Species at Risk Act
Action Plan Series

Multi-species Action Plan for Thousand Islands National Park of Canada







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For copies of the action plan, or for additional information on species at risk, including COSEWIC Status Reports, residence descriptions, recovery strategies, and other related recovery documents, please visit the Species At Risk Public Registry[1].

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[1] www.registrelep.gc.ca/default_e.cfm

Recommendation and Approval Statement

The Parks Canada Agency led the development of this federal action plan. The Vice-President, Operations, Eastern Canada, upon recommendation of the relevant Park Superintendent and Field Unit Superintendent, hereby approves this document indicating that the relevant Species at Risk Act requirements related to action plan development have been fulfilled in accordance with the Act.

Recommended by:

Jeff Leggo
Superintendent, Thousand Islands National Park of Canada
Parks Canada Agency

Recommended by:

Katherine Patterson
Field Unit Superintendent, Georgian Bay and Eastern Ontario Field Unit
Parks Canada Agency

Approved by:

Carol Sheedy
Vice-President, Operations, Eastern Canada
Parks Canada Agency

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), the federal competent ministers are responsible for the preparation of action plans for species listed as Extirpated, Endangered, and Threatened for which recovery has been deemed feasible. They are also required to report on progress five years after the publication of the final document on the Species At Risk Public Registry.

Under SARA, one or more action plan(s) provides the detailed recovery planning that supports the strategic directions set out in the recovery strategies for the species. The plan outlines what needs to be done to achieve the population and distribution objectives (previously referred to as recovery goals and objectives) identified in the recovery strategies, including the measures to be taken to address the threats and monitor the recovery of the species, as well as the proposed measures to protect critical habitat that has been identified for the species. The action plan also includes an evaluation of the socio-economic costs of the action plan and the benefits to be derived from its implementation. The action plan is considered one in a series of documents that are linked and should be taken into consideration together with the COSEWIC status reports, management plans, recovery strategies and other action plans produced for these species.

The Minister responsible for the Parks Canada Agency (the Minister of the Environment and Climate Change) is the competent minister under SARA for the species found in Thousand Islands National Park of Canada and has prepared this action plan to implement the recovery strategies, as per section 47 of SARA. It has been prepared in cooperation with Akwesasne First Nation, Environment Canada, the Department of Fisheries and Oceans and the province of Ontario as per section 48(1) of SARA.

Implementation of this action plan is subject to appropriations, priorities, and budgetary constraints of the participating jurisdictions and organizations.

[2] www.ec.gc.ca/media_archive/press/2001/010919_b_e.htm

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Executive Summary

The *Multi-species Action Plan for Thousand Islands National Park of Canada* applies to lands and waters occurring within the boundaries of Thousand Islands National Park of Canada (TINP). The plan meets the requirements for action plans set out in the *Species At Risk Act* (SARA s.47) for species requiring an action plan and that regularly occur in the park. Measures described in this plan will also provide benefits for other species of conservation concern that regularly occur at TINP.

Where it has been determined that the park can conduct management activities to help recover and/or manage a species, park-specific objectives are identified in this plan and represent the park's contribution to overall objectives presented in federal recovery strategies and management plans. Species at risk, their residences, and their habitat are protected by existing regulations and management regimes in national parks as well as by SARA. Additional measures that will contribute to the survival and recovery of the species in the park are described in this plan. These measures were identified based on threats and measures outlined in federal and provincial status assessments and recovery documents, as well as knowledge of the status and needs of each species in the park. Population monitoring measures are also identified for the species for which management activities at the park can contribute to recovery.

Critical habitat is identified for the Least Bittern in this action plan. Measures used for protection of existing critical habitat are described.

Measures proposed in this action plan will have limited socio-economic impact and place no restrictions on land use outside of Thousand Islands National Park. Direct costs of implementing this action plan will be borne by Parks Canada. Indirect costs are expected to be minimal, while benefits will include positive impacts on park ecological integrity, greater awareness and appreciation of the value of biodiversity to Canadians, and opportunities for engagement of local communities and Indigenous groups.

