2021

IMPLEMENTATION REPORT:

MULTI-SPECIES ACTION PLAN for Thousand Islands National Park of Canada (2016-2021)

Parks Canada Parcs Canada

Canada

Recommended Citation

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For copies of the report, or for additional information on species at risk, including the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) Status Reports, residence descriptions, recovery strategies, action plans and other related recovery documents, please visit the Species at Risk (SAR) Public Registry[1].

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Cover illustration, clockwise from top left: Canadian Shield shoreline; Aerial view of the Thousand Islands region of the St. Lawrence River; Gray Ratsnake; Snapping Turtle hatchling; Deerberry in flower. **Page 1** left to right: Parks Canada Agency (PCA) employees monitoring benthic invertebrates; Milksnake; American Bullfrog; PCA employees; Blanding's Turtle hatchling; Painted Turtle hatchling; Eastern Musk Turtle; kayaking in Thousand Islands National Park (TINP); Five-lined Skink; TINP forest. **Page 9** clockwise from top left: Eastern Musk Turtle hatchling; PCA employee holding Gray Ratsnake at TINP Visitor Center; PCA employee providing reptile and amphibian education. **Page 10** left to right: Five-lined Skink habitat before restoration; Five-lined Skink habitat after restoration. **Page 16**: TINP Indigenous Liaison with Mohawk of Akwesasne partner. **Page 18**: PCA employees monitoring marsh birds. **Page 19** left to right: Children releasing Snapping Turtle hatchling back into TINP on school field trip; young boy holding a Snapping Turtle hatchling at a TINP turtle release event.

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[1] http://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html

Preface

The federal, provincial, and territorial government signatories under the Accord for the Protection of Species at Risk (1996)[2] agreed to establish complementary legislation and programs that provide for effective protection of species at risk throughout Canada. Under the *Species at Risk Act* (S.C. 2002, c.29) (SARA), action plans outline measures that will be taken to implement recovery strategies for SARA-listed Extirpated, Endangered and Threatened species. Parks Canada's multi-species action plans address a suite of species of conservation concern within one or more Parks Canada managed areas, including species that require an action plan under SARA.

The Minister responsible for the Parks Canada Agency (the Minister of the Environment and Climate Change) is the competent minister under SARA for species found in Thousand Islands National Park of Canada, and in 2016 published the Multi-species Action Plan for Thousand Islands National Park of Canada.

Under section 55 of SARA, the competent minister must monitor the implementation of an action plan and the progress towards meeting its objectives, and assess and report on its implementation and its ecological and socio-economic impacts five years after the action plan comes into effect. A copy of the report must be included in the Species at Risk Public Registry. The Minister responsible for the Parks Canada Agency has prepared this Implementation Report: Multi-species Action Plan for Thousand Islands National Park of Canada (2016-2021).

The achievement of population and distribution objectives identified within the recovery strategy or management plan for a species may require a long time frame. In these cases, a five-year reporting window may not be sufficient to show demonstrable progress towards meeting site-based population and distribution objectives identified for that species within a Parks Canada site-based action plan. Parks Canada monitors, evaluates and, as necessary, adapts measures taken to achieve species survival or recovery, and will report on progress towards meeting site-based population and distribution objectives every five years.

[2] https://www.canada.ca/en/environment-climate-change/services/species-risk-act-accord-funding/protection-federal-provincial-territorial-accord.html

Acknowledgments

In the heart of the Thousand Islands, on traditional Haudenosaunee and Anishinaabe (Algonquin) lands, Thousand Islands National Park would like to acknowledge those who have contributed to implementation of the Multi-species Action Plan for Thousand Islands National Park of Canada. Thanks are extended to:

Peggy-Pyke Thompson and Henry Lickers (Akwesasne Department of the Environment), Shaun Thompson and Colin Lake (Ontario Ministry of Natural Resources and Forestry), Marie-Andrée Carrière (Environment and Climate Change Canada), Dale Kristensen and Stephen Lougheed (Queens University), Corina Brdar (Ontario Parks), Erin Neave (Eastern Ontario Model Forest), Emily Conger and David Miller (Algonquin to Adirondack Collaborative), Nicholas Mandrak (University of Toronto Scarborough), Don Ross (Frontenac Arch Biosphere Reserve) and Gabriel Blouin-Demers (University of Ottawa).

Parks Canada Agency
The action plan was developed by Josh Van Wieren and Sheldon Lambert with support from Joanne Tuckwell. Implementation and project development leaders were Brent Lewis, Mathieu Lecompte, Mary Beth Lynch, Samantha Peever, Jean-François Charest, Noah Johnson, Kelsey Payette, Emma Phillips, Olivia Galloway and Paul Zorn.

