- American White Pelican Habitat Regulation *Ontario Regulation 242/08* (2012)

Five-Year Review of Progress Towards the Protection and Recovery of

Bent Spike-rush



The recovery goal in the government response statement (GRS) for Bent Spike-rush is to prevent further loss and degradation of habitat at both locations where it occurs so that populations are maintained. Progress has been made through the government-led action to create best management practices for the control of Phragmites, an invasive plant (also known as European Common Reed) that is degrading Bent Spike-rush habitat. The government has also made progress toward the GRS action of conducting detailed mapping and surveys of known populations to provide a quantitative baseline for future monitoring.

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In alignment with the GRS, more work needs to be done to inform recovery actions through repeated and long-term monitoring, researching the reproductive and habitat needs of Bent Spike-rush and studying the magnitude of impacts on habitat and reproduction caused by Phragmites.



Provincial status:

Bent Spike-rush is classified as endangered under the *Endangered Species Act, 2007* (ESA). Bent Spike-rush was also listed under the previous Endangered Species Act, and has retained the same status since transition to the ESA. Bent Spike-rush has been protected from being killed, harmed, harassed, captured or taken and its habitat has been protected from damage or destruction under the ESA since 2009. In addition, in 2012, the government finalized a habitat regulation for the species.



registration

Supporting human activities while ensuring appropriate support for species recovery:

One activity has been registered for this species. The activity is registered under 'Drainage works' (section 23.9) under *Ontario Regulation 242/08* of the ESA.



observations of this species were submitted to the NHIC since 2008

Occurrences and distribution:

Three populations of Bent Spike-rush have been known to occur in southwestern Ontario, two on the shores of Lake Erie, and one in Cedar Springs, two kilometres inland from Lake Erie. Currently, two of these populations are extant and one is considered to be historical. Recent surveys have confirmed the presence of both extant populations.

Species-specific documents and guidance published by the government:

- Recovery Strategy for Bent Spike-rush (2010)
- Bent Spike-rush: Ontario Government Response Statement (2011)
- Bent Spike-rush Habitat Regulation *Ontario Regulation 242/08* (2012)

Five-Year Review of Progress Towards the Protection and Recovery of

Common Five-lined Skink Carolinian and Southern Shield populations



The recovery goal in the government response statement (GRS) for Common Five-lined Skink is to ensure the long-term viability and survival of both designated populations in Ontario. Progress has been made through both government-led and government-supported actions for the species through activities such as:

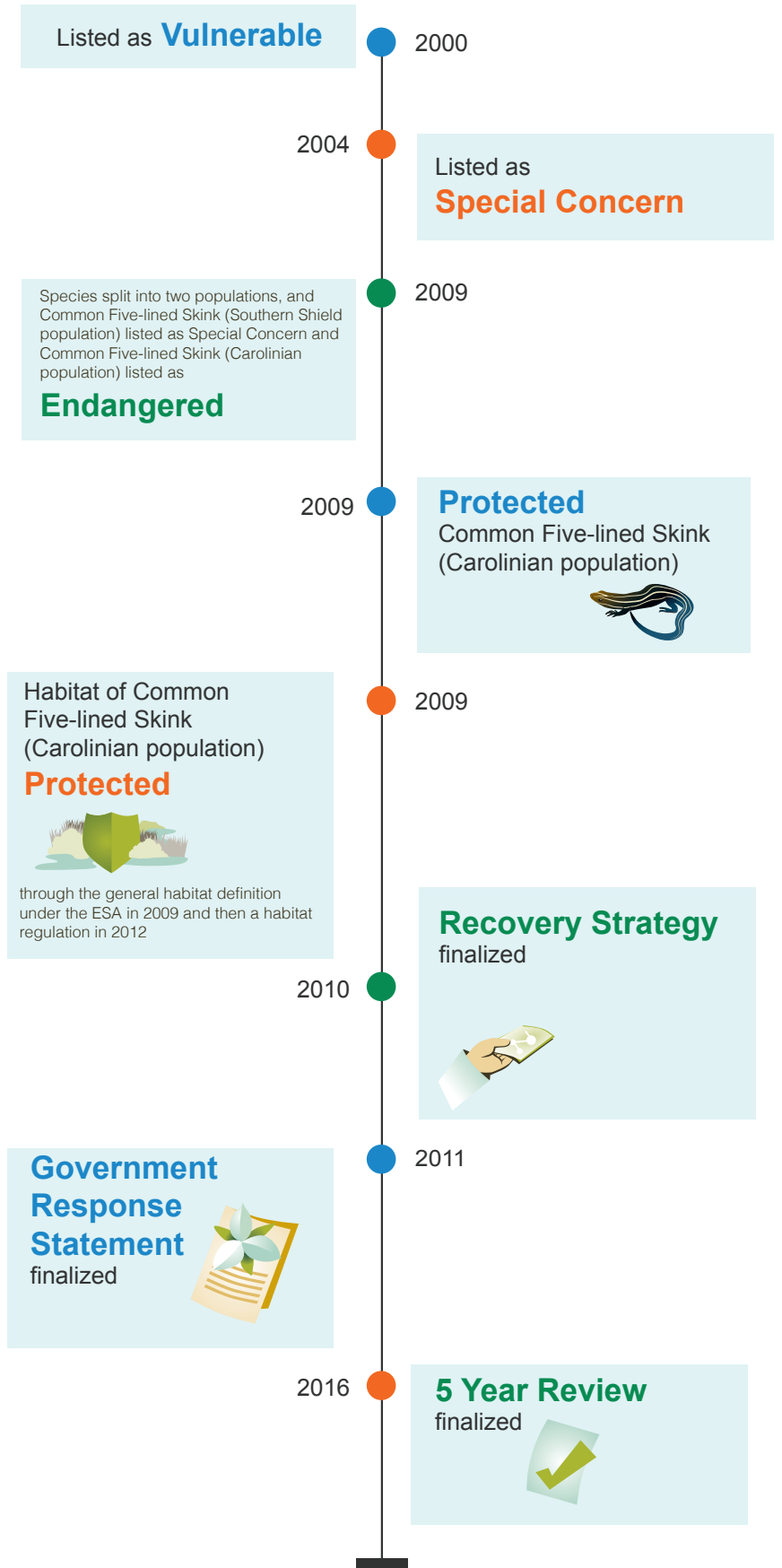
- Identifying and implementing approaches to reduce threats such as road mortality, predators and disturbance of cover objects;
- Studying habitat use, movements and dispersal abilities of the species; and
- Investigating the most effective techniques to maintain or enhance suitability of skink habitat.

More research on aspects such the spatial ecology, distribution and population trends of the Common Five-lined Skink is needed, as well as efforts to maintain the amount and quality of habitat and microhabitats for the species.



Provincial status:

Common Five-lined Skink was classified as special concern under the previous Endangered Species Act in 2004, and retained this status under the *Endangered Species Act, 2007* (ESA) when it came into effect in 2008. The species was subsequently reassessed and in 2009 was split into two newly-listed populations on the Species at Risk in Ontario List: the Carolinian population and the Southern Shield population. The Carolinian population is listed as endangered, and the Southern Shield population is listed as special concern. Individual members of the Carolinian population have been protected from being killed, harmed, harassed, captured or taken, and their habitat has been protected from damage or destruction, under the ESA since 2009. In addition, the government finalized a habitat regulation for the Carolinian population in 2012.





Government-supported stewardship projects:

Through the **Species at Risk Stewardship Fund**, the Ministry of Natural Resources and Forestry (“the Ministry”) has enabled its stewardship partners to conduct a total of 39 projects (\$2,242,512) that have supported the protection or recovery of Common Five-lined Skink (Carolinian and Southern Shield populations), of which 37 also targeted other species at risk. Thirteen projects (\$787,936) included both populations of Common Five-lined Skink, 10 projects (\$859,922) were for Common Five-lined Skink (Carolinian population) and 16 projects (\$594,654) were for Common Five-lined Skink (Southern Shield population).

The Ministry’s support helped its stewardship partners to involve 3,878 individuals who volunteered 36,118 hours of their time toward protection or recovery activities for species at risk, including Common Five-lined Skink. The estimated value of these voluntary contributions, as well as additional funding and in-kind support, is \$2,299,987.

Stewardship partners reported that through their actions 45 hectares of habitat were enhanced for Common Five-lined Skink and other species at risk that inhabit the same ecosystem.

Stewardship partners reported providing outreach on multiple species at risk, including Common Five-lined Skink, to 264,840 individuals.

Species at risk stewardship fund:





1

overall benefit permit

7

protection or
recovery permits

16

registrations

1,687

observations of these
species were submitted
to the NHIC since 2008

Supporting human activities while ensuring appropriate support for species recovery:

The Ministry of Natural Resources and Forestry has issued eight permits for Common Five-lined Skink (Carolinian population): seven 'protection or recovery permits' were issued under clause 17(2)(b), and one 'overall benefit permit' was issued under clause 17(2)(c) of the ESA.

Sixteen activities have been registered for Common Five-lined Skink (Carolinian population). The activities were registered under 'Drainage Works' (section 23.9), 'Ecosystem protection' (section 23.11), 'Possession for educational purposes, etc.' (section 23.15), 'Species protection, recovery activities' (Section 23.17) or 'Threats to health and safety, not imminent' (section 23.18) under *Ontario Regulation 242/08* of the ESA.

Occurrences and distribution:

Nineteen local populations of Common Five-lined Skink (Carolinian population) have been documented in southwestern Ontario near the shores of Lakes Erie, St. Clair and Huron. Currently, 13 of these local populations are extant, whereas five are considered historical and one is considered extirpated. Since 2008, the statuses of two local populations have changed from extant to historical based on the date that they were last observed, while three local populations changed from extirpated/historic to extant as the species' persistence was confirmed through monitoring efforts. Excitingly, six new local populations have been identified since 2008.

Common Five-lined Skink (Southern Shield population) has been recently observed in 150 squares along the southern edge of the Canadian Shield, and there are 47 additional squares that contain historical observations of the species within that geography. Since 2008, 19 squares are considered to have changed from extant to historical based on the date that the species was last observed, whereas the species continued persistence has been confirmed at 95 squares (including 14 squares that in 2008 were thought to be historical). Notably, monitoring conducted since 2008 identified 13 new squares in which Common Five-lined Skink was not previously known to occur.

Species-specific documents and guidance published by the government:

- Recovery Strategy for Common Five-lined Skink (*Plestiodon fasciatus*) - Carolinian and Southern Shield populations in Ontario (2010)
- Common Five-lined Skink - Carolinian and Southern Shield Populations: Ontario Government Response Statement (2011)
- Common Five-lined Skink (Carolinian population) Habitat Regulation *Ontario Regulation 242/08* (2012)

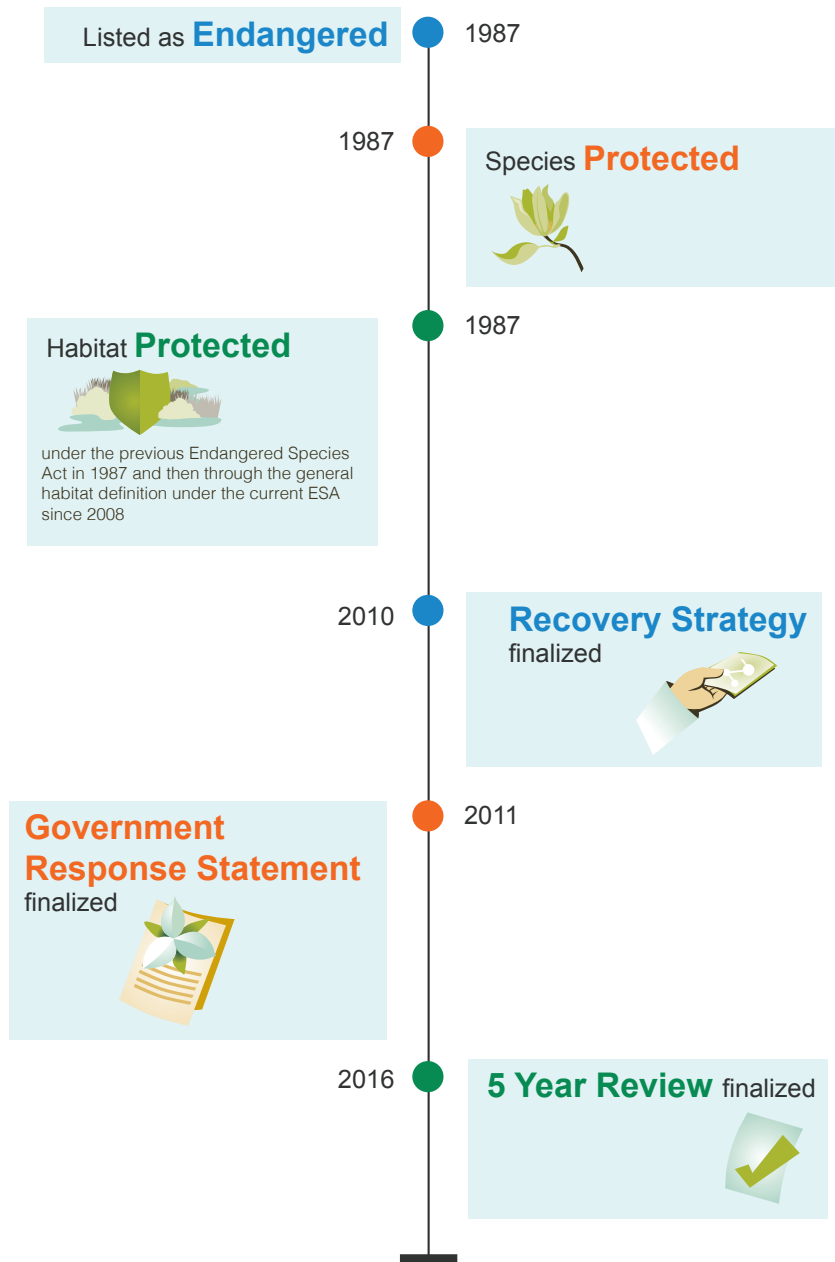
Five-Year Review of Progress Towards the Protection and Recovery of Cucumber Tree



The recovery goal in the government response statement (GRS) for Cucumber Tree is to conserve and achieve a self-sustaining population in Ontario. Progress has been made toward all government-led actions and the majority of government-supported actions for the species through activities such as:

- Landowners participating in the Conservation Land Tax Incentive Program and the Managed Forest Tax Incentive Program;
- Assisting woodlot owners to monitor and manage habitat for Cucumber Tree; and
- Researching the degree of variability in genetic composition among Ontario trees, and compared with trees growing in the central U.S.