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1. Context

The Thousands Islands area has long been important to many First Nations. As European settlement expanded into the area during the 1800s, the area became known for its natural beauty and tourism potential. While some legal protection was afforded to the current park area as early as 1875, it was not until 1904 that Thousand Islands National Park of Canada (TINP) was established as the first Canadian national park east of the Rockies (Canadian Thousand Islands Heritage Conservancy, 2004), known then as St. Lawrence Islands National Park. The area was also officially designated by the United Nations in 2002 as a Biosphere Reserve. The designation recognizes the region as a place where people live, work and enjoy a variety of economic and recreational activities based on respect for the environment. The park consists of several ecologically important mainland properties and over 20 islands between Kingston and Brockville, Ontario. Because of the fragmented nature of the park properties, many of the stresses on the park's ecosystem originate from outside its boundaries. For this reason, First Nations, local residents, conservation organizations, and other groups and land users play an important role in managing, restoring, and protecting the Thousand Islands ecosystem.

The park is located at the meeting point of the St. Lawrence River and the Frontenac Arch. The rugged nature of the Frontenac Arch resulted in less anthropogenic landscape modification than most of southern Ontario and, as a result, the area remains important for migrating species and local species of flora and fauna (Snetsinger, 1997). The islands of the park are considered to be important "stepping stones" in the connectivity corridor linking Algonquin Provincial Park in Ontario to Adirondack State Park in New York (Snetsinger, 2001). Being located in a transition zone, the park, for its size, is rich in biodiversity and provides habitat for many species that are at the northern or southern limits of their range.

Maintenance and restoration of ecological integrity is the first priority of national parks (*Canada National Parks Act* s.8(2)). Species at risk, their residences, and their habitat are therefore protected by existing national park regulations and management regimes as well as by SARA.

Recovery measures for species at risk will be integrated within the framework of Parks Canada's ongoing ecological integrity programs. National parks maintain comprehensive, scientifically rigorous ecological integrity monitoring and restoration programs that are organized according to the major ecosystems present in the park. The recovery measures described in this action plan are therefore organized in the same manner. Parks Canada's ecological integrity programs make contributions to the recovery of species at risk by providing inventory and monitoring data, and through the implementation of habitat restoration projects and other conservation measures. The species-directed measures outlined in this plan will in turn contribute to maintaining and improving the ecological integrity of Thousand Islands National Park by improving the conservation status of native species and their habitat and maintaining biodiversity.

1.1 Scope of the Action Plan

The geographic scope of this action plan includes all federally owned lands and waters managed by Thousand Islands National Park of Canada (Figure 1). This multi-species action plan has been written specifically for Thousand Islands National Park because the Parks Canada Agency (PCA) is legally responsible for species at risk on PCA lands and waters, has the ability to take direct conservation action, and deals with different threats, legislation, and management priorities than areas outside the park.