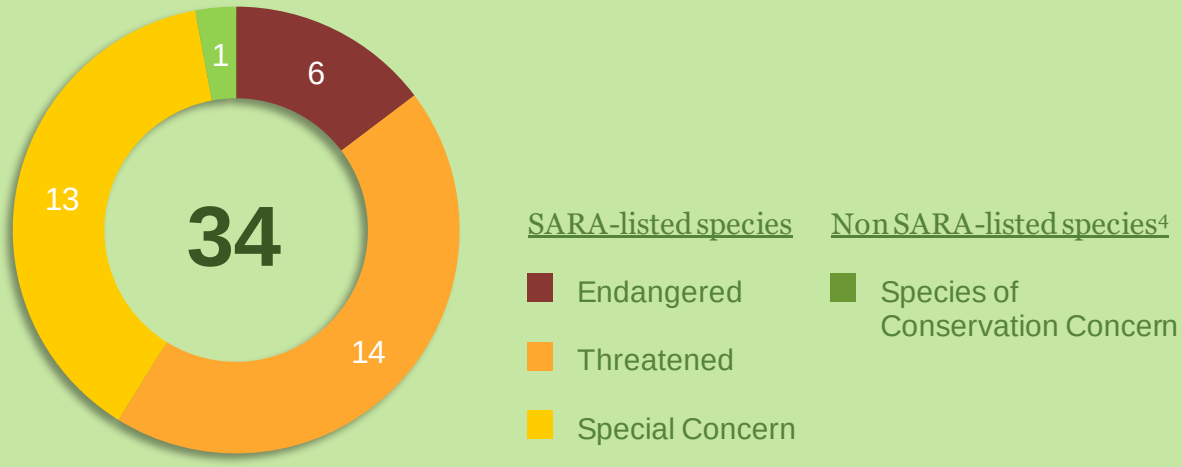
Niá:wen, Miigwetch, Merci, Thank you

EXECUTIVE SUMMARY

This document reports on implementation of the Multi-species Action Plan for Thousand Islands National Park of Canada between 2016 and 2021. It reports on implementation of measures identified in the plan, assesses progress towards meeting site-based population and distribution objectives, and evaluates socio-economic impacts.

Species Addressed[3]

The action plan addressed 33 SARA-listed species and one species of conservation concern. Measures and site-based population and distribution objectives identified within the action plan were focused on 10 species, for which management actions within Thousand Islands National Park could have a substantive impact on species survival or recovery: Deerberry, Blanding's Turtle (Great Lakes / St. Lawrence population), Five-linked Skink (Great Lakes / St. Lawrence population), Eastern Musk Turtle, Gray Ratsnake (Great Lakes / St. Lawrence population), Least Bittern, Milksnake, Northern Map Turtle, Snapping Turtle and Swamp Rose-mallow.



[3] The SARA-listing classifications for the species in this report may differ from the Multi-species Action Plan due to changes made to Schedule 1 of the *Species at Risk Act* since the action plan was published.
[4] Including non SARA-listed species of conservation concern (COSEWIC assessed, provincially listed, culturally significant species) in addition to SARA-listed species provides the Parks Canada Agency with a comprehensive plan for species conservation and recovery at the site.

Implementation of the Action Plan

15 measures (recovery actions) were identified in the Multi-species Action Plan. Implementation of the action plan is assessed by determining progress towards completing each measure, and is outlined in Section 2 of this report. During the five-year period, all 15 measures were initiated[5] and 13 were completed. An additional 8 measures identified in the action plan were implemented because resources and/or partnerships became available to support the work.

Ecological Impacts

10 site-based, population and distribution objectives (PDOs) were developed in the action plan. Ecological impacts are assessed by measuring progress towards achieving each of the PDOs and are outlined in Section 4. Progress was made on all objectives[6] including five that were fully achieved. Restrictions due to COVID-19 resulted in some objectives being delayed or postponed.

Socio-Economic Impacts

Direct costs of implementing this action plan were borne by Parks Canada. Indirect costs were mainly through visitor restrictions to certain areas of the park to protect Deerberry plants. Benefits included positive impacts on park ecological integrity, greater awareness of species and enhanced opportunities for engagement and conservation partnering.

[5] Includes measures that are 100% completed.
[6] Includes PDOs that are fully achieved.

TABLE OF CONTENTS

PREFACE i

ACKNOWLEDGMENTS ii

EXECUTIVE SUMMARY iii

1. CONTEXT 1

2. IMPLEMENTATION OF THE ACTION PLAN 1

3. ACTION PLAN HIGHLIGHT 9

4. ECOLOGICAL IMPACTS 11

5. SOCIO-ECONOMIC IMPACTS 16

1. CONTEXT

This document reports on implementation of the Multi-species Action Plan for Thousand Islands National Park of Canada[7] between 2016 and 2021, assesses progress towards meeting its population and distribution objectives, and evaluates its socio-economic impacts. It addresses 34 species, including 20 SARA-listed Extirpated, Endangered, and Threatened species (for which an action plan is required) as well as 13 SARA-listed Special Concern species[8] and one species of conservation concern.