In alignment with the GRS, more research needs to be done on pollination and seed dispersal, genetic variability among populations, and efforts continue to reduce habitat fragmentation and secure habitat for the species.



Provincial status:

Cucumber Tree is classified as endangered under the *Endangered Species Act, 2007* (ESA). Cucumber Tree was also listed under the previous Endangered Species Act, and has retained the same status since transition to the ESA. Cucumber Tree has received species and habitat protection since 1987.



Government-supported stewardship projects:

Through the **Species at Risk Stewardship Fund**, the Ministry of Natural Resources and Forestry (“the Ministry”) has enabled its stewardship partners to conduct a total of seven projects that have supported the protection or recovery of Cucumber Tree. One project (\$7,600) focused exclusively on Cucumber Tree, while the other six projects (\$160,266) focused on multiple species at risk, including Cucumber Tree.

The Ministry’s support helped its stewardship partners to involve 481 individuals who volunteered 4,702 hours of their time toward protection and recovery activities for species at risk, including Cucumber Tree. The estimated value of these voluntary contributions, as well as additional funding and in-kind support, is \$449,081.

Stewardship partners reported providing outreach on multiple species at risk, including Cucumber Tree to 1,125 individuals.

Through the Species at Risk Research Fund for Ontario the Ministry supported one research partner in conducting a conservation genetics study on Cucumber Tree that improved understanding of the species’ biology and ecology.

Through participation in the Conservation Land Tax Incentive Program (CLTIP; 20 properties) and Managed Forest Tax Incentive Program (MFTIP; 2 properties), private landowners protected natural heritage values and biodiversity, including Cucumber Tree on their land.

Species at risk stewardship fund:



\$7,600
for Cucumber Tree
exclusively



\$160,226
for multi-species
projects that included
Cucumber Tree



\$449,081
in additional funding
and in-kind support



7 projects
included the
Cucumber Tree



481
volunteers



4,702
volunteer hours



1,125
people
received outreach



1

protection or
recovery permit

1

registration

Supporting human activities while ensuring appropriate support for species recovery:

The Ministry has issued one 'protection or recovery permit' issued under clause 17(2)(b) of the ESA.

One activity has been registered for this species. The activity was registered under 'Threats to health and safety, not imminent' (section 23.18), under *Ontario Regulation 242/08* of the ESA.

111

observations of
this species were
submitted to the
NHIC since 2008

Occurrences and distribution:

Thirteen populations of Cucumber Tree have been documented in the Niagara region and Norfolk county region. Currently, seven of these populations are extant, one is considered historical and the remaining five are considered extirpated. Since 2008, no new populations of Cucumber Tree have been identified; however, one population that was presumed to be extirpated was confirmed to exist. In addition, two populations that did not have observations for 20 years were confirmed to exist through monitoring efforts.

Species-specific documents and guidance published by the government:

- Recovery Strategy for the Cucumber Tree (*Magnolia acuminata*) (2010)
- Cucumber Tree: Ontario Government Response Statement (2011)

Five-Year Review of Progress Towards the Protection and Recovery of

Eastern Foxsnake Carolinian and Georgian Bay Populations



The recovery goal in the government response statement (GRS) for Eastern Foxsnake is to ensure the persistence of the species and to maintain the current range of occupancy and connectivity of its habitat within both the Carolinian and Georgian Bay populations. A specific government-led action in the GRS to develop a survey protocol for snakes was completed in 2016. Progress has been made toward the majority of government-led actions and all government-supported actions for the species through activities such as:

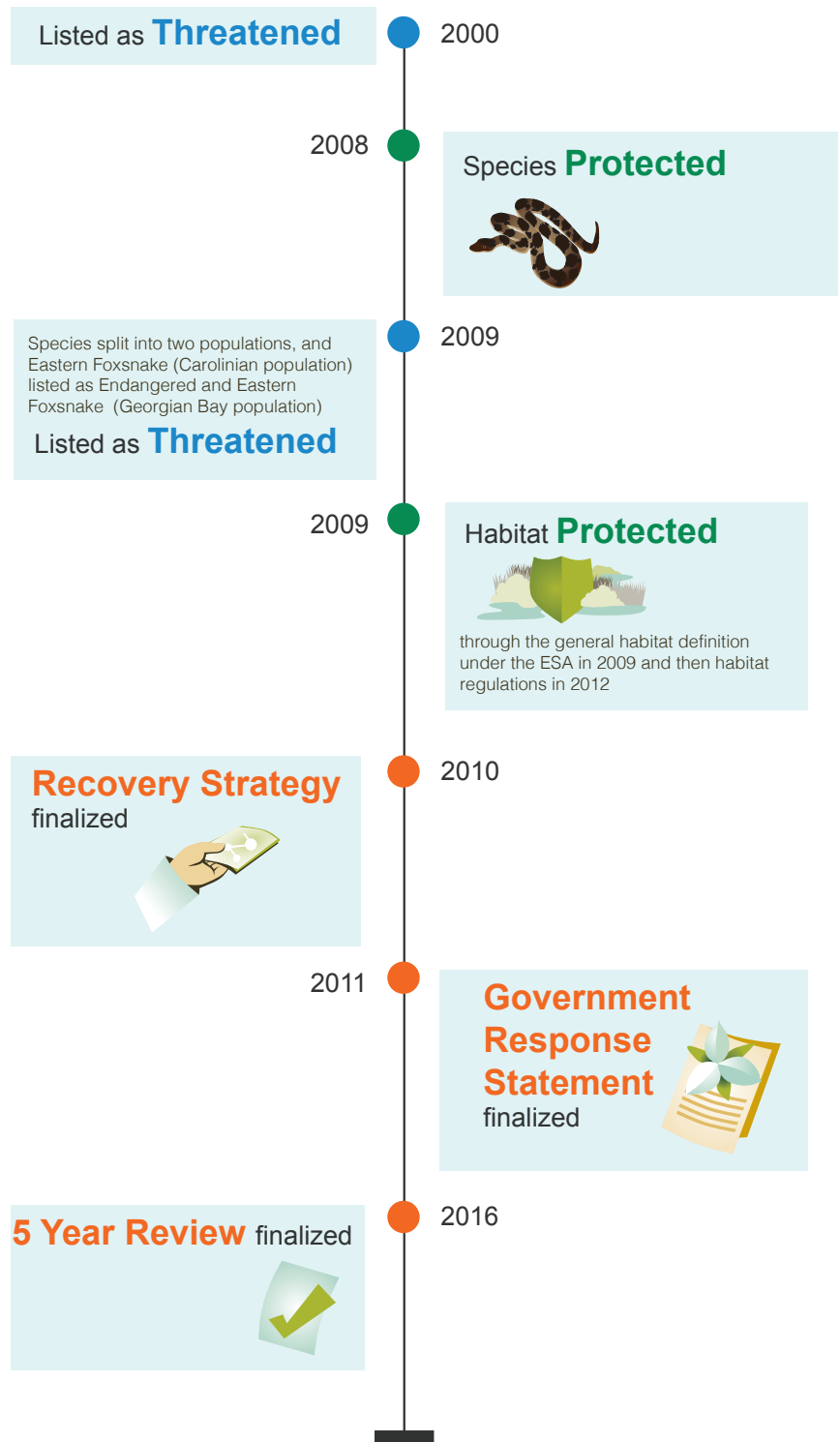
- Surveying specific areas for Eastern Foxsnake and monitoring hibernacula;
- Identifying habitat features and learning more about the species' distribution;
- Coordinating existing landscape-restoration activities to maintain connectivity and create a mosaic of habitat types and features for the species; and
- Reducing road mortality and human persecution of snakes.

More work needs to be done on GRS actions such as implementing a collaborative monitoring approach across the province and researching the impacts of new diseases.



Provincial status:

Prior to its transition to the ESA, Eastern Foxsnake was listed as threatened, but was not regulated under the previous Endangered Species Act. Eastern Foxsnake retained this status under the Endangered Species Act, 2007 (ESA) when it came into effect in 2008. In 2009, the species was split into two newly-listed populations on the Species at Risk in Ontario List: the Carolinian population and the Georgian Bay population. The Carolinian population is listed as endangered and the Georgian Bay population is listed as threatened. Both populations of Eastern Foxsnake have been protected from being killed, harmed, harassed, captured or taken under the ESA since 2008, and its habitat has been protected from damage or destruction since 2009. In addition, in 2012, the government finalized habitat regulations for the species. Species and habitat protection continue to apply to both of the newly-listed populations.





Government-supported stewardship projects:

Through the **Species at Risk Stewardship Fund**, the Ministry of Natural Resources and Forestry (“the Ministry”) has enabled its stewardship partners to conduct a total of 101 projects (\$4,551,392) that have supported the protection or recovery of multiple species at risk, including Eastern Foxsnake (Carolinian and Georgian Bay populations). Nineteen projects (\$1,230,819) included both populations of Eastern Foxsnake, 66 projects (\$2,799,291) were specific to Eastern Foxsnake (Carolinian population) and other species at risk; and the remaining 16 projects (\$521,282) targeted multiple species at risk, including Eastern Foxsnake (Georgian Bay population).

The Ministry’s support helped its stewardship partners to involve 10,830 individuals who volunteered 86,822 hours of their time toward protection or recovery activities for species at risk, including Eastern Foxsnake. The estimated value of these voluntary contributions, as well as additional funding and in-kind support, is \$7,912,924.

Stewardship partners reported that through their actions 4,596 hectares of habitat were enhanced for Eastern Foxsnake and other species at risk that inhabit the same ecosystem.

Stewardship partners reported providing outreach on multiple species at risk, including Eastern Foxsnake to 1,791,578 individuals.

Through the Species at Risk Research Fund for Ontario the Ministry has supported a total of two projects that evaluate road mitigation for reptiles and amphibians.

Species at risk stewardship fund:



\$38,738

for Eastern Foxsnake (Carolinian population) exclusively



\$4,512,654

for multi-species projects that included Eastern Foxsnake



\$7,912,654

in additional funding and in-kind support



101 projects

included the Eastern Foxsnake



10,830

volunteers



86,822

volunteer hours



4,596

hectares of habitat enhanced



1,791,578

people received outreach



27

protection or
recovery permits

6

overall benefit
permits

2

social or economic
benefit to Ontario
permits

17

agreements

38

registrations

Supporting human activities while ensuring appropriate support for species recovery:

The Ministry of Natural Resources and Forestry has issued 35 permits for Eastern Foxsnake: 27 'protection or recovery permits' (i.e., 17(2)(b) permit), six 'overall benefit permits' (i.e., 17(2)(c) permit), and two 'social or economic benefit to Ontario permits' (i.e., 17(2)(d) permit).

A total of 17 agreements were entered into for Eastern Foxsnake. These agreements were enabled through *Ontario Regulation 242/08* (prior to the July 1, 2013 amendment).

Thirty-eight activities have been registered for Eastern Foxsnake. The activities were registered under

'Ecosystem protection' (section 23.11), 'Hydro-electric generating stations' (section 23.12), 'Possession for educational purposes, etc.' (section 23.15), 'Species protection, recovery actions' (section 23.17), 'Threats to health and safety, not imminent' (section 23.18), or 'Drainage works' (section 23.9) under *Ontario Regulation 242/08* of the ESA.



observations of
these species were
submitted to the
NHIC since 2008

Occurrences and distribution:

There are 16 local populations of Eastern Foxsnake (Carolinian population) that have been documented along the Lake-Erie-Lake Huron waterway shoreline and tributaries, several islands in Lake Erie and the Detroit River-Lake St. Clair. Currently, 14 of these local populations are extant, whereas one is considered historical and the remaining one is considered extirpated. Since 2008, the status of one local population has changed from extant to historical based on the date that it was last observed, while one local population changed from historical to extant as observations of the species were confirmed through monitoring efforts. Additionally, three local populations of Eastern Foxsnake

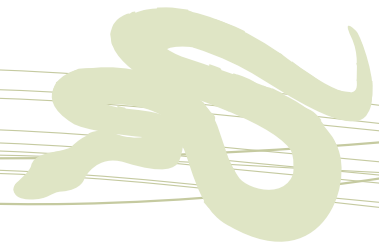
(Carolinian population) have been newly-identified since 2008, and an additional two local populations have been identified based on sightings made prior to 2008.

Eastern Foxsnake (Georgian Bay population) has been recently observed in 34 squares, and there are 10 additional squares that contain historical observations of the species along the shoreline of eastern Georgian Bay. Since 2008, one square is now considered historical based on the date the species was last observed, while seven areas that were previously considered historical have been recently confirmed.