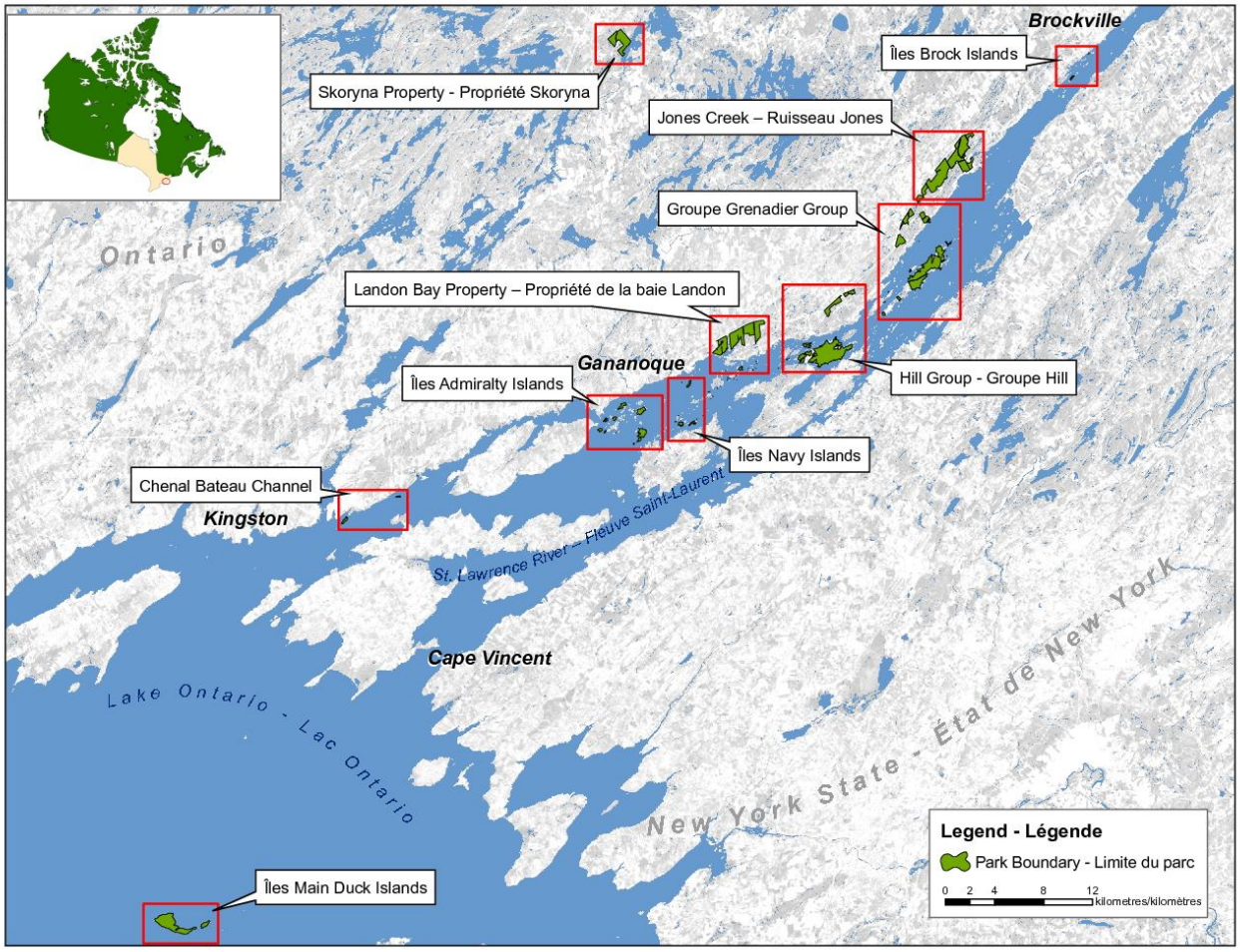

Figure 1. Geographic scope for the *Multi-species Action Plan for Thousand Islands National Park of Canada*.

This action plan addresses SARA-listed species that regularly occur in TINP which require an action plan under SARA (s.47), as well as other species of conservation concern (Table 1). This approach both responds to the legislated requirements of the SARA and provides the Parks Canada Agency with a comprehensive plan for species conservation and recovery at these sites. The plan will be amended as required to meet SARA requirements for action planning.

Table 1. Species at risk included in the action plan for TINP.

Species	Scientific Name	COSEWIC Status	SARA Status
American Ginseng	*Panax quinquefolius*	Endangered	Endangered
American Water-willow	*Justicia Americana*	Threatened	Threatened
Blannding's Turlte (Great Lakes/St. Lawrence population)	*Emydoidea blandingii*	Threatened	Threatened
Butternut	*Juglans cinerea*	Endangered	Endangered
Canada Warbler	*Carellina Canadensis*	Threatened	Threatened
Common Nighthawk	*Chordeiles minor*	Threatened	Threatened
Deerberry	*Vaccinium stamineum*	Threatened	Threatened
Eastern Musk Turtle	*Sternotherus odoratus*	Special Concern	Threatened
Eastern Whip-poor-will	*Antrostomus vociferous*	Threatened	Threatened
Golden-winged Warbler	*Vermivora chrysoptera*	Threatened	Threatened
Gray Ratsnake (Great Lakes/St. Lawrence population)	*Pantherophis spiloides*	Threatened	Threatened
Least Bittern	*Ixobrychus exilis*	Threatened	Threatened
Little Brown Myotis	*Myotis lucifugus*	Endangered	Endangered
Pale-bellied Frost Lichen	*Physconia subpallida*	Endangered	Endangered
Pugnose Shiner	*Notropis anogenus*	Threatened	Endangered
Western Chorus Frog (Great Lakes/St. Lawrence-Canadian Shield population)	*Pseudacris triseriata*	Threatened	Threatened
Bridle Shiner	*Notropis bifrenatus*	Special Concern	Special Concern
Cerulean Warbler	*Setophaga cerulean*	Endangered	Special Concern
Eastern Ribbonsnake (Great Lakes population)	*Thamnophis sauritus*	Special Concern	Special Concern
Five-lined Skink (Great Lakes/St. Lawrence population)	*Plestiodon fasciatus*	Special Concern	Special Concern
Grass Pickerel	*Esox americanus vermiculatus*	Species Concern	Special Concern
Milksnake	*Lampropeltis Triangulum*	Special Concern	Special Concern
Monarch	*Danaus plexippus*	Special Concern	Special Concern
Northern Map Turtle	*Graptemys geographica*	Special Concern	Special Concern
Peregrine Falcon (anatum/tundrius)	*Falco peregrinus anatum*	Special Concern	Special Concern
Rusty Blackbird	*Euphagus carolinus*	Special Concern	Special Concern
Snapping Turtle	*Chelydra serpentine*	Special Concern	Special Concern
Swamp Rose-mallow	*Hibiscus moscheutos*	Special Concern	Special Concern
American Eel	*Anguilla rostrata*	Threatened	Not Listed
Barn Swallow	*Hirundo rustica*	Threatened	Not Listed
Bobolink	*Dolichonyx oryzivorus*	Threatened	Not Listed
Eastern Meadowlark	*Sturnella magna*	Threatened	Not Listed
Eastern Wood-pewee	*Contopus virens*	Special Concern	Not Listed
Wood Thrush	*Hylocichla mustelina*	Threatened	Not Listed