Site-based population and distribution objectives were developed for 10 species for which implementation measures within Thousand Islands National Park could have a substantive impact on recovery: Deerberry, Blanding's Turtle (Great Lakes / St. Lawrence population), Five-linked Skink (Great Lakes / St. Lawrence population), Eastern Musk Turtle, Gray Ratsnake (Great Lakes / St. Lawrence population), Least Bittern, Milksnake, Northern Map Turtle, Snapping Turtle and Swamp Rose-mallow.

2. IMPLEMENTATION OF THE ACTION PLAN

Implementation of the Multi-species Action Plan for Thousand Islands National Park of Canada is assessed by measuring progress towards completing the recovery measures identified in the action plan (Table 1). Refer to the original action plan for a description of each measure, the desired outcomes, and the threats that each measure addresses.

In 2020 and 2021 there were several restrictions put in place at Thousand Islands National Park to combat the spread of COVID-19, including temporary restriction of park management activities. This impacted the ability of the park to complete the implementation of some parts of the action plan.

[7] Parks Canada Agency. 2016. Multi-species Action Plan for Thousand Islands National Park of Canada. Species at Risk Act Action Plan Series. Parks Canada Agency, Ottawa. v + 30 pp.
[8] The status of these species may have changed over the reporting period.

Table 1. Progress towards completing recovery measures committed to by Thousand Islands National Park (* indicates an ongoing measure that may continue into a future Multi-species Action Plan).

Species and measure	Desired outcome	Progress towards outcome	Progress (% complete)
1) Blanding's Turtle, Eastern Musk Turtle, Least Bittern: Species at risk critical habitat warning sign and no motorized watercraft sign installed at mouth of important wetland shortly after critical habitat is identified.	Work with partners to control motorized watercraft access at mouth of important wetland.	Warning sign installed in 2016.	100%
2) Coastal Wetland Community: Remove early invasions of priority alien invasive plants from park wetlands.	Prevent invasive species from becoming established in park wetlands.	Fourteen wetland sites were visited as part of the park's condition monitoring program. No early invasions were observed at 13 sites and an early invasion was observed and removed at one site (ongoing monitoring and subsequent removals anticipated). Note that there are established invasive plant populations at these sites, but only new invasions were targeted as part of this measure.	100%*
3) Coastal Wetland Community: Re-survey two park wetlands to determine if Blanding's Turtles are present.	Increase knowledge of turtle distribution in the park.	Adequate surveys were completed at both wetlands and presence was confirmed at one site.	100%
4) Swamp Rose-mallow: Assess and remove any immediate alien invasive plant risks around existing Swamp Rose-mallow plants.	Reduce threat of invasive alien species to Swamp Rose-mallow.	Baseline monitoring was conducted in a 50-meter buffer around the Swamp Rose-mallow population. No immediate threats were discerned. While Purple Loosestrife was	100%*

Species and measure	Desired outcome	Progress towards outcome	Progress (% complete)
		observed, it was in low density and a biological control was observed. Future monitoring will track any invasive alien threats around the population.	
5) Swamp Rose-mallow: Complete full Swamp Rose-mallow inventory of south and southwest shorelines of Main Duck Island.	Swamp Rose-mallow distribution known for Main Duck Island by 2017.	Detailed inventories were completed to located previously known populations. These small patches were not found and may be extirpated. However, a new much larger patch was found.	100%
6) Pugnose Shiner: Assist the Department of Fisheries and Oceans on signage for critical habitat in the Park and assist with DFO-led research and inventory projects.	Increase public awareness of Pugnose Shiner critical habitat and increase knowledge about populations of Pugnose Shiner.	Partnership with DFO led to the installation of interpretative signs containing information on SAR species and critical habitat in and around TINP properties. Additionally, TINP participated in DFO led Pugnose Shiner reviews and shared annual data on Pugnose Shiner numbers as part of the park's Near-shore Fish Richness Monitoring Program.	100%*
7) Deerberry: Plant and maintain two new Deerberry populations and maintain/ augment two recently planted populations until they are self-sustaining.	Increase number of Deerberry populations in Canada.	One new population consisting of three patches was planted on Camelot Island in 2016. In 2015 and 2016 Deerberry seed crops were low, which prevented a second population from being planted. In 2018 an adequate number of seeds were produced and the park planted additional seedlings on Camelot Island in the fall of 2019 and spring 2020. The planted Thwartway Island population has persisted and the planted Georgina Island population has thrived is now considered self-sustaining by COSEWIC.	75%*