Species-specific documents and guidance published by the government:

- Recovery Strategy for Eastern Foxsnake (*Pantherophis gloydi*) (Carolinian and Georgian Bay populations) (2010)
- Eastern Foxsnake (Carolinian and Georgian Bay populations): Ontario Government Response Statement (2011)
- Eastern Foxsnake (Carolinian population) Habitat Regulation: *Ontario Regulation 242/08* (2012)
- Eastern Foxsnake (Georgian Bay population) Habitat Regulation *Ontario Regulation 242/08* (2012)



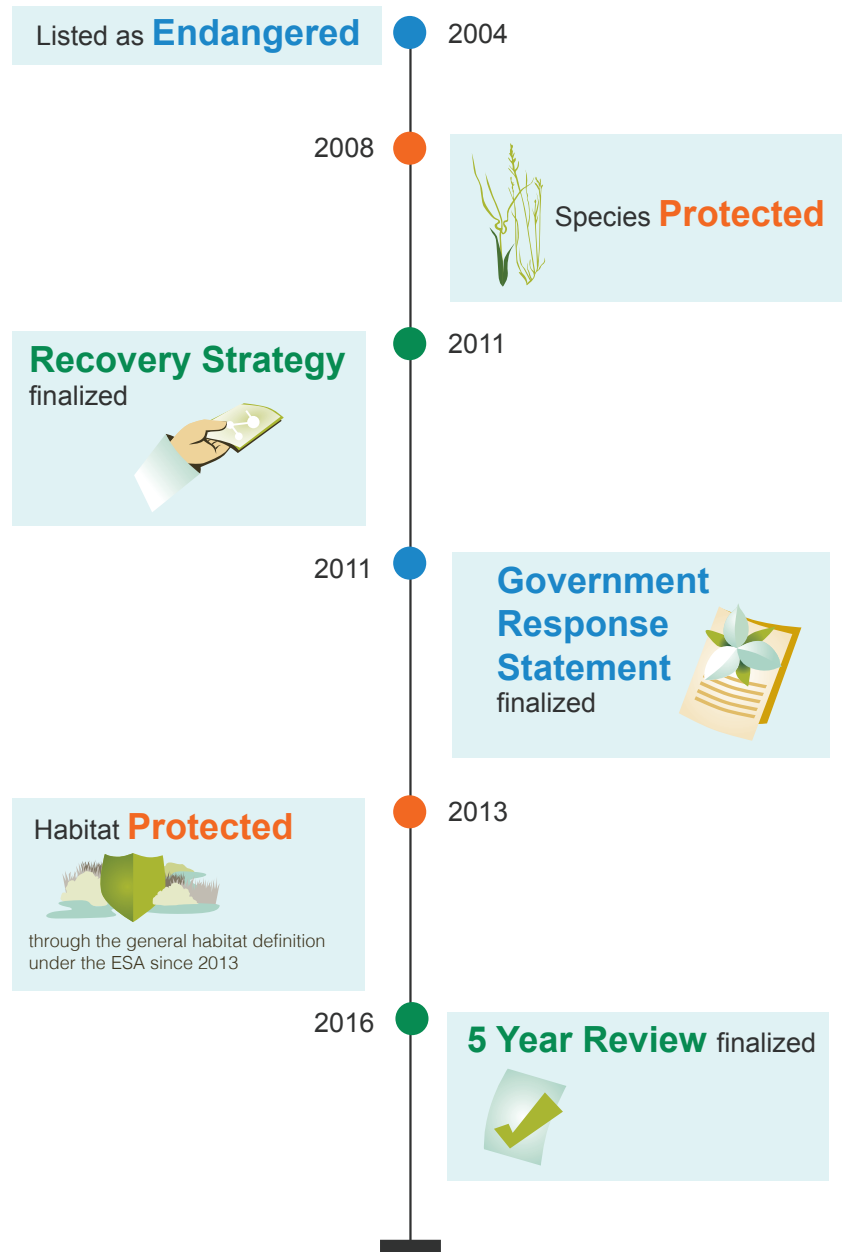
Five-Year Review of Progress Towards the Protection and Recovery of **Forked Three-awned Grass**



The recovery goal in the government response statement (GRS) for Forked Three-awned Grass is to maintain self-sustaining populations at all currently occupied sites within the species' native distribution in Ontario. Progress has been made toward all government-led actions and several of the government-supported actions for the species through activities such as:

- Implementing a monitoring program to track changes in known populations and the impacts of threats; and
- Surveying for additional populations of Forked Three-awned Grass.

More work needs to be done on GRS actions such as implementing a standardized monitoring program at all Ontario population sites, and researching seed viability and ecological processes that maintain habitat.



Provincial status:

Forked Three-awned Grass is classified as endangered under the *Endangered Species Act, 2007* (ESA). Prior to its transition to the ESA, Forked Three-awned Grass was listed as endangered on the Species at Risk in Ontario List, but was not regulated under the previous Endangered Species Act. The species has been protected from being killed, harmed, harassed, captured or taken under the ESA since 2008, and its habitat has been protected from damage or destruction since 2013.



Supporting our partners:

Through the **Species at Risk Stewardship Fund**, the Ministry of Natural Resources and Forestry (“the Ministry”) has enabled its stewardship partners to conduct a total of four projects (\$145,515) that have supported the protection or recovery of multiple species at risk, including Forked Three-awned Grass.

The Ministry’s support helped its stewardship partners to involve 98 individuals who volunteered 321 hours of their time toward protection or recovery activities for species at risk, including Forked Three-awned Grass. The estimated value of these voluntary contributions, as well as additional funding and in-kind support, is \$54,886.

Stewardship partners reported providing outreach on multiple species at risk, including Forked Three-awned Grass to 2,872 individuals.

Species at risk stewardship fund:



\$0

for Forked Three-awned Grass exclusively



\$145,515

for multi-species projects that included Forked Three-awned Grass



\$54,886

in additional funding and in-kind support



4 projects

included the Forked Three-awned Grass



98

volunteers



321

volunteer hours



2,872

people
received outreach



**observations of
this species were
submitted to the
NHIC since 2008**

Occurrences and distribution:

Forked Three-awned Grass is known to occur in 13 populations within Simcoe County and islands in adjacent Georgian Bay. No new populations of the species have been discovered since 2008; however, continuing persistence has been recently confirmed at nine of the populations, and the species has been discovered at new locations within several populations.

Species-specific documents and guidance published by the government:

- Recovery Strategy for Forked Three-awned Grass (2011)
- Forked Three-awned Grass: Ontario Government Response Statement (2011)



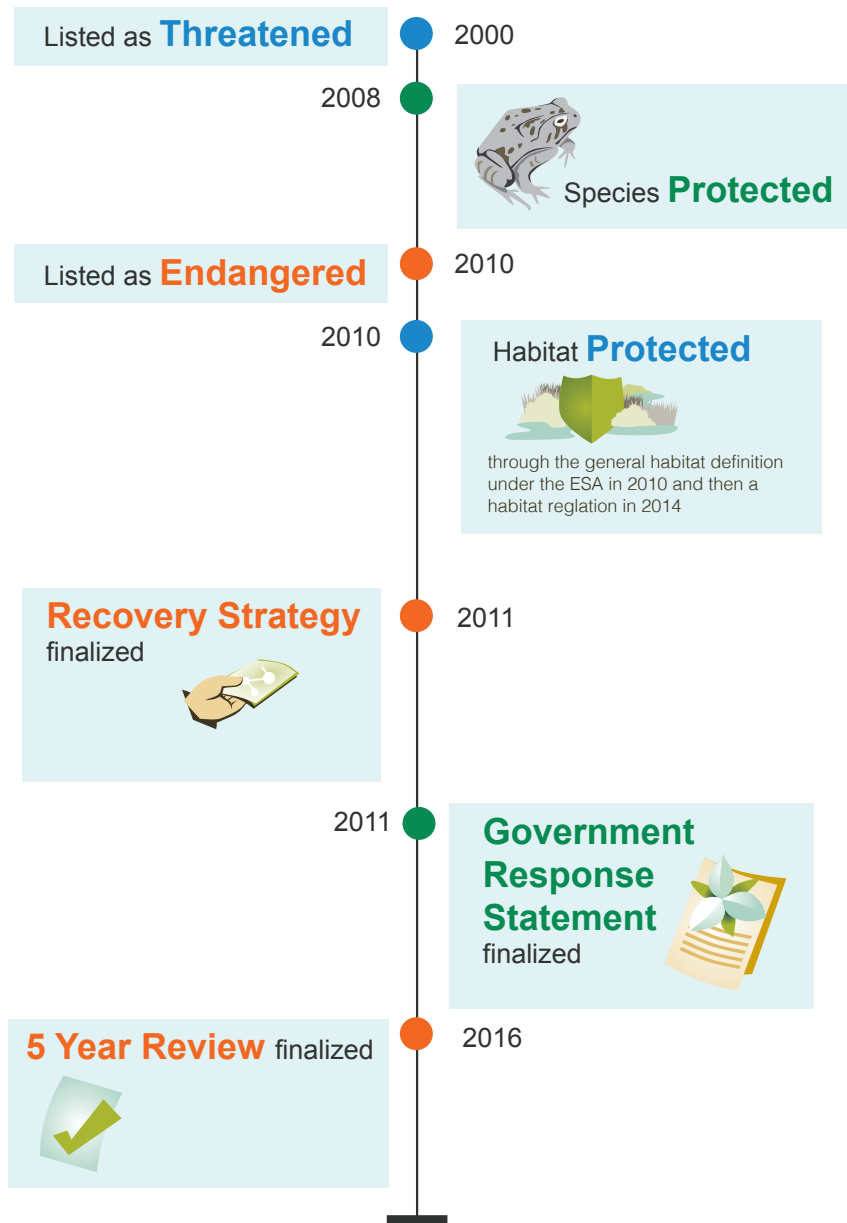
Five-Year Review of Progress Towards the Protection and Recovery of Fowler's Toad



The recovery goal in the government response statement (GRS) for Fowler's Toad is to maintain populations at existing locations in Ontario, and to investigate the feasibility of re-introducing populations in other suitable areas. Progress has been made on all government-led and government-supported actions for the species through activities such as:

- Extensive monitoring for Fowler's Toad in the two provincial parks where the species occurs (Rondeau and Long Point) and the Niagara region;
- Many years of monitoring at Long Point by a researcher who is also investigating the use of artificial breeding ponds to sustain or increase toad populations; and
- Delivery of education and outreach programs to key stakeholders and landowners to increase awareness of the species' distribution and threats and foster good stewardship.

In alignment with the GRS, more work needs to be done to address the threat of the invasive plant Phragmites (European Common Reed) at Long Point, determine the level of impacts caused by recreational activity on Rondeau beaches, and investigate the feasibility of re-introducing the species into suitable areas.



Provincial status:

Fowler's Toad is classified as endangered under the *Endangered Species Act, 2007* (ESA). Prior to its transition to the ESA, Fowler's Toad was listed as threatened, but was not regulated under the previous Endangered Species Act. It was re-assessed as endangered and its status was updated on the Species at Risk List in 2010. The species has been protected from being killed, harmed, harassed, captured or taken under the ESA since it came into force in 2008, and its habitat has been protected from damage or destruction since 2010. In addition, in 2014, the government finalized a habitat regulation for the species.



Government-supported stewardship projects:

Through the **Species at Risk Stewardship Fund**, the Ministry of Natural Resources and Forestry (“the Ministry”) has enabled its stewardship partners to conduct a total of 19 projects (\$870,403) that have supported the protection or recovery of multiple species at risk, including Fowler’s Toad.

The Ministry’s support helped its stewardship partners to involve 5,281 individuals who volunteered 31,844 hours of their time toward protection or recovery activities for species at risk, including Fowler’s Toad. The estimated value of these voluntary contributions, as well as additional funding and in-kind support, is \$1,291,497.

Stewardship partners reported that through their actions 121 hectares of habitat were enhanced for Fowler’s Toad and other species at risk that inhabit the same ecosystem.

Stewardship partners reported providing outreach on multiple species at risk, including Fowler’s Toad to 14,066 individuals.

Species at risk stewardship fund:





8

protection or
recovery permits

7

agreements

2

registrations

Supporting human activities while ensuring appropriate support for species recovery:

The Ministry has issued eight permits for this species. All eight of these permits have been 'protection or recovery permits' issued under clause 17(2)(b) of the ESA.

A total of seven agreements were entered into for Fowler's Toad. These agreements were enabled through *Ontario Regulation 242/08* (prior to the July 1, 2013 amendment).

Two activities have been registered for this species. The two activities are registered under 'Species protection, recovery activities' (section 23.17) and 'Drainage works' (section 23.9) of Ontario Regulation 242/08 under *Ontario Regulation 242/08* of the ESA.



25,000

observations of this
species were submitted
to the NHIC since 2008

Occurrences and distribution:

Thirteen populations of Fowler's Toad have been documented in southwestern Ontario. Currently, of these populations six are extant, four are considered historical and three are considered extirpated.

Species-specific documents and guidance published by the government:

- Recovery Strategy for Fowler's Toad (2011)
- Fowler's Toad: Ontario Government Response Statement (2011)
- Fowler's Toad Habitat Regulation *Ontario Regulation 242/08* (2014)

Five-Year Review of Progress Towards the Protection and Recovery of

Gray Ratsnake Carolinian and Frontenac Axis Populations



The recovery goal in the government response statement (GRS) for Gray Ratsnake is to maintain a viable self-sustaining Frontenac Axis population and to halt the decline of the Carolinian population. The government supports investigating the feasibility of increasing the distribution and size of the Carolinian population. Progress has been made toward the majority of government-led and government-supported actions for the species through activities such as:

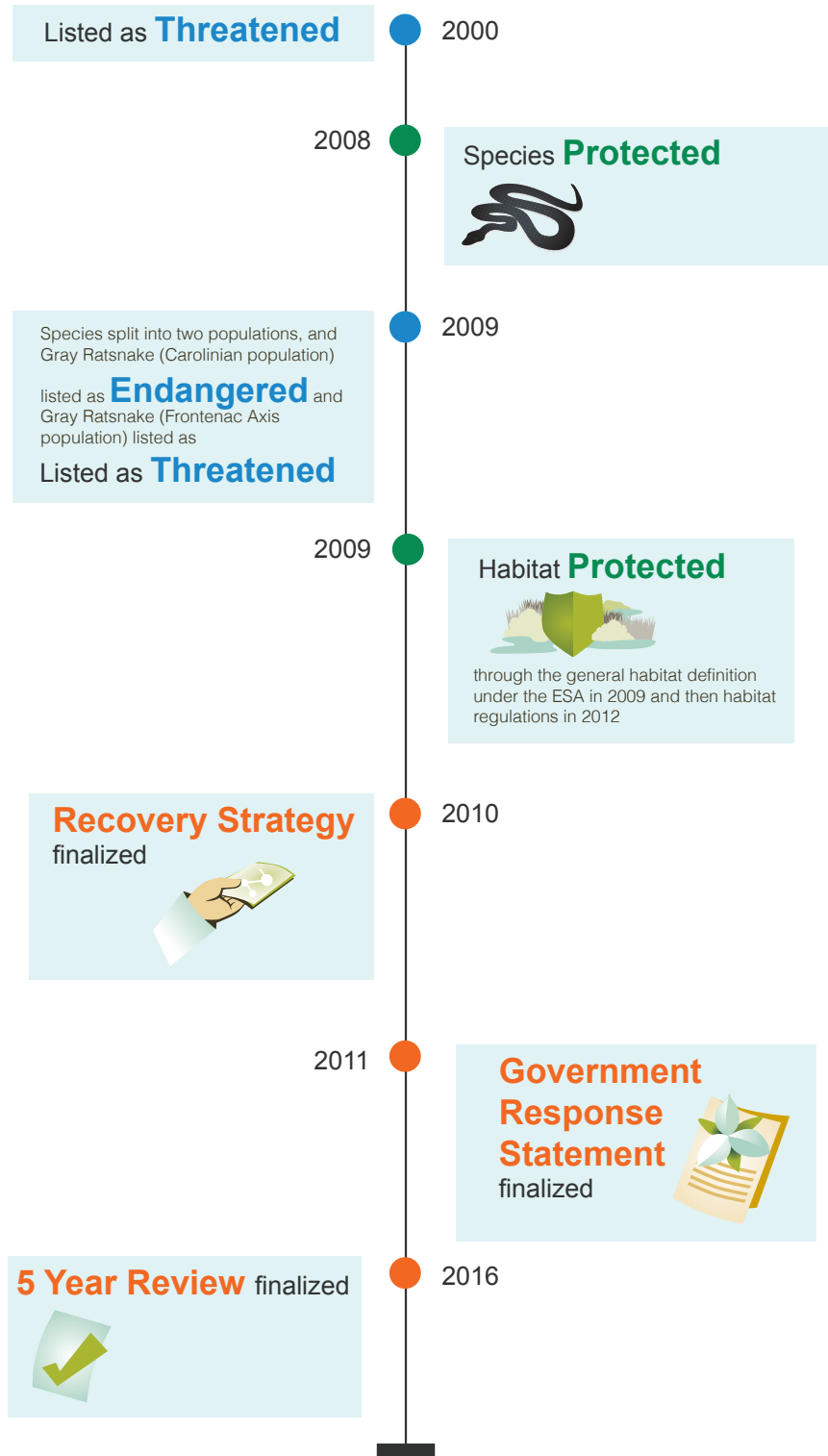
- Delivering outreach programs to raise awareness, reduce threats such as human persecution of snakes, and promote best management practices;
- Extending monitoring programs and creating additional stations to gather information about important habitat features and the species' distribution in Ontario; and
- Studying habitat use and movement patterns for the Carolinian population of Gray Ratsnake.