2. Recovery Objectives and Measures

The potential for PCA to undertake management actions at the park that will contribute to the recovery of each species was assessed. Park-specific population and distribution objectives were developed (Table 2) to identify the contribution that TINP can make towards achieving the national objectives presented in federal recovery strategies and management plans. Because they are directly linked to the park population and distribution objectives, monitoring activities are reported in Table 2 rather than in the tables of recovery measures (Tables 3 & 4). If there is little opportunity for the park to contribute to the recovery of a species, site-specific objectives and conservation measures may be limited to protection measures in place under the *Canada National Parks Act* and SARA, and population monitoring, habitat maintenance, and restoration through the existing park management regime at the park. For many species, population and distribution objectives for TINP are not meaningful at the scale of this action plan for various reasons, including 1) threats cannot be controlled in the park or do not exist in the park (e.g., wide-spread disease, damming of St. Lawrence River, loss of overwintering habitat, hay harvesting); 2) species is only transient or does not occur on land over which the park has jurisdiction (e.g., migrates through park, breeding is not confirmed, occurs below high-water mark); 3) population within the park is a very small part of the Canadian distribution or is unknown or unconfirmed.

Table 2: Species information and objectives for species at risk in Thousand Islands National Park of Canada

Species	National objectives	Population & distribution objectives for TINP	Population Trend in TINP[3]	Population monitoring[4]	General information and broad park approach
Deerberry	1. Halt the decline of mature individuals and number of populations. 2. Increase the number of populations to 10 or more, if introduction or re-introduction of 'new' populations is deemed feasible.	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.	Stable	1. Monitor annual growth and population of both native populations. 2. 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).	Majority of Canadian population occurs in TINP. Continue to mitigate threats and introduce additional populations if feasible.

[3] Population trend is from 2008-2013.
[4] Where population and distribution objectives have been established for TINP, monitoring is designed to directly measure success in achieving those goals; otherwise baseline population monitoring efforts necessary for park stewardship, management and reporting are described.

Species	National objectives	Population & distribution objectives for TINP	Population Trend in TINP[3]	Population monitoring[4]	General information and broad park approach
Blanding's Turtle	Maintain, and where necessary and feasible, increase the area of occupancy and abundance.	1. Maintain an adequate[5] amount of suitable habitat in the park. 2. Maintain current relative abundance of Blanding's turtles for the park's largest population 3. Maintain occupancy at two other known park locations.	Decreasing	1. Assess changes in the amount of habitat using satellite imagery from 1980 onwards. 2. Estimate the relative abundance of Blanding's Turtles for the largest park population once every five years. 3. Confirm continued occupancy at two other known locations by observing at least one individual at least once every five years.	Blanding's Turtles occur at three locations in the park including one wetland complex which is almost entirely within the park boundary. This wetland complex holds a regionally significant population of Blanding's Turtle.
Eastern Musk Turtle	Maintain, and where necessary and feasible, increase the area of occupancy and abundance.	1. Maintain an adequate amount of suitable habitat in the park. 2. Maintain occupancy at four known park locations.	Stable	1. Assess changes in the amount of habitat using satellite imagery from 1980 onwards. 2. Confirm continued occupancy in four known locations by observing at least one individual at least once every five years.	Focus on preserving appropriate habitat and mitigating threats at locations within the park that contribute to larger ecosystem-wide ranges.
Five-lined Skink	Maintain the distribution and number of viable element occurrences.	Maintain appropriate habitat for Landon Bay population.	Unknown	After completion of a habitat suitability index to determine suitable habitat, assess habitat amount in the Landon Bay property every five years.	Skinks are not widely distributed in the park and are cryptic and difficult to count. Focus is on protecting and maintaining existing habitat.