Species and measure	Desired outcome	Progress towards outcome	Progress (% complete)
8) Deerberry: Remove all invasive plants within a 50-m buffer of Deerberry on West Grenadier and Endymion islands by 2018 and eventually remove all invasive plants from park property at both locations.	Remove threat of invasive species to Deerberry on West Grenadier and Endymion islands.	All target invasive plants were removed within 50m of Deerberry in 2018 and 2019 and across the entire Grenadier Island west park area in 2019. All target invasive shrubs were removed from Endymion Island between 2016-21. A seed bank still occurs at both locations and monitoring and additional removals will be required.	100%*
9) Deerberry: Continue to work with one private landowner to identify and mitigate threats to non-park population.	Maintain partnership with single landowner of the only private population in the country to mitigate threats to Deerberry as needed.	TINP staff remained in contact with the private landowner who continued to allow staff to access and assess the Deerberry population and potential invasive threats.	100%*
10) Deerberry: Re-route trails away from Deerberry populations on West Grenadier Island and enforce closure of a portion of the trail.	Closure of the portion of West Grenadier trail that runs through Deerberry population by fall 2014.	A closed area order has been enacted on the site under the *Canada National Parks Act*. Fencing and signage has been installed to assist compliance.	100%
11) Deerberry: Collaborate with agencies in the USA to obtain more information on New York populations.	List of known locations and sizes of NY populations by 2018.	List developed of all known Deerberry locations and population sizes in NY (specifically areas in and around the Thousand Islands Region) with USA agencies.	100%

Species and measure	Desired outcome	Progress towards outcome	Progress (% complete)
12) Five-lined Skink: Increase number of cover objects on Fitzsimmons Mountain.	Microhabitat restored on Fitzsimmons Mountain by Winter 2014.	Increased the amount of available microhabitat on seven rock outcrops in the Fitzsimmons / Landons Bay area by increasing the number of available cover objects. NOTE: Two additional sites were identified as appropriate for future Five-lined Skink microhabitat restoration and an additional three sites were identified as potential restoration sites. These sites will be considered for future recovery measures.	100%*
13) Blanding's Turtle, Five-lined Skink, Gray Ratsnake: Enforce and increase awareness of poaching consequences (including sharing information with partners).	Law enforcement involved in regulating potential poaching threats, and messaging provided regarding consequences of poaching.	Held two meetings with Park Wardens focusing on poaching of species at risk within TINP. Pamphlets were developed to inform the public of poaching consequences.	100%*
14) ALL: Ensure provincial departments, conservation authorities and municipal governments are aware of SAR hotspots for consideration in official land-use plans. Provide input into development proposals that are referred by the Cataraqui Region Conservation Authority.	Share observations and sensitive habitat locations with conservation partners.	Observational data for species at risk was shared with conservation partners as requested throughout the five year Action Plan period. TINP has participated in reviews of official plans and development applications that occur near the park.	100%*
15) ALL: Work with partners to promote the protection of key species dispersal habitats. Work in	All partners consider landscape ecology in SAR decisions.	Worked with the Leeds and Grenville Stewardship Council to promote the protection of important dispersal habitat for	100%*

Species and measure	Desired outcome	Progress towards outcome	Progress (% complete)
partnership with the Leeds and Grenville Stewardship Council on issues related to Gray Ratsnake outreach and species at risk protection.		Gray Ratsnake in 2018. Collaborated with the Algonquin to Adirondack Collaborative and other key partners to promote the maintenance of key ecological connections and potential eco-passages.	

Additional measures were identified in the action plan that would be beneficial to complete should resources become available. Table 2 describes the actions that Thousand Islands National Park was able to initiate between 2016 and 2021. Measures from the action plan that were not initiated will be carried forward for consideration in a revised action plan.