In alignment with the GRS, more work needs to be done to promote a collaborative approach to record observations and co-ordinate monitoring across the species' area of distribution. As new threats emerge for species at risk snakes such as snake fungal disease, more research is required to investigate the scale and significance of threats to the species.



Provincial status:

Prior to its transition to the *Endangered Species Act, 2007* (ESA), Gray Ratsnake was listed as threatened, but was not regulated under the previous Endangered Species Act. Gray Ratsnake retained this status under the ESA when it came into effect in 2008. In 2009, the species was split into two newly-listed populations on the Species at Risk in Ontario List: the Carolinian and the Frontenac Axis population. The Carolinian population is listed as endangered, and the Frontenac Axis population is listed as threatened. Both populations of Gray Ratsnake have been protected from being killed, harmed, harassed, captured or taken under the ESA since 2008, and their habitat has been protected from damage or destruction since 2009. In addition, in 2012, the government finalized habitat regulations for the species. Species and habitat protection continue to apply to both of the newly-listed populations.





Government-supported stewardship projects:

Through the **Species at Risk Stewardship Fund** the Ministry of Natural Resources and Forestry (“the Ministry”) has enabled its stewardship partners to conduct a total of 58 projects (\$3,159,899) that have supported the protection or recovery of multiple species at risk, including Gray Ratsnake (Carolinian and Frontenac Axis populations). Ten projects (\$608,977) included both populations of Gray Ratsnake; 12 projects (\$401,175) were specific to Gray Ratsnake (Frontenac Axis population) and other species at risk; and the remaining 36 projects (\$2,149,747) targeted multiple species at risk, including Gray Ratsnake (Carolinian population).

The Ministry’s support helped its stewardship partners to involve 8,305 individuals who volunteered 65,756 hours of their time toward protection or recovery activities for species at risk, including Gray Ratsnake. The estimated value of these voluntary contributions, as well as additional funding and in-kind support, is \$6,524,608.

Stewardship partners reported that through their actions 3,159 hectares of habitat were enhanced for Gray Ratsnake and other species at risk that inhabit the same ecosystem.

Stewardship partners reported providing outreach on multiple species at risk, including Gray Ratsnake to 332,624 individuals.

Species at risk stewardship fund:





20

protection or
recovery permits

1

overall benefit permit

11

agreements

32

registrations

Supporting human activities while ensuring appropriate support for species recovery:

The Ministry of Natural Resources and Forestry has issued 21 permits for this species: 20 'protection or recovery permits' (i.e., 17(2)(b) permit) and one 'overall benefit permit' (i.e., 17(2)(c) permit).

A total of 11 agreements were entered into for Gray Ratsnake. These agreements were enabled through *Ontario Regulation 242/08* (prior to the July 1, 2013 amendment).

Thirty-two activities have been registered for Gray Ratsnake. The activities were registered under 'Drainage works' (section 23.9), 'Ecosystem protection' (section 23.11), 'Pits and quarries' (section 23.14), 'Possession for educational purposes, etc.' (section 23.15), 'Species protection, recovery activities' (section 23.17) or 'Threats to health and safety, not imminent' (section 23.18) under *Ontario Regulation 242/08* of the ESA.



1,442

observations of these
species were submitted
to the NHIC since 2008

Occurrences and distribution:

There are 18 local populations of Gray Ratsnake (Carolinian population) that have been documented in southwestern Ontario, in the Niagara and north shore of Lake Erie regions. Currently, four of these local populations are extant, 11 are considered historical and three are classified as extirpated. Since 2008, three local populations have been newly-identified. In addition to the newly-identified populations, four existing local populations changed from extant to historical based on the date that each was last observed.

Gray Ratsnake (Frontenac Axis population) has been recently observed in 45 squares, and there are 41 additional squares that contain historical observations of the species in southeastern Ontario. Since 2008, 11 squares are now considered historical based on the date the species was last observed, while 3 squares that were previously considered historical have been recently confirmed.



Species-specific documents and guidance published by the government:

- Recovery Strategy for Gray Ratsnake (*Pantherophis spiloides*)
Carolinian and Frontenac Axis populations in Ontario (2010)
- Gray Ratsnake – Carolinian and Frontenac Axis Populations: Ontario Government Response Statement (2011)
- Gray Ratsnake (Carolinian population) Habitat Regulation *Ontario Regulation 242/08* (2012)
- Gray Ratsnake (Frontenac Axis population) Habitat Regulation *Ontario Regulation 242/08* (2012)



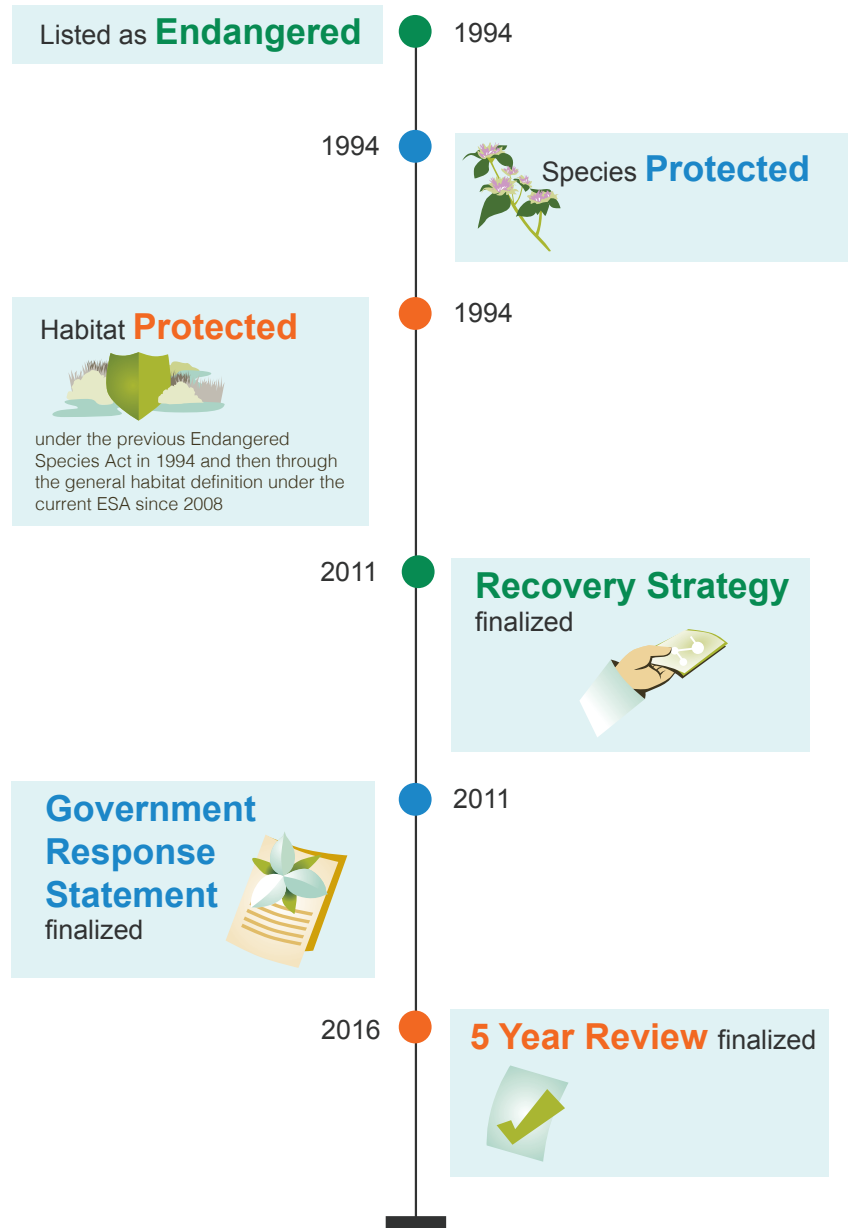
Five-Year Review of Progress Towards the Protection and Recovery of Hoary Mountain-mint



The recovery goal in the government response statement (GRS) for Hoary Mountain-mint is to ensure the long term survival of existing Ontario populations. Progress has been made toward all of the government-led recovery objectives and government-supported actions for the species through activities such as:

- Implementing a multi-year project to manage habitat for the species' single population in Ontario;
- Evaluating the effectiveness of habitat restoration activities, which also resulted in the discovery of a new sub-population of Hoary Mountain-mint; and
- Monitoring populations periodically to determine any changes in population abundance and evaluate the extent of threats.

In alignment with the GRS, additional monitoring of the species should continue, especially the Willow Point subpopulation of Hoary Mountain-mint where considerable fluctuation in numbers of plants has been observed.



Provincial status:

Hoary Mountain-mint is classified as endangered under the *Endangered Species Act, 2007* (ESA). Hoary Mountain-mint was also listed under the previous Endangered Species Act and has retained the same status since transition to the ESA. Hoary Mountain-mint has received species and habitat protection since 1994.



Government-supported stewardship projects:

Through the Species at Risk Stewardship Fund the Ministry of Natural Resources and Forestry (“the Ministry”) has enabled its stewardship partners to conduct six projects (\$191,487) that have supported the protection or recovery of Hoary Mountain-mint. One project (\$16,681) focused exclusively on Hoary Mountain-mint, while the other five projects (\$174,806) focused on multiple species at risk, including Hoary Mountain-mint.

The Ministry’s support helped its stewardship partners to involve 161 individuals who volunteered 2,639 hours of their time toward protection or recovery activities for species at risk, including Hoary Mountain-mint. The estimated value of these voluntary contributions, as well as additional funding and in-kind support, is \$211,349.

Stewardship partners reported that, through one of the projects, 1.09 hectares of habitat were enhanced for Hoary Mountain-mint and other species at risk that inhabit the same ecosystem.

Species at risk stewardship fund:





**observations of
this species were
submitted to the
NHIC since 2008**

Occurrences and distribution:

There is one population of Hoary Mountain-mint in the Burlington/Hamilton area. This population is considered to be extant (i.e., observed within the last 20 years) and is composed of multiple sub-populations at two locations: Willow Point and Woodland Cemetery. A third sub-population at Carroll's Point is considered to be extirpated. In 2010, a new sub-population consisting of 15 Hoary Mountain-mint seedlings was discovered that appeared to have germinated from an existing seed bank following site restoration work. There are three more sub-populations that also occur within the cemetery property. The number of stems in the sub-population at Willow Point has fluctuated since its discovery, but overall has increased since 2000.

Species-specific documents and guidance published by the government:

- Recovery Strategy for Hoary Mountain-mint (*Pycnanthemum incanum*) (2011)
- Hoary Mountain-mint: Ontario Government Response Statement (2011)



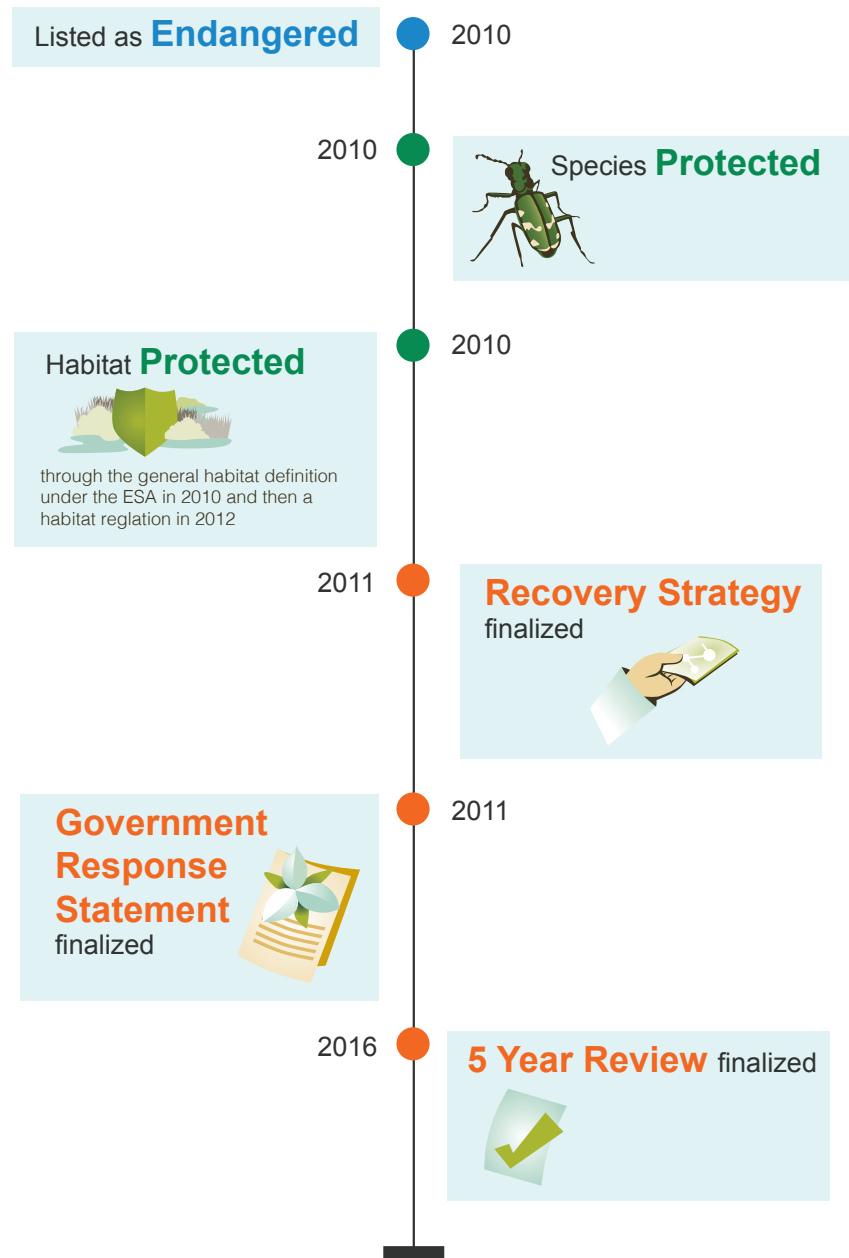
Five-Year Review
of Progress Towards the
Protection and Recovery of
Northern Barrens Tiger Beetle



The recovery goal in the government response statement (GRS) for Northern Barrens Tiger Beetle is to ensure its long-term survival in Ontario. Progress has been made toward all government-led actions for the species, including a specific action to provide information and training to staff of Pinery Provincial Park, where the species is known to occur. The government has also implemented trail management prescriptions to reduce the impacts of heavily-used trails on beetle habitat.