[5] Based on established thresholds for Blanding's Turtles, Eastern Musk Turtle, and Least Bittern in the TINP wetland condition monitoring program (Zorn, 2012).

Species	National objectives	Population & distribution objectives for TINP	Population Trend in TINP[3]	Population monitoring[4]	General information and broad park approach
Gray Ratsnake	N/A	Confirm continued occupancy of all known TINP hibernacula.	Decreasing	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).	Five known hibernacula in the park. Snakes leave park hibernacula and often travel outside park boundary, snake hibernating adjacent to park often travel into the park and provide juvenile recruitment. Focus is on protecting existing hibernacula, finding new hibernacula and working with partners to promote connections between hibernacula in and adjacent to park boundaries.
Least Bittern	Maintain and, where possible, increase the current population size and area of occupancy in Canada.	1. Maintain an adequate amount of suitable habitat in the park 2. Maintain occupancy at both known breeding locations.	Stable	1. Assess changes in the amount of habitat using satellite imagery from 1980 onwards. 2. Confirm continued occupancy in the two known locations by observing at least one individual at least once every five years.	Least Bittern nest in two wetlands in the park. Focus is on protecting and maintaining existing habitat.
Milksnake	N/A	Maintain occupancy at all known locations.	Unknown	Confirm continued occupancy in all known locations by observing at least one individual at least once every five years.	Milksnakes are distributed throughout the park, often in developed areas.
Northern Map Turtle	Maintain, and where necessary and feasible, increase the area of occupancy and abundance	Maintain occupancy in Jones Creek Wetland Complex.	Unknown	Confirm continued occupancy in Jones Creek by observing at least one individual at least once every five years.	Map turtles range widely outside the park and are often found basking just on the edge of the park boundary. Focus is on protecting and maintaining existing habitat.
Snapping Turtle	Implement measures to address the main threats and document population trends across Canada.	Maintain occupancy at all known locations.	Unknown	Confirm continued occupancy in all seven known locations by observing at least one individual at least once every five years.	Snapping turtles have large ranges that extend outside the park and have only a small percentage of their overall population in the park. Focus is on protecting and maintaining existing habitat within the park.

Species	National objectives	Population & distribution objectives for TINP	Population Trend in TINP[3]	Population monitoring[4]	General information and broad park approach
Swamp Rose-mallow	Maintain current distribution and area of occupancy of extant populations.	Maintain existing plants on Main Duck Island and investigate population augmentation.	Unknown	Survey known plants at least once every five years and monitor introduced plants annually for at least the first 3 years after planting.	Swamp rose-mallow is confined to Main Duck Island with minimal threats. Focus is on protecting and maintaining existing habitat.
American Water-willow	Maintain (and, if possible, increase) the current number of individuals to maintain the actual number of locations (10) and prevent the decline in the quality of habitat.	No objective established: no threats known in park and no individuals found on TINP lands.	Unknown	Record incidental observations.	None of the individuals are currently within TINP boundaries, however large populations are found immediately adjacent to park lands. Continue to ensure park management activities do not threaten the existing populations adjacent to our lands.

Species	National objectives	Population & distribution objectives for TINP	Population Trend in TINP[3]	Population monitoring[4]	General information and broad park approach
Little Brown Myotis, Barn Swallow, Bobolink, Butternut, Canada Warbler, Cerulean Warbler, Common Nighthawk, Eastern Meadowlark, Eastern Wood-pewee, Golden-winged Warbler, Peregrine Falcon (*anatum*), Pugnose Shiner, Rusty Blackbird, Wood Thrush, Monarch, American Eel, Bridle Shiner, Grass Pickerel, Western Chorus Frog, Eastern Ribbonsnake, Eastern Whip-poor-will, American Ginseng, Pale-bellied Frost Lichen		No objective established: because no threats known in park (Grass Pickerel, Pale-bellied Frost Lichen and Peregrine Falcon); or no TINP management actions can contribute to conservation within the park and TINP is of limited importance to the species' national recovery.	Unknown	Record incidental observations and share with partners.	Continue to contribute to drafting of recovery plans and identification of critical habitat. The park will continue to protect individuals and protect suitable habitat on park lands and support partners where feasible on recovery and protection of these species. Additionally, TINP will work with partners to conduct opportunistic surveys for under-surveyed species in the park and adjust management approaches appropriately when new populations are found.