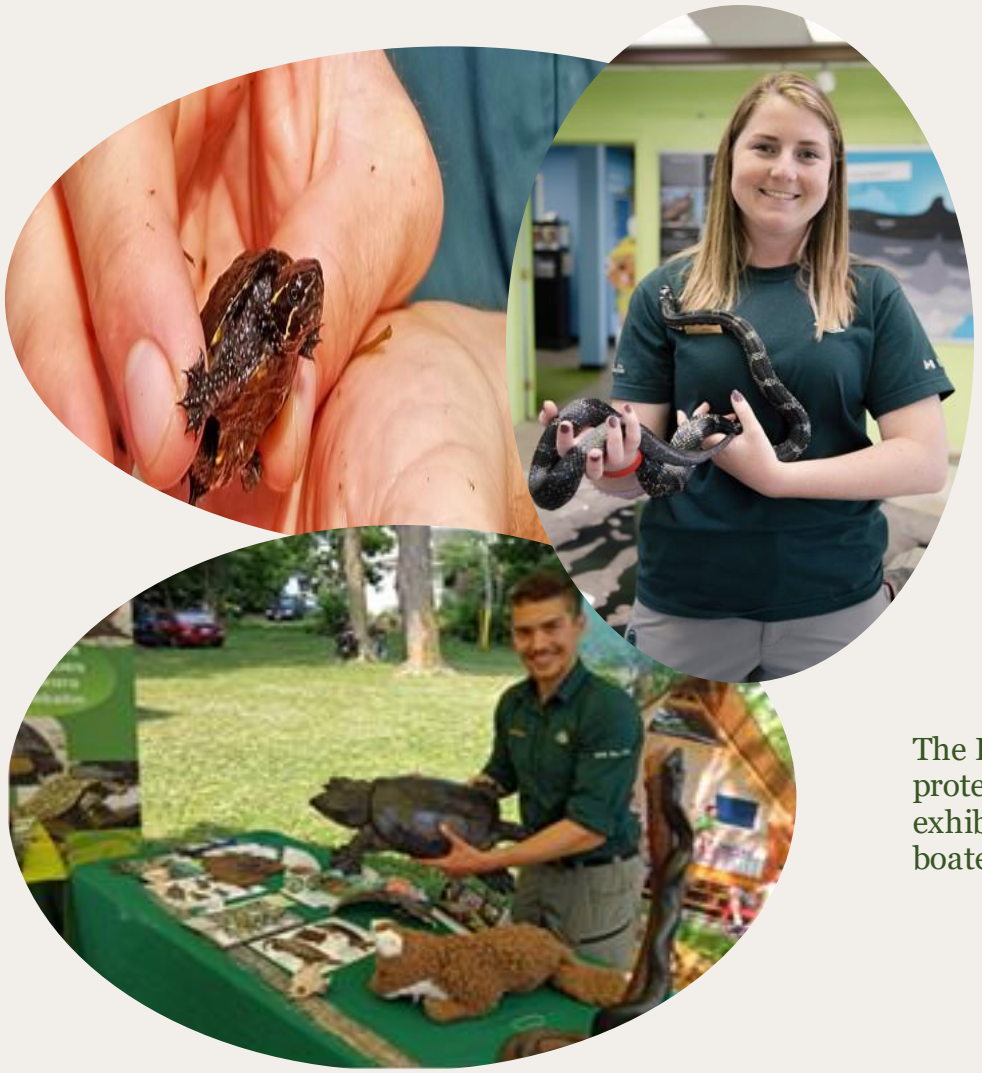
Table 2. Progress towards completing additional recovery measures implemented because partnerships and/or resources became available (progress is influenced by the amount of funding / support received; * indicates an ongoing measure that may continue into a future Multi-species Action Plan).

Species and Measure	Desired outcome	Progress towards outcome	Progress (% complete)
17) All turtles Public outreach to help reduce road mortality.	Reduce turtle road mortality.	Public outreach activities included: 1) presentations at regional resident workshops; 2) Turtle nest box lending program; 3) Updates to park website and regular social media posts; and 4) Interpretation booths at the park Visitor Center and major partner and community events. The park joined the regional project	100%*

Species and Measure	Desired outcome	Progress towards outcome	Progress (% complete)
		"On the Road Again" to address road mortality at Ontario sites.	
19) All turtles Work with partners to mitigate turtle by-catch mortality in commercial fishing nets.	Work with partners to evaluate and promote mitigation measures that will reduce the number of turtles killed in fishing nets around park wetlands.	Conversations with the local commercial fishery in the region revealed that nets are now being set with turtle by-catch mitigations and thus no funding support was needed. Supported research with the University of Ottawa and Carleton University on methods to reduce turtle by-catch.	100%*
20) All turtles Provide turtle safety messaging to boaters around Central Grenadier and Mallorytown Landing.	Promote awareness and reduce turtle mortality around docking areas.	Ongoing signage and communication with boaters. A "dock talk" interpretation program was developed to increase boater awareness of boat-related turtle mortality.	100%*
23) Eastern Musk Turtle Complete Eastern Musk Turtle inventory around TINP lands in Mallorytown Landing.	Distribution of musk turtles known in Mallorytown Landing.	Inventories completed in 2017 and 2019.	100%
25) Bridle Shiner, Pugnose Shiner and Grass Pickerel Cooperate with OMNR, DFO and university partners to survey Jones Creek complex, Brooker's Creek, Adelaide Island, East Hill Island, Skoryna, Escott Rd. and Polly	Park distribution of species at risk fish determined.	Surveyed 5 of the 7 sites (4 with staff resources and acquired funds to hire a contractor for one additional site).	71%*

Species and Measure	Desired outcome	Progress towards outcome	Progress (% complete)
Creek pond for Bridle Shiner, Pugnose Shiner and Grass Pickerel.			
28) Blanding's Turtle Communicate with landowners adjacent to TINP to promote stewardship and nest protection.	Landowners protect turtles and turtle habitat.	Communicated with local landowners during three years of the Action Plan period. Instituted Reptile and Amphibian Recovery and Education Program (RARE) in 2019 and reached nearly one hundred thousand people over social media and engaged hundreds of local residents in turtle hatchling releases and through a turtle nest box protector lending program.	100%*
41) American Ginseng, Cerulean Warbler, King Rail, Little Brown Myotis, Western Chorus Frog Complete park inventories.	Determine park distributions of species at risk to protect individuals and habitat.	4 out of 5 inventories completed. Considerable survey efforts remain for Western chorus frog.	80%*

3. ACTION PLAN HIGHLIGHT: Reptile and Amphibian Recovery and Education (R.A.R.E.)



Thousand Islands National Park is home to a unique mixture of reptile and amphibian species, 10 of which are at risk. To ensure these amazing species will survive for generations to come, the park has created the R.A.R.E. project, which is part of a joint regional initiative called "On the Road Again". This project is successful due to the support of many dedicated partners. It involves two key components: species recovery and public education.