.....

In alignment with the GRS, more research is required to determine key threats and to address knowledge gaps about this rare and cryptic species, including its biology, distribution, abundance and population trends in Ontario.



Provincial status:

Northern Barrens Tiger Beetle is classified as endangered under the *Endangered Species Act, 2007* (ESA). The species has been protected from being killed, harmed, harassed, captured or taken under the ESA since 2010. Its habitat has been protected from damage or destruction since 2010. In addition, in 2012 the government developed a habitat regulation for the species.



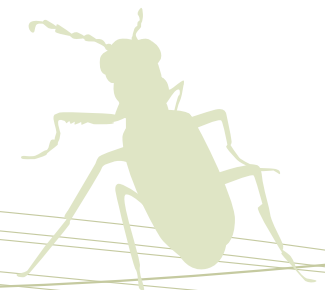
**observations of
this species were
submitted to the
NHIC since 2008**

Occurrences and distribution:

Two populations of the Northern Barrens Tiger Beetle have been documented: at Pinery Provincial Park (extant) and Constance Bay along the Ottawa River (extirpated). Since 2010, no change in the status of the populations occurred, although ongoing persistence of the population in Pinery Provincial Park was re-confirmed in 2015.

Species-specific documents and guidance published by the government:

- Recovery Strategy for Northern Barrens Tiger Beetle (2011)
- Northern Barrens Tiger Beetle: Ontario Government Response Statement (2011)
- Northern Barrens Tiger Beetle Habitat Regulation *Ontario Regulation 242/08* (2012)



Five-Year Review of Progress Towards the Protection and Recovery of

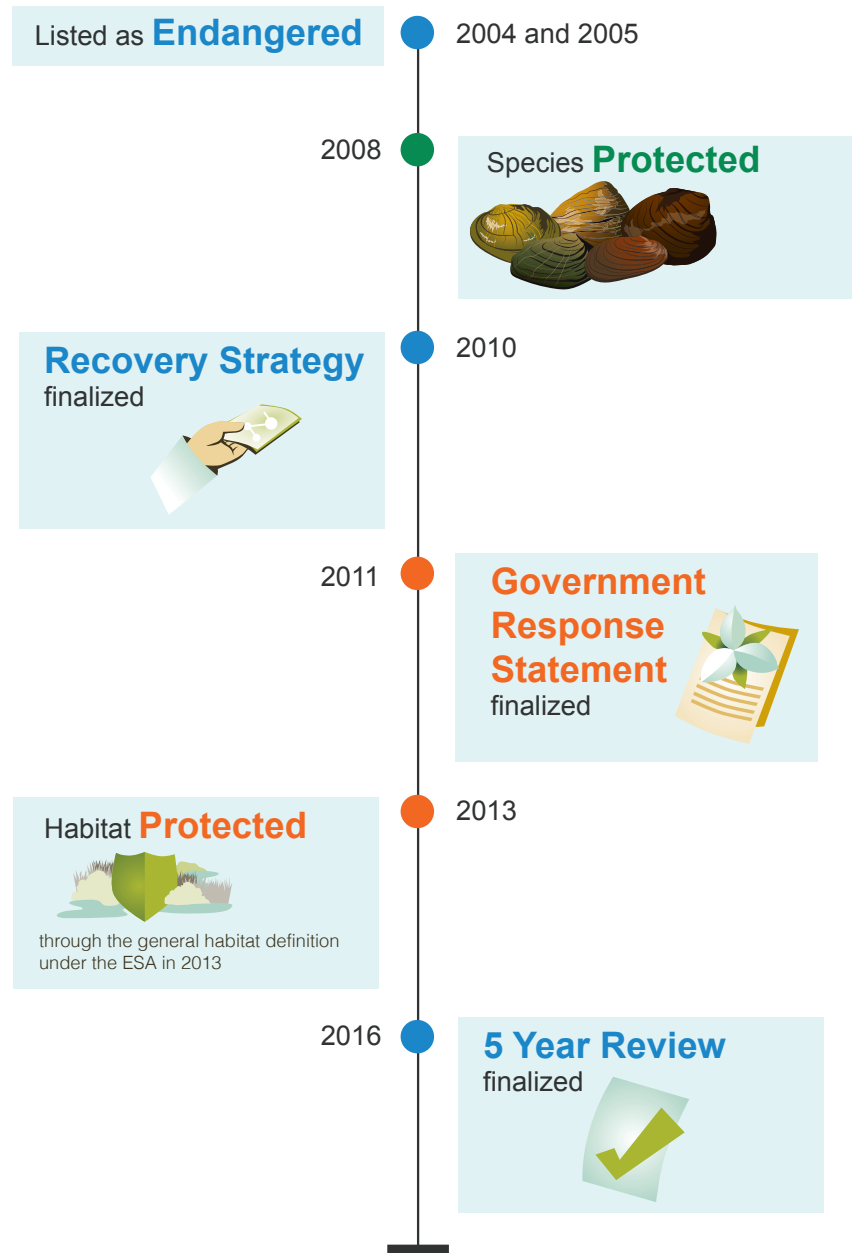
Northern Riffleshell, Rayed Bean, Round Pigtoe, Salamander Mussel and Snuffbox



The recovery goal in the government response statement (GRS) for Northern Riffleshell, Rayed Bean, Round Pigtoe, Salamander Mussel and Snuffbox is to protect populations of the species and to improve the habitat where they occur. The government supports investigating feasibility of augmenting the existing populations. Progress has been made toward government-led actions and government-supported actions for the species through activities such as:

- The Ministry of Environment and Climate Change (MOECC) developed and published significant new water quality initiatives that also benefit habitat for mussels;
- Restoring degraded habitats and improved water quality in areas where these mussel species occur;
- Increased surveying for mussels, mussel identification training sessions and collecting data from a network of permanent monitoring stations;
- Research on habitat needs for all mussel life stages, the feasibility of augmenting existing mussel populations, methods to grow mussels in an artificial environment and the host fish for Round Pigtoe.

In alignment with the GRS, monitoring should continue on the distribution and abundance of the species and their host fishes, habitat use and the presence of invasive mussel species. More research needs to be done to confirm host species, the feasibility of augmenting existing populations of the species and establishing actively managed refuge sites.



Provincial status:

Northern Riffleshell, Rayed Bean, Round Pigtoe, Salamander Mussel and Snuffbox are classified as endangered under the *Endangered Species Act, 2007* (ESA). Prior to their transition to the ESA, the five species were listed as endangered on the Species at Risk in Ontario List, but were not regulated under the previous Endangered Species Act. The five species have been protected from being killed, harmed, harassed, captured or taken under the ESA since it came into force in 2008, and their habitats have been protected from damage or destruction since 2013.



Government-supported stewardship projects:

Through the **Species at Risk Stewardship Fund**, the Ministry of Natural Resources and Forestry (“the Ministry”) has enabled its stewardship partners to conduct a total of 23 projects (\$1,100,752) that have supported the protection or recovery of multiple species at risk, including a combination of Northern Riffleshell, Rayed Bean, Round Pigtoe, Salamander Mussel and Snuffbox.

The Ministry’s support helped its stewardship partners to involve 1,068 individuals who volunteered 12,784 hours of their time toward protection or recovery activities for species at risk, including Northern Riffleshell, Rayed Bean, Round Pigtoe, Salamander Mussel and Snuffbox. The estimated value of these voluntary contributions, as well as additional funding and in-kind support, is \$1,818,451.

Stewardship partners reported that through their actions 153 hectares of habitat were enhanced for Northern Riffleshell, Rayed Bean, Round Pigtoe, Salamander Mussel, Snuffbox and other species at risk that inhabit the same ecosystem.

Stewardship partners reported providing outreach on multiple species at risk, including Northern Riffleshell, Rayed Bean, Round Pigtoe, Salamander Mussel and Snuffbox to 748,503 individuals.

Species at risk stewardship fund:



\$0

for these five species exclusively



\$1,100,752

for multi-species projects that included these five species



\$1,818,451

in additional funding and in-kind support



23 projects

included combinations of these five species



1,068

volunteers



12,784

volunteer hours



153

hectares of habitat enhanced



748,503

people
received outreach

12

protection or
recovery permits

1

overall benefit
permit

36

agreements

16

registrations

Supporting human activities while ensuring appropriate support for species recovery:

The Ministry has issued 13 permits for these five species: 12 'protection or recovery permits' were issued under clause 17(2)(b), and one 'overall benefit permit' was issued under clause 17(2)(c) of the ESA.

A total of 36 agreements were entered into for Northern Riffleshell, Rayed Bean, Round Pigtoe, Salamander Mussel and Snuffbox. These agreements were enabled through *Ontario Regulation 242/08* (prior to the July 1, 2013 amendment).

Sixteen activities have been registered for this species. The activities were registered under 'Drainage works' (section 23.9), '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.



observations of
these species were
submitted to the
NHIC since 2008

Occurrences and distribution:

In total, there are 46 populations of Northern Riffleshell, Rayed Bean, Round Pigtoe, Salamander Mussel and Snuffbox that have been documented in southwestern Ontario. These 46 populations are comprised of eight populations of Northern Riffleshell, four populations of Rayed Bean, 18 populations of Round Pigtoe, five populations of Salamander and 11

populations of Snuffbox. Currently, 24 of these populations are extant, 19 are considered historical and 3 are considered extirpated. Since 2008, one population of Northern Riffleshell and one population of Round Pigtoe have been newly-discovered and updated occurrence information has been provided for 15 populations of these species.

Species-specific documents and guidance published by the government:

- Recovery Strategy for Northern Riffleshell, Rayed Bean, Round Pigtoe, Salamander Mussel and Snuffbox (2010)
- Northern Riffleshell, Rayed Bean, Round Pigtoe, Salamander Mussel and Snuffbox: Ontario Government Response Statement (2011)

Five-Year Review of Progress Towards the Protection and Recovery of Pale-bellied Frost Lichen



The recovery goal in the government response statement (GRS) for Pale-bellied Frost Lichen is to ensure the persistence of the size and distribution of all existing populations of the species in Ontario and to allow for natural population growth through maintenance of suitable occupied and adjacent habitat. Progress has been made toward all government-led actions for the species through activities such as:

- The 2015 forest values collection project undertaken by the Ministry of Natural Resources and Forestry has resulted in a large amount of lichen observation data that is also used to inform forest management practices; and
- Surveys have resulted in the discovery of this species at multiple new locations, providing evidence that significant progress is being made toward the species' recovery goal.

More work needs to be done on GRS actions to implement a long-term monitoring program, determine important habitat features for the species' survival, and increase awareness among landowners, municipalities, and planners about protecting Pale-bellied Frost Lichen and its habitat.



Provincial status:

Pale-bellied Frost Lichen is classified as endangered under the *Endangered Species Act, 2007* (ESA). The species has been protected from being killed, harmed, harassed, captured or taken and its habitat has been protected from damage or destruction under the ESA since 2010. In addition, in 2012, the government finalized a habitat regulation for the species.



Government-supported stewardship projects:

Through the **Species at Risk Stewardship Fund**, the Ministry of Natural Resources and Forestry (“the Ministry”) has enabled its stewardship partners to conduct a total of two projects (\$61,390) that have supported the protection or recovery of multiple species at risk, including Pale-bellied Frost Lichen.

The Ministry’s support helped its stewardship partners to involve 76 individuals who volunteered 1,523 hours of their time toward protection or recovery activities for species at risk, including Pale-bellied Frost Lichen. The estimated value of these voluntary contributions, as well as additional funding and in-kind support, is \$85,660.

Stewardship partners reported providing outreach on multiple species at risk, including Pale-bellied Frost Lichen, to 220 individuals.

Species at risk stewardship fund:





5

registrations

Supporting human activities while ensuring appropriate support for species recovery:

Five activities have been registered for this species. The activities were registered under 'Drainage Works' (section 23.9) of *Ontario Regulation 242/08* of the ESA.

113

observations of this species were submitted to the NHIC since 2008

Occurrences and distribution:

Twenty-nine populations of Pale-bellied Frost Lichen have been documented in southeastern Ontario. Currently, 26 of these populations are considered to be extant and three are considered extirpated or possibly extirpated. Before 2011, only 7 populations of the species had been documented, three extant and four historical populations. Since 2011, 22 new populations of Pale-bellied Frost Lichen have been identified in Ontario. In addition, since 2011, three historical populations have been classified as extirpated and one population of the species that had not been seen since 1868 was found in 2015 and is now considered extant.