2.1 Measures to be Taken and Implementation Schedule

This action planning process identified measures to achieve the site-based population and distribution objectives, along with measures required to protect the species and learn more about them. The process of determining which measures will be conducted by the Park (Table 3) and which measures will be encouraged through partnerships or when additional resources come available (Table 4) involved a prioritization process. The process primarily considered ecological effectiveness of measures, and also included consideration of opportunities to increase the value of visitor experience to the park, opportunities to increase awareness through external relations, and budgetary opportunities and constraints. Wherever possible, Parks Canada is taking an ecosystem approach, prioritizing actions that benefit numerous species at once to effectively and efficiently protect and recover species at risk.

Table 3: Recovery measures that will be conducted by Thousand Islands National Park.

Species	Measure #	Measure	Desired Outcome	Threat or recovery measure addressed[6]	Timeline
WETLAND COMMUNITY					
Blanding's Turtle, Eastern Musk Turtle, Least Bittern, Pugnose Shiner	1	Species at risk critical habitat warning sign installed at mouth of important wetland after critical habitat is identified.	Work with partners to control motorized watercraft access at mouth of important wetlands.	Boating mortality	2017

[6] Threat or recovery measures as per most recent versions of relevant recovery documents found in References section.

Species	Measure #	Measure	Desired Outcome	Threat or recovery measure addressed[6]	Timeline
Coastal Wetland Community[7]	2	Remove early invasions of priority[8] alien invasive plants from park wetlands.	Prevent invasive species from becoming established in park wetlands.	Exotic and invasive species	If invasion detected, the site will be visited annually for at least three years.
Coastal Wetland Community	3	Re-survey Skoryna and Escott Rd wetlands to determine if Blanding's turtles are present.	Increase knowledge of turtle distribution in the park.	Collect population, habitat and threat data to monitor turtles.	2018
Swamp Rose-mallow	4	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.	Investigate the feasibility of employing best management practices/known methods of controlling European Common Reed and Hybrid Cattail, and implement these practices where feasible.	2019

[7] Species at risk considered part of the TINP coastal wetland community include Blanding's Turtle, Eastern Musk Turtle, Snapping Turtle, Northern Map Turtle, American Eel, Bridle Shiner, Grass Pickerel, Pugnose Shiner, and Least Bittern.

[8] As determined by TINP's Integrated Vegetation Management Plan (McPherson, 2006).

Species	Measure #	Measure	Desired Outcome	Threat or recovery measure addressed[6]	Timeline
Swamp Rose-mallow	5	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	Assess and monitor the distribution and habitat, population sizes and trends of Swamp Rose-mallow.	2017
Pugnose Shiner	6	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.	2-1. Coordination with other recovery teams and relevant groups.	2015

Species	Measure #	Measure	Desired Outcome	Threat or recovery action addressed	Timeline
FOREST COMMUNITY					
Deerberry	7	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.	Enhance or augment existing populations.	One new population planted in 2014-2015 and one more in 2016. Augmentation at other two planted populations is dependent on number of available seedlings and maintenance is ongoing until plants are self-seeding (usually about 2-5 years)
Deerberry	8	Remove all invasive plants within a 50-m buffer of Deerberry on West Grenadier and Endymion islands by 2018.	Remove threat within 50m buffers of invasive species to Deerberry on West Grenadier and Endymion islands.	Invasive species is a low level threat.	2018
Deerberry	9	Continue to work with 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.	Continue to work with private landowner on stewardship of non-park population.	Ongoing
Deerberry	10	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.	Plan and effect re-routing of trails away from Deerberry populations.	Re-route by 2015, enforcement ongoing.
Deerberry	11	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.	Collaborate with agencies in the USA to obtain more information on New York populations.	2018

Species	Measure #	Measure	Desired Outcome	Threat or recovery action addressed	Timeline
Five-lined Skink	12	Increase number of cover objects on Fitzsimmons Mountain.	Microhabitat restored on Fitzsimmons Mountain by Winter 2014.	Maintain, and if possible, increase the amount of habitat and microhabitat available for Five-lined Skinks.	2016
CROSS-COMMUNITY					
Blanding's Turtle, Five-lined Skink, Gray Ratsnake