The R.A.R.E. recovery programs include: a turtle incubation program where eggs are collected and incubated and the hatchling turtles are released back into the wild; creation of artificial turtle nesting sites away from roads; working with partners to learn best practices for keeping turtles safe in the waters around the Thousand Islands.

The R.A.R.E. education programs include: lending turtle nest protector boxes to local landowners; species at risk outreach exhibits at the park visitor center and local events; community and boater turtle protection workshops and dock talks.

Action Plan Highlight: Five-lined Skink Habitat Restoration

The Five-lined Skink is Ontario's only native lizard species. Declining skink populations have resulted in a 'Special Concern' listing under the *Species at Risk Act* (SARA). Threats like habitat fragmentation and habitat loss continue to impact Skink populations as infrastructure developments increase in the Thousand Islands. However, microhabitat characteristics such as cover rock presence and rock morphology also play an important role in determining suitable skink habitat.

When Thousand Islands National Park (TINP) acquired large mainland areas with Five-lined Skink populations in the mid 2000s, ATV trails and backcountry camping had altered skink habitat. Many of the rock barrens that should have contained healthy skink populations were surveyed with no observations made. Also missing from the barrens in many cases was a complete lack of small to medium sized rocks, instead just bare bedrock was present. In some cases, large piles of rocks were being used as flag pole holders, fire pits or trail markers.

In an effort to re-create suitable microhabitat conditions for skink, TINP staff restored seven rock barrens in the park. The rock barrens were restored by breaking apart anthropogenic structures and spreading appropriate sized rocks across the barrens in strategic patterns known to maximise skink usage and decrease predation. Nearly 400 rocks were moved back into locations that improved skink microhabitat conditions (e.g. Figure 1).

Park staff have been completing surveys in the restored areas by looking under the re-distributed rocks and in 2019 skinks were observed on multiple restored barrens with no previous records. These barrens will continue to be monitored and through the restoration process, staff have located an additional 3-5 barrens that can benefit from similar work in forthcoming Multi-species Action Plans.

Figure 1: Rock barren before and after Five-lined Skink microhabitat restoration. Note the large pile of rocks (used as a flag pole holder) in the bottom right of the before picture.

4. ECOLOGICAL IMPACTS

Ecological impacts of the action plan are assessed by measuring progress towards meeting the site-based population and distribution objectives described in the action plan (Table 3). See the original action plan for national Population and Distribution Objectives (where available) and General Information and Broad Park Approach for each species.

Table 3. Progress towards achieving site-based population and distribution objectives for species at risk in Thousand Islands National Park of Canada.

Species	Site-based population & distribution objectives	Population monitoring	Progress towards site-based population and distribution objectives	Progress (% achieved)
Deerberry	1) Halt the decline of mature individuals and number of populations. 2) Maintain and augment (where necessary) two planted populations on Thwartway and Georgina islands and plant two new additional populations, if introductions are deemed feasible.	Monitor annual growth and population of all planted populations (existing populations on Thwartway and Georgina islands and two new populations, if introductions are deemed feasible).	1) The park continued to protect and monitor the existing natural populations. 2) The park maintained the two previously planted populations. The Georgina population is now self-sustaining and increasing, while the Thwartway Island population has yet to become self-sustaining. Due to poor seed crops, only one new	75%

Species	Site-based population & distribution objectives	Population monitoring	Progress towards site-based population and distribution objectives	Progress (% achieved)
			population was planted. That population on Camelot island is not flourishing and augmentation will likely be necessary.	
Blanding's Turtle (BLTU)	1. Maintain an adequate amount of suitable habitat in the park.	1. Assess changes in the amount of habitat using satellite imagery from 1980 onwards.	1. The amount of habitat for BLTU in the park has increased from 1987-2017 based on remote sensing analysis (St. Lawrence River Institute 2019).	100%
	2. Maintain current relative abundance of Blanding's Turtles for the park's largest population.	2. Estimate the relative abundance of Blanding's Turtles for the largest park population once every five years.	2. Spring monitoring was cancelled in 2020 and 2021 due to the restrictions on some activities related to the COVID-19 pandemic.	0%
	3. Maintain occupancy at two other known park locations.	3. Confirm continued occupancy at two other known locations by observing at least one individual at least once every five years.	3. Blanding's Turtle occupancy confirmed at both locations.	100%