Species-specific documents and guidance published by the government:

- Recovery Strategy for Pale-bellied Frost Lichen (2011)
- Pale-bellied Frost Lichen: Ontario Government Response Statement (2011)
- Pale-bellied Frost Lichen Habitat Regulation *Ontario Regulation 242/08* (2012)

Five-Year Review of Progress Towards the Protection and Recovery of

Queensnake



The recovery goal in the government response statement (GRS) for Queensnake is to halt further decline and to achieve stable or increasing populations of Queensnake in Ontario throughout the current distribution. The government supports investigating the feasibility of reintroducing populations at historic locations within the Ontario range. A specific government-led action in the GRS to develop a survey protocol for Queensnake was completed in 2015. Progress has been made toward the majority of government-led actions and all government-supported actions for the species through activities such as:

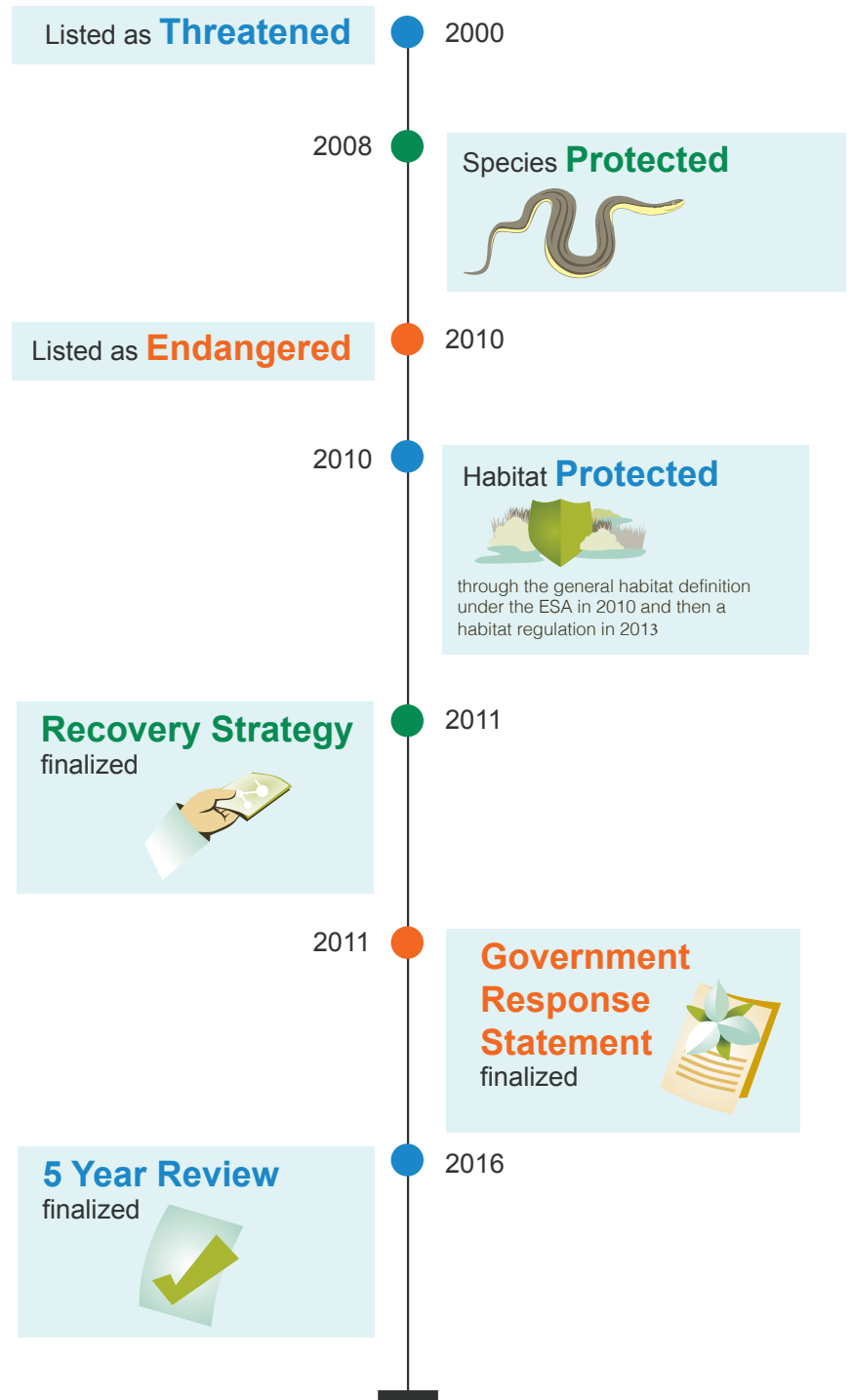
- Research to investigate impacts that Rusty Crayfish (an invasive species) may have on Queensnake;
- Initiation of a province-wide long-term monitoring program using standardized methods;
- Developing habitat suitability models and standardized surveys to identify the species' habitat requirements; and
- Investigating communications and outreach strategies that result in positive impacts on human behaviour towards snakes.

In alignment with the GRS, more research needs to be done on home range sizes, habitat needs, and possible genetic isolation of the species as well as the feasibility of reintroducing the Queensnake into historic habitat areas.



Provincial status:

Queensnake is classified as endangered under the *Endangered Species Act, 2007* (ESA). Prior to its transition to the ESA, Queensnake was listed as threatened, but was not regulated under the previous Endangered Species Act. It was re-assessed as endangered, and its status was updated on the Species at Risk List in 2010. The species has been protected from being killed, harmed, harassed, captured or taken under the ESA since 2008, and its habitat has been protected from damage or destruction since 2010. In addition, in 2014, the government finalized a habitat regulation for the species.





Government-supported stewardship projects:

Through the **Species at Risk Stewardship Fund** the Ministry of Natural Resources and Forestry (“the Ministry”) has enabled its stewardship partners to conduct a total of 40 projects that have supported the protection or recovery of Queensnake. Seven projects (\$253,518) focused exclusively on Queensnake, while the other 33 projects (\$1,737,369) focused on multiple species at risk, including Queensnake.

The Ministry’s support helped its stewardship partners to involve 5,810 individuals who volunteered 37,710 hours of their time toward protection or recovery activities for species at risk, including Queensnake. The estimated value of these voluntary contributions, as well as additional funding and in-kind support, is \$3,720,852.

Stewardship partners reported that through their actions 59 hectares of habitat were enhanced for Queensnake and other species at risk that inhabit the same ecosystem.

Stewardship partners reported providing outreach on multiple species at risk, including Queensnake to 157,904 individuals.

Species at risk stewardship fund:



\$253,518

for Queensnake
exclusively



\$1,737,369

for multi-species
projects that included
Queensnake



\$3,720,852

in additional funding
and in-kind support



40 projects

included the
Queensnake



5,810

volunteers



37,710

volunteer hours



59

hectares of habitat
enhanced



157,904

people
received outreach



15

protection or
recovery permits

1

overall benefit
permit

11

agreements

10

registrations

Supporting human activities while ensuring appropriate support for species recovery:

The Ministry has issued 16 permits for this species: 15 'protection or recovery permits' were issued under clause 17(2)(b), and one 'overall benefit permit' was issued under clause 17(2)(c) of the ESA.

A total of 11 agreements were entered into for Queensnake. These agreements were enabled through *Ontario Regulation 242/08* (prior to the July 1, 2013 amendment).

Ten activities have been registered for this species.

The activities were registered under 'Drainage works' (section 23.9), 'Ecosystem protection' (section 23.11), '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.



observations of this
species were submitted
to the NHIC since 2008

Occurrences and distribution:

Twenty six populations of Queensnake have been documented in Ontario, west of the Niagara Escarpment and south of Georgian Bay. Currently, 11 of these populations are extant, 13 are considered historical, whereas the remaining two are considered extirpated. Since 2008, the status of seven of these populations changed from extant to historical as the populations have not been recorded within the last 20 years. Three populations changed from historical to extant as their existence was re-confirmed through monitoring efforts, including one that had not been observed since 1883. No new populations of Queensnake have been identified since 2008.

Species-specific documents and guidance published by the government:

- Recovery Strategy for the Queensnake in Ontario (2011)
- Queensnake: Ontario Government Response Statement (2011)
- Queensnake Habitat Regulation *Ontario Regulation 242/08* (2014)

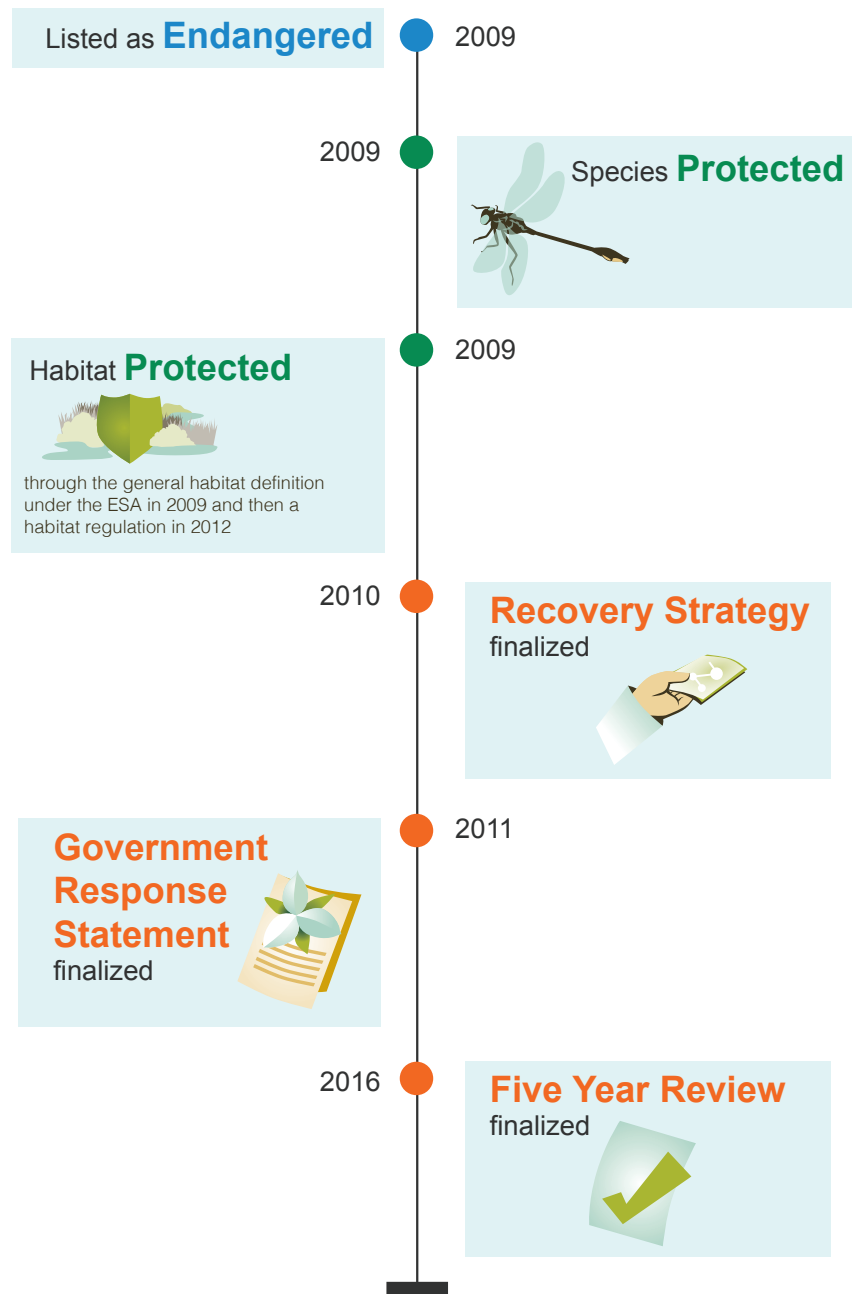
Five-Year Review of Progress Towards the Protection and Recovery of Rapids Clubtail



The recovery goal in the government response statement (GRS) for Rapids Clubtail is to ensure its long-term survival by protecting existing populations and, where feasible, by rehabilitating degraded habitat at known sites. Progress has been made toward the majority of government-led actions and two government-supported actions for the species through activities such as:

- Reporting observations of three new populations of Rapids Clubtail in Ontario;
- Training volunteers on undertaking surveys to increase knowledge of the species distribution; and
- Integrating searches for the species into ongoing benthic inventory programs.

In alignment with the GRS, more work needs to be done on developing and implementing a monitoring program at known locations, investigating the sensitivity of Rapids Clubtail to various habitat features and researching the species' basic biology.



Provincial status:

Rapids Clubtail is classified as endangered under the *Endangered Species Act, 2007 (ESA)*. The species has been protected from being killed, harmed, harassed, captured or taken and its habitat has been protected from damage or destruction under the ESA since 2009. In addition, in 2012, the government finalized a habitat regulation for the species.



Government-supported stewardship projects:

Through the [Species at Risk Stewardship Fund](#), the Ministry of Natural Resources and Forestry (“the Ministry”) has enabled its stewardship partners to conduct a total of two projects (\$122,450) that have supported the protection or recovery of multiple species at risk, including Rapids Clubtail.

The Ministry’s support helped its stewardship partners to involve 167 individuals who volunteered 2,502 hours of their time toward protection or recovery activities for species at risk, including Rapids Clubtail. The estimated value of these voluntary contributions, as well as additional funding and in-kind support, is \$292,980.

Stewardship partners reported providing outreach on multiple species at risk, including Rapids Clubtail to 1,000 individuals.

Species at risk stewardship fund:



\$0

for Rapids Clubtail exclusively



\$122,450

for multi-species projects that included Rapids Clubtail



\$292,980

in additional funding and in-kind support



2 projects

included the Rapids Clubtail



167

volunteers



2,502

volunteer hours



1,000 people

received outreach



 3

protection or
recovery permits

Supporting human activities while ensuring appropriate support for species recovery:

The Ministry has issued three 'protection or recovery permits' under clause 17(2)(b) of the ESA.

There have been no registrations of activities for the purposes of *Ontario Regulation 242/08* under the ESA for this species.


 24

observations of this
species were submitted
to the NHIC since 2008

Occurrences and distribution:

Eight populations of Rapids Clubtail have been documented in southern and eastern Ontario. Currently, seven of these populations are extant, whereas the remaining one is considered historical. Since 2008, two previously-known populations have been observed through monitoring efforts.

Additionally, three populations of Rapids Clubtail have been newly identified since 2008. In total, recent observations of this rare dragonfly have more than doubled the number of currently-known extant populations in Ontario.

Species-specific documents and guidance published by the government:

- Recovery Strategy for Rapids Clubtail in Ontario (2010)
- Rapids Clubtail: Ontario Government Response Statement (2011)
- Rapids Clubtail Habitat Regulation *Ontario Regulation 242/08* (2012)

Five-Year Review of Progress Towards the Protection and Recovery of

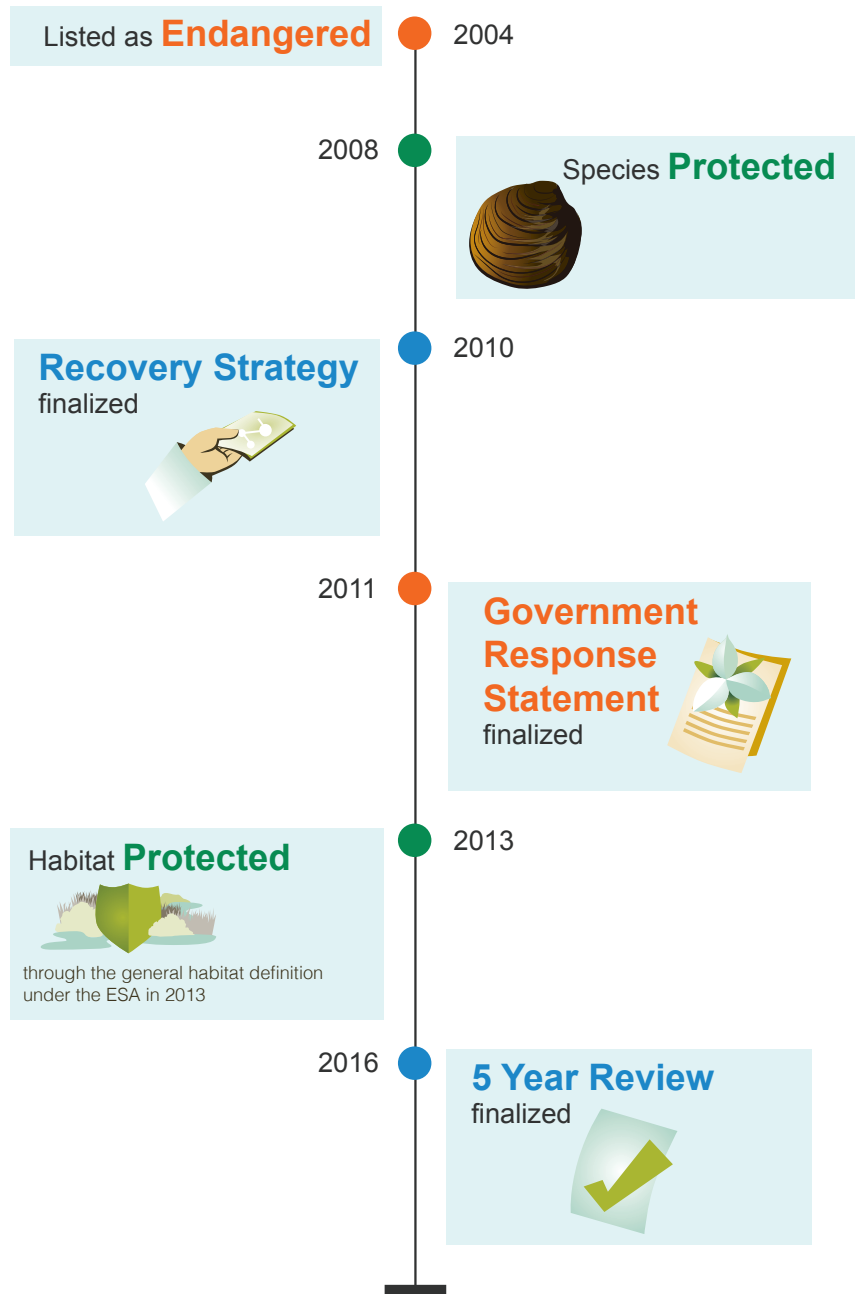
Round Hickorynut and Kidneyshell



The recovery goal in the government response statement (GRS) for Round Hickorynut and Kidneyshell is to protect populations of the species and to improve the habitat where they occur. The government supports investigating the feasibility of augmenting the existing populations. Progress has been made toward all government-led actions and government-supported actions for the species through activities such as:

- The Ministry of Environment and Climate Change (MOECC) developed and published significant new water quality initiatives that benefit habitat for mussels;
- Restoring degraded habitats and improved water quality in areas where these mussel species occur;
- Increased surveying for mussels, mussel identification training sessions and data collection from a network of permanent monitoring stations; and
- Researching habitat needs for all mussel life stages, the feasibility of augmenting existing mussel populations and methods to grow mussels in an artificial environment.

In alignment with the GRS, monitoring should continue on the distribution and abundance of the species and their host fishes, habitat use and the presence of invasive mussel species. More research needs to be done to confirm host species, the feasibility of augmenting existing mussel species and establishing actively managed refuge sites.



Provincial status:

Round Hickorynut and Kidneyshell are classified as endangered under the *Endangered Species Act, 2007* (ESA). Prior to their transition to the ESA, they were listed as endangered on the Species at Risk in Ontario List, but were not regulated under the previous Endangered Species Act. The species have been protected from being killed, harmed, harassed, captured or taken under the ESA since it came into force in 2008, and their habitat has been protected from damage or destruction since 2013.



Government-supported stewardship projects:

Through the **Species at Risk Stewardship Fund**, the Ministry of Natural Resources and Forestry (“the Ministry”) has enabled its stewardship partners to conduct a total of 15 projects (\$839,407) that have supported the protection or recovery of multiple species at risk, including Round Hickorynut and Kidneyshell.

The Ministry’s support helped its stewardship partners to involve 869 individuals who volunteered 10,622 hours of their time toward protection or recovery activities for species at risk, including Round Hickorynut and Kidneyshell. The estimated value of these voluntary contributions, as well as additional funding and in-kind support, is \$1,281,440.

Stewardship partners reported that through their actions 92 hectares of habitat were enhanced for Round Hickorynut and Kidneyshell and other species at risk that inhabit the same ecosystem.

Stewardship partners reported providing outreach on multiple species at risk, including Round Hickorynut and Kidneyshell, to 701,903 individuals.

Species at risk stewardship fund:



11

protection or
recovery permits

23

agreements

15

registrations

Supporting human activities while ensuring appropriate support for species recovery:

The Ministry has issued 11 permits for this species, all of which are 'protection or recovery' permits issued under clause 17(2)(b) of the ESA.

A total of 23 agreements were entered into for one or both of these species. These agreements were enabled through *Ontario Regulation 242/08* (prior to the July 1, 2013 amendment).

Fifteen activities have been registered for these species. The activities were registered under 'Drainage works' (section 23.9), '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.



422

observations of these
species were submitted
to the NHIC since 2008

Occurrences and distribution:

There are 11 populations of Round Hickorynut that have been documented in Ontario. Currently, three of these populations are extant, whereas seven are considered historical and one is extirpated. Since 2008, the status of two populations changed from extant to historical based on the dates that they were last observed.

There are 14 populations of Kidneyshell that have been documented in Ontario. Currently, six of these populations are extant, whereas the remaining eight are considered historical. Since 2008, observations have been made at four of the extant populations.

Species-specific documents and guidance published by the government:

- Recovery Strategy for Round Hickorynut and Kidneyshell (2010)
- Round Hickorynut and Kidneyshell: Ontario Government Response Statement (2011)

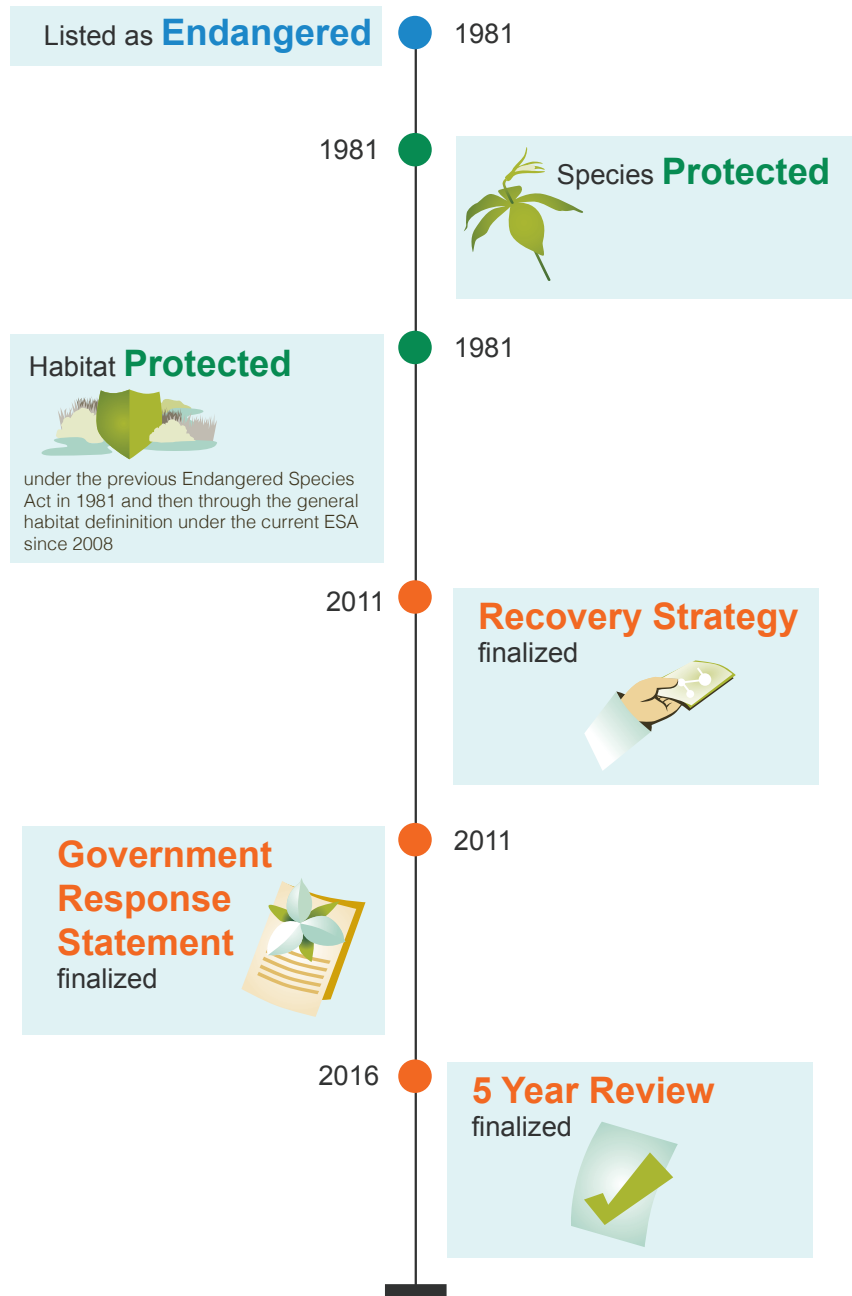
Five-Year Review of Progress Towards the Protection and Recovery of Small Whorled Pogonia



The recovery goal in the government response statement (GRS) for Small Whorled Pogonia is to maintain the persistence of Ontario’s only population. Progress has been made toward this goal through both government-led and government-supported actions for the species including activities such as:

- Permanent study plots were established in Calton Swamp to confirm the presence of the one known existing Ontario population of Small Whorled Pogonia; and
- Surveys in 2014 resulted in the discovery of a new population in Norfolk County.

In alignment with the GRS, efforts should continue to provide additional information and education to orchid enthusiasts and others regarding the risk to Small Whorled Pogonia from inadvertent trampling, identified as a key threat to the species.



Provincial status:

Small Whorled Pogonia is classified as endangered under the *Endangered Species Act, 2007* (ESA). Small Whorled Pogonia was also listed under the previous Endangered Species Act, and has retained the same status since transition to the ESA. Small Whorled Pogonia has received species and habitat protection under the ESA since 2008.



Government-supported stewardship projects:

Through the **Species at Risk Stewardship Fund** the Ministry of Natural Resources and Forestry (“the Ministry”) has enabled its stewardship partners to conduct a total of nine projects that have supported the protection or recovery of Small Whorled Pogonia. One project (\$19,000) focused exclusively on Small Whorled Pogonia, while the other eight projects (\$139,742) focused on multiple species at risk, including Small Whorled Pogonia.

The Ministry’s support helped its stewardship partners to involve 911 individuals who volunteered 11,188 hours of their time toward protection or recovery activities for species at risk, including Small Whorled Pogonia. The estimated value of these voluntary contributions, as well as additional funding and in-kind support, is \$623,877 over five years.

Stewardship partners reported that, through their actions, management and protection of 20 hectares of habitat for the persistence of Small Whorled Pogonia in Ontario has been enhanced through site analyses conducted in Calton Swamp.

Stewardship partners reported providing outreach on multiple species at risk, including Small Whorled Pogonia to 6,772 individuals.

Species at risk stewardship fund:



\$19,000
for Small Whorled Pogonia exclusively



\$139,742
for multi-species projects that included Small Whorled Pogonia



\$623,877
in additional funding and support



9 projects
included Small Whorled Pogonia



911
volunteers



11,188
volunteer hours



20
hectares of habitat enhanced



6,772
people
received outreach



**observations of this
species were submitted
to the NHIC since 2008**

Occurrences and distribution:

There are two populations of Small Whorled Pogonia in Ontario. In 2008, one population was known to occur in southwestern Ontario in the Calton Swamp area. Currently, this population is considered extant. In 2014, a new population was discovered in an adjoining county.

Since 2008 the Ministry has received 13 records of the species, including the newly-identified population in southwestern Ontario.