Species	Site-based population & distribution objectives	Population monitoring	Progress towards site-based population and distribution objectives	Progress (% achieved)
Eastern Musk Turtle	1. Maintain an adequate amount of suitable habitat in the park.	1. Assess changes in the amount of habitat using satellite imagery from 1980 onwards.	1. The amount of habitat for musk turtles has increased in the park from 1987-2017 (St. Lawrence River Institute 2019).	100%
	2. Maintain occupancy at four known park locations.	2. Confirm continued occupancy in four known locations by observing at least one individual at least once every five years.	2. Searches were conducted at all sites, but visual observations were only made at two of four sites. Park staff are working with Queens University to enable eDNA sampling for this species in future action plans.	50%
Five-lined Skink	Maintain appropriate habitat for Landons Bay population.	After completion of a habitat suitability index to determine suitable habitat, assess habitat amount in the Landons Bay property every five years.	A habitat suitability index was developed in partnership with Fleming College and suitable habitat on Landons Bay was determined.	100%

Species	Site-based population & distribution objectives	Population monitoring	Progress towards site-based population and distribution objectives	Progress (% achieved)
Gray Ratsnake	Confirm continued occupancy of all known TINP hibernacula.	Visit each confirmed hibernaculum on park property during one year every five years for maximum of 3 visits per hibernaculum (if snake is found on visit 1, the other two visits are unnecessary).	Occupancy confirmed at all of the known hibernacula.	100%
Least Bittern	1. Maintain an adequate amount of suitable habitat in the park.	1. Assess changes in the amount of habitat using satellite imagery from 1980 onwards.	Habitat assessment conducted and there is no negative trend in the amount of Least Bittern habitat in the park.	100%
	2. Maintain occupancy at both known breeding locations.	2. Confirm continued occupancy in the two known locations by observing at least one individual at least once every five years.	Occupancy confirmed at both known breeding locations in the park.	100%
Milksnake	Maintain occupancy at all known locations.	Confirm continued occupancy in all known locations by observing at least one individual at least once every five years.	Searches conducted at all sites and occupancy confirmed at 5 of the 6 locations. Future sampling is required at Thwartway Island to determine if that population is extirpated.	83%

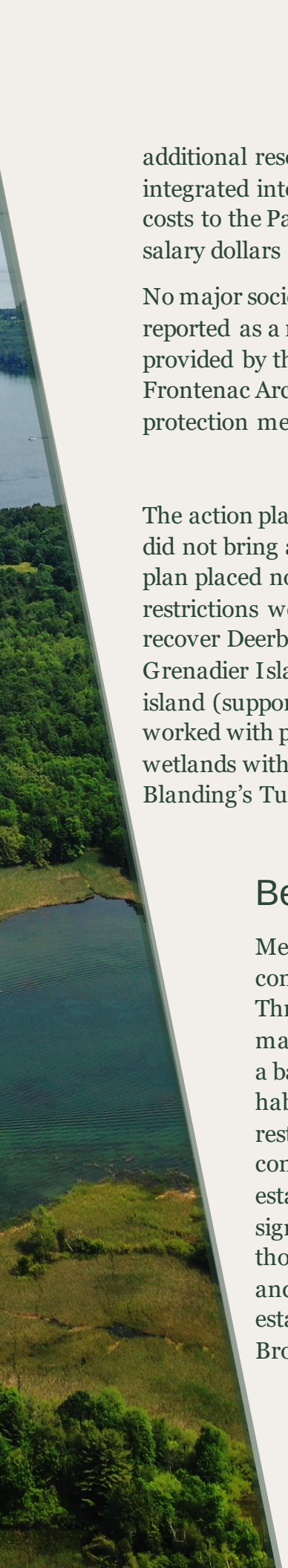
Species	Site-based population & distribution objectives	Population monitoring	Progress towards site-based population and distribution objectives	Progress (% achieved)
Northern Map Turtle	Maintain occupancy in Jones Creek Wetland Complex.	Confirm continued occupancy in Jones Creek by observing at least one individual at least once every five years.	Occupancy confirmed at Jones Creek during surveys in 2019 and 2021.	100%
Snapping Turtle	Maintain occupancy at all known locations.	Confirm continued occupancy in all seven known locations by observing at least one individual at least once every five years.	Confirmed continued occupancy all 7 known locations.	100%
Swamp Rose-mallow	1. Maintain existing plants on Main Duck Island. 2. Investigate population augmentation.	1. Survey known plants at least once every five years. 2. Investigate population augmentation.	1. Plants surveyed in 2019 and occupancy was confirmed. 2. Determining the genetics of the Main Duck population is still required before a decision can be made on population augmentation. Discussions with researchers about a range-wide genetic study were started, however COVID-19 and funding restrictions prevented completion.	100% 50%

5. SOCIO-ECONOMIC IMPACTS

The *Species at Risk Act* requires the responsible federal minister to report on the socio-economic costs of the multi-species action plan and the benefits derived from its implementation. The MSAP only applies to protected lands and waters under the authority of the Parks Canada Agency, which are often subject to fewer threats (e.g., industrial activities) compared to other areas as the lands are managed to preserve ecological and commemorative integrity. This section does not include socio-economic impacts of existing permitted activities that may be occurring in Parks Canada places as those have been addressed through other processes (e.g.: impact assessments). This socio-economic assessment is narrow in scope, as it is focused on the measures implemented within the action plan, and primarily focuses on Indigenous partners, leaseholders, licensees, residents and visitors. The overall socio-economic impacts of the MSAP for Thousand Islands National Park, described as costs and benefits, are outlined below.

Costs

The majority of costs to implement this action plan was borne by Parks Canada out of existing salaries and goods and services dollars. This includes incremental salary costs, materials, equipment, and contracting of professional services for measures outlined in Tables 3 (Recovery measures that will be conducted by Thousand Islands National Park) and 4 (Other recovery measures that will be encouraged through partnerships or when



additional resources become available) of the action plan. Action plan measures were integrated into the operational management of Thousand Islands National Park. These costs to the Parks Canada Agency were covered by prioritization of existing funds and salary dollars and did not result in additional costs to society.

No major socio-economic costs to partners, stakeholders or Indigenous groups were reported as a result of this action plan. Additional resources and partnership was provided by the Leeds Grenville Stewardship Council, the Brockville Aquatarium, the Frontenac Arch Biosphere and the St. Lawrence Parks Commission to complete reptile protection measures.

The action plan applies only to lands and waters in Thousand Islands National Park, and did not bring any restrictions to land use outside the national park. As such, this action plan placed no extraneous socio-economic costs on the public. However, some restrictions were placed on visitors to Thousand Islands National Park. To protect and recover Deerberry, closure and re-routing of a portion of a trail on the west end of Grenadier Island was undertaken and imposed new visitor travel restrictions on the island (supported by ongoing enforcement efforts). In addition, national park staff worked with partners to control motorized watercraft access at the mouth of important wetlands within the park. Signs to alert boaters of Critical Habitat areas were posted for Blanding's Turtle, Eastern Musk Turtle, Least Bittern and Pugnose Shiner.

Benefits

Measures presented in this action plan for Thousand Islands National Park contributed to meeting recovery / population and distribution objectives for Threatened and Endangered species, and also contributed to meeting management objectives for species of Special Concern. The measures sought a balanced approach to reduce or eliminate threats to at-risk populations and habitats, and included protection of individuals and their habitat (e.g., restrictions to human activities within areas occupied by the species, combined with ongoing research and monitoring), potential species re-establishment, and increasing public awareness and stewardship (e.g., signage, visitor programs, social media outreach to over one hundred thousand people through the RARE program and hundreds of local residents and students engaged in turtle protection). Additionally, the park has established new partnership agreements with species at risk themes with the Brockville Aquatarium and the Leeds Grenville Stewardship Council.

These measures had an overall positive impact on ecological integrity and contributed to efforts to increase visitor and public awareness. Working with partners, staff contributed to building awareness of Pugnose Shiner populations and their Critical Habitat needs as well as building an awareness of the consequences of poaching. Data and information products were shared with the Butternut working group to help monitor and collect seeds from putatively resistant trees. Measures taken as part of the action plan also provided benefits to other species of conservation concern that regularly occur in Thousand Islands National Park including Gray Ratsnake, Milksnake, Least Bittern, Five-lined Skink, Blanding's Turtle, Eastern Musk Turtle, Northern Map Turtle Snapping Turtle, Swamp Rose-mallow, Bridle Shiner and Grass Pickerel. These and other measures taken may have resulted in broader benefits to Canadians, such as positive impacts on biodiversity and the value individuals place on preserving biodiversity.

Potential economic benefits of the recovery of the species at risk found in Thousand Islands National Park cannot be easily quantified, as many of the values derived from wildlife are non-market commodities that are difficult to appraise in financial terms. Wildlife, in all its forms, has value in and of itself, and is valued by Canadians for aesthetic, cultural, spiritual, recreational, educational, historical, economic, medical, ecological and scientific reasons.

Implementing this action plan had positive benefits for park visitors, local residents, and Indigenous groups. Through interpretive programming a total of 5,000 school visitors received Gray Ratsnake appreciation messaging. These efforts were complimented by the distribution of school education kits and lesson plans for 6 targeted school districts. Over 150 turtle nest box protectors were lent out to regional residents to protect turtle nests on their properties and over 400 turtle hatchlings from three species were released back into the wild after being rescued from roadside sites with a high risk of predation. A partnership was maintained with a local landowner to track and mitigate threats to a Deerberry population on private lands. Parks Canada

obtained a Mohawk Council of Akwesasne Scientific Permit for the action plan. Through an established working relationship with the Mohawks of Akwesasne Department of Environment, traditional knowledge of species at risk recovery were incorporated into the action plans for Bridle Shiner, Pugnose Shiner and Grass Pickerel.

Summary

The measures proposed in the action plan had limited socio-economic impact and placed no restrictions on land outside the boundary of the national park. Direct costs of implementing this action plan were borne by Parks Canada. Indirect costs were minimal and were limited to restrictions to visitor access, while benefits included positive impacts on park ecological integrity, greater awareness of species and enhanced opportunities for engagement of visitors, local communities and Indigenous groups.