Species-specific documents and guidance published by the government:

- Recovery Strategy for Small Whorled Pogonia (*Isotria medeoloides*) in Ontario (2011)
- Small Whorled Pogonia: Ontario Government Response Statement (2011)



Five-Year Review of Progress Towards the Protection and Recovery of

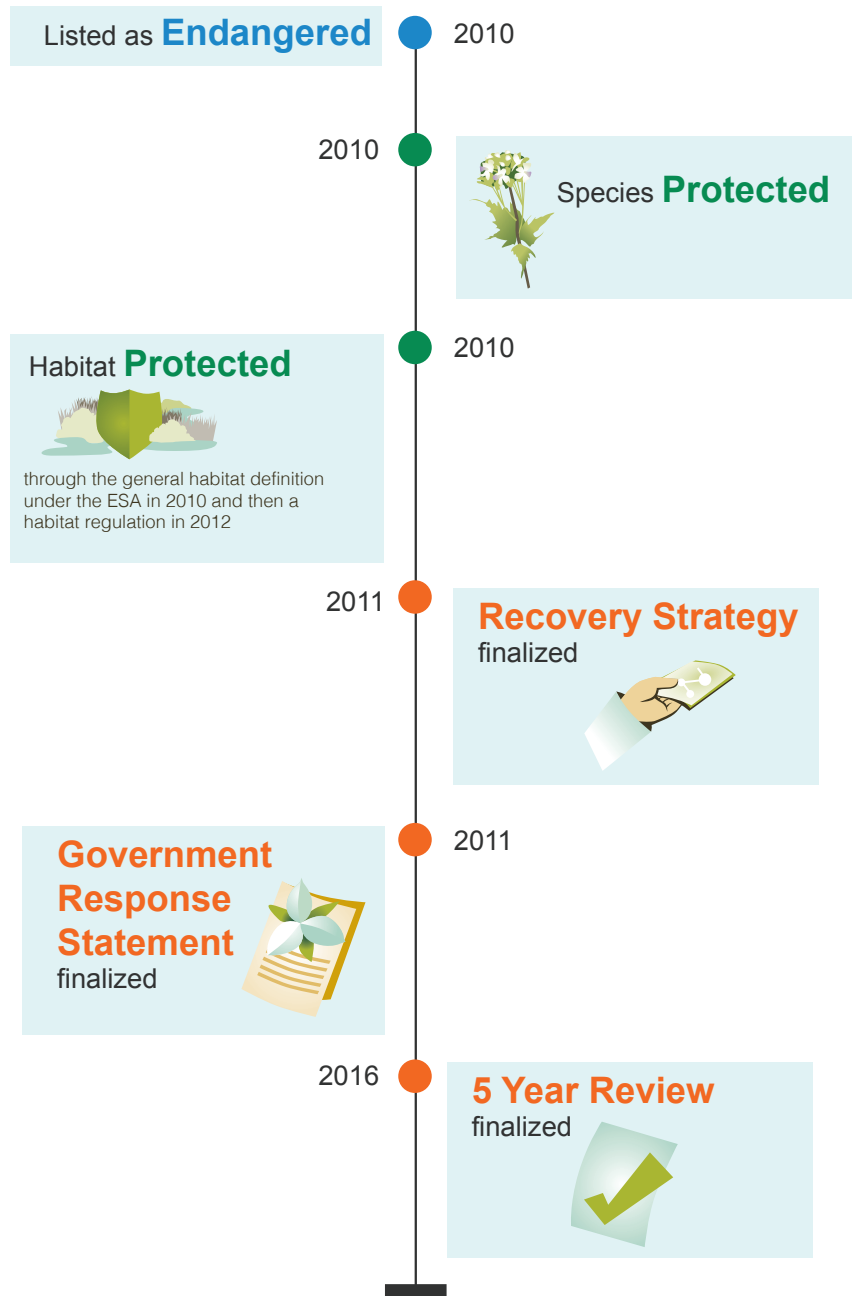
Virginia Mallow



The recovery goal in the government response statement (GRS) for Virginia Mallow is to protect and maintain all existing populations of Virginia Mallow in southern Ontario and to ensure the species' long-term persistence within its current range. Progress has been made toward all government-led actions and two government-supported actions for the species including activities such as:

- Gathering baseline data on population demographics, seed biology and optimal growth conditions for the species to be used for developing a monitoring program; and
- Researching the impacts of the invasive European Common Reed on Virginia Mallow seed germination and seedling growth.

In alignment with the GRS, work needs to continue on refining the monitoring program, implementing best management practices for the control of European Common Reed, and conducting surveys in potential suitable habitat.



Provincial status:

Virginia Mallow is classified as endangered under the *Endangered Species Act, 2007* (ESA). The species has been protected from being killed, harmed, harassed, captured or taken and its habitat has been protected from damage or destruction under the ESA since 2010. In addition, in 2012, the government finalized a habitat regulation for the species.



3

protection or
recovery permits

1

registration

Supporting our partners:

Through the Species at Risk Research Fund for Ontario, the Ministry has provided funding for two projects to help determine the size and distribution of the Taquanyah Conservation Area population of Virginia Mallow and to fill the knowledge gaps identified in the species' GRS.

The Ministry has issued three 'protection or recovery permits' under clause 17(2) (b) of the ESA.

One activity has been registered for this species under 'Species protection, recovery activities' (section 23.17) under *Ontario Regulation 242/08* of the ESA.

237

observations of this
species were submitted
to the NHIC since 2008

Occurrences and distribution:

Two populations of Virginia Mallow have been documented in southwestern Ontario; both populations are considered extant. In addition, evidence suggests that one of these populations has increased in size, likely due to habitat improvements.

Species-specific documents and guidance published by the government:

- Recovery Strategy for Virginia Mallow (2011)
- Virginia Mallow: Ontario Government Response Statement (2011)
- Virginia Mallow Habitat Regulation *Ontario Regulation 242/08* (2012)

Five-Year Review of Progress Towards the Protection and Recovery of Wavy-rayed Lampmussel



The recovery goal in the government response statement (GRS) for Wavy-rayed Lampmussel is to protect populations of the species and to improve the habitat where they occur. The government supports investigating the feasibility of augmenting existing populations. Progress has been made toward all government-led actions and government-supported actions for the species through activities such as:

- The Ministry of Environment and Climate Change (MOECC) developed and published significant new water quality initiatives that also benefit habitat for mussels;
- Restoring degraded habitats and improved water quality in areas where these mussel species occur; and
- Increased surveying for mussels, mussel identification training sessions and collecting data from a network of permanent monitoring stations.

In alignment with the GRS, monitoring should continue on the distribution and abundance of the species and their host fishes, habitat use and the presence of invasive mussel species. More research needs to be done on additional host fish species and efforts continued toward augmenting existing populations of the species and establishing actively managed refuge sites.



Provincial status:

Wavy-rayed Lampmussel is classified as threatened under the *Endangered Species Act, 2007* (ESA). Prior to its transition to the ESA, Wavy-rayed Lampmussel was listed as endangered, but was not regulated under the previous Endangered Species Act. It was re-assessed as threatened, and its status was updated on the Species at Risk in Ontario List in 2010. The species has been protected from being killed, harmed, harassed, captured or taken under the ESA since it came into force in 2008, and its habitat has been protected from damage or destruction since 2010. In addition, in 2015, the government finalized a habitat regulation for the species.





Government-supported stewardship projects:

Through the **Species at Risk Stewardship Fund**, the Ministry of Natural Resources and Forestry (“the Ministry”) has enabled its stewardship partners to conduct a total of 19 projects (\$847,783) that have supported the protection or recovery of multiple species at risk, including Wavy-rayed Lampmussel.

The Ministry’s support helped its stewardship partners to involve 442 individuals who volunteered 6053 hours of their time toward protection or recovery activities for species at risk, including Wavy-rayed Lampmussel. The estimated value of these voluntary contributions, as well as additional funding and in-kind support, is \$1,557,726.

Stewardship partners reported that through their actions 101 hectares of habitat were enhanced for Wavy-rayed Lampmussel and other species at risk that inhabit the same ecosystem.

Stewardship partners reported providing outreach on multiple species at risk, including Wavy-rayed Lampmussel to 66,405 individuals.

Species at risk stewardship fund:





13

protection or
recovery permits

5

overall benefit
permits

24

agreements

13

registrations

Supporting human activities while ensuring appropriate support for species recovery:

The Ministry of Natural Resources and Forestry has issued 18 permits for this species: 13 'protection or recovery' permits were issued under clause 17(2)(b), and five 'overall benefit permits' were issued under clause 17(2)(c) of the ESA.

A total of 24 agreements were entered into for Wavy-rayed Lampmussel. These agreements were enabled through *Ontario Regulation 242/08* (prior to the July 1, 2013 amendment).

Thirteen activities have been registered for this species. The activities were registered under 'Drainage works' (section 23.9), 'Species protection, recovery activities' (section 23.17), 'Possession for educational purposes, etc.' (section 23.15), 'Threats to health and safety, not imminent' (section 23.18) and 'Aquatic species' (section 23.4) under *Ontario Regulation 242/08* of the ESA.



observations of this
species were submitted
to the NHIC since 2008

Occurrences and distribution:

There are 16 populations of Wavy-rayed Lampmussel that have been documented in Ontario. Currently, 14 of these populations are extant, whereas the remaining two are considered historical. All populations considered extant in 2008 remain extant, and recent quantitative surveys reveal that several populations are larger than previously estimated.

Species-specific documents and guidance published by the government:

- Recovery Strategy for Wavy-rayed Lampmussel (2011)
- Wavy-rayed Lampmussel: Ontario Government Response Statement (2011)
- Wavy-rayed Lampmussel Habitat Regulation *Ontario Regulation 242/08* (2015)

Five-Year Review of Progress Towards the Protection and Recovery of

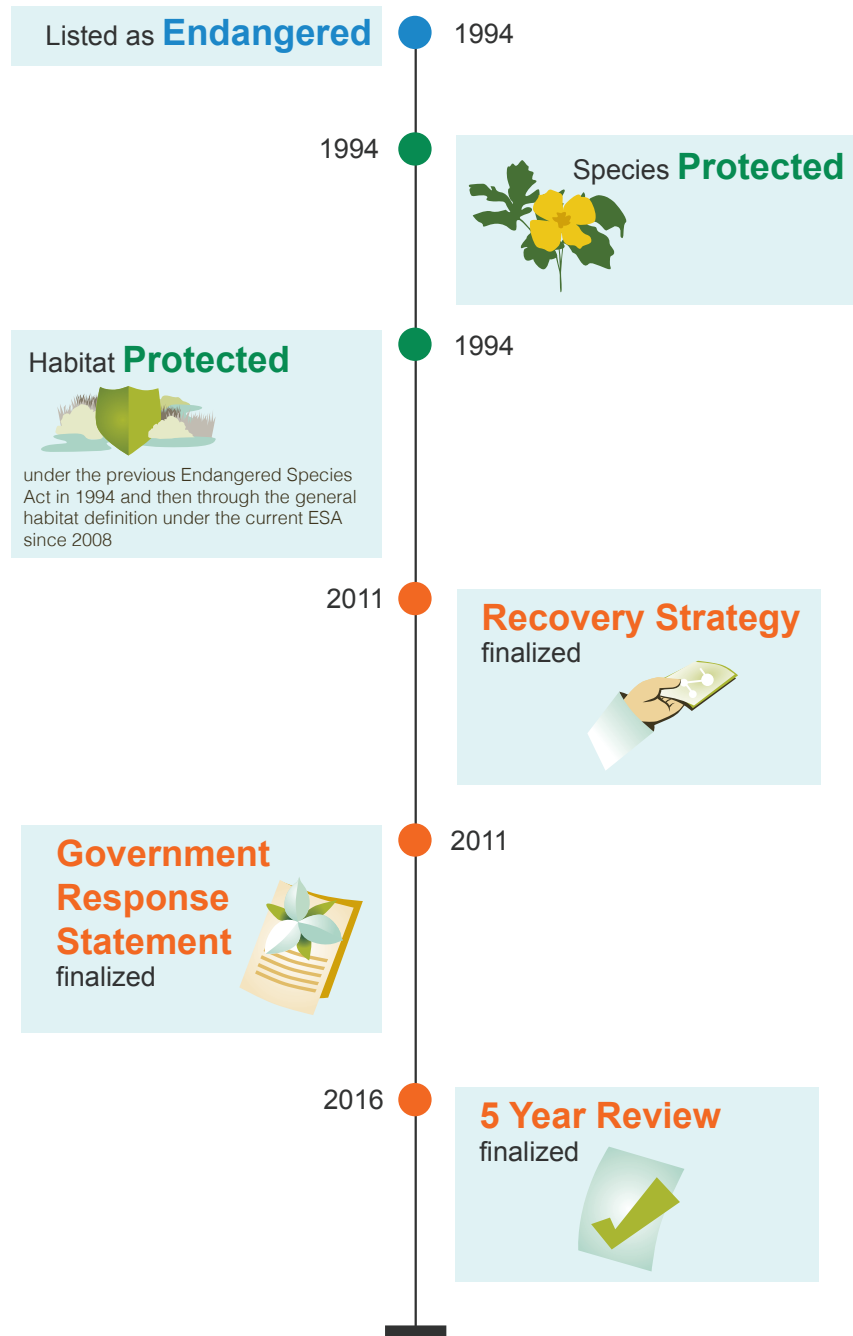
Wood-poppy



The recovery goal in the government response statement (GRS) for Wood-poppy is to ensure the persistence of naturally occurring populations of the species and its habitat at all known locations. Progress has been made toward all government-led actions and two of the government-supported actions for the species including activities such as:

- Landowners participating in the Conservation Land Tax Incentive Program; and
- Providing information to landowners and local recreational land users to promote protection and recovery of Wood-poppy.

More work needs to be done on GRS actions such as population monitoring, researching the degree of genetic variability and low reproductive success of this plant, and managing the species' habitat to control the spread of invasive species, reduce trampling, and increase potential habitat.



Provincial status:

Wood-poppy is classified as endangered under the *Endangered Species Act, 2007* (ESA). Wood-poppy was also listed under the previous Endangered Species Act, and has retained the same status since transition to the ESA. Wood-poppy has received species and habitat protection since 1994.



Supporting our partners:

The Ministry has not issued any authorizations for Wood-poppy and no activities have been registered under the ESA.

Through the **Species at Risk Stewardship Fund**, the Ministry of Natural Resources and Forestry (“the Ministry”) has enabled its stewardship partners to conduct a total of four projects (\$914,750) that have supported the protection or recovery of multiple species at risk, including Wood-poppy.

The Ministry’s support helped its stewardship partners to involve 1,387 individuals who volunteered 19,242 hours of their time toward protection or recovery activities for species at risk, including Wood-poppy. The estimated value of these voluntary contributions, as well as additional funding and in-kind support, is \$993,708.

Stewardship partners reported providing outreach on multiple species at risk, including Wood-poppy, to 29,442 individuals.

Species at risk stewardship fund:



\$0

for Wood-poppy exclusively



\$914,750

for multi-species projects that included Wood-poppy



\$993,708

in additional funding and support



4 projects

included Wood-poppy



1,387

volunteers



19,242

volunteer hours



**29,442
people**

received outreach



53
observations of this
species were submitted
to the NHIC since 2008

Occurrences and distribution:

There are currently five extant populations of Wood-poppy in Ontario (four in the London area and one near Bayfield). Three populations were documented at the time the ESA came into force, and two additional populations have been documented since then.

Species-specific documents and guidance published by the government:

- Recovery Strategy for Wood-poppy (*Stylophorum diphyllum*) (2011)
- Wood-Poppy: Ontario Government Response Statement (2011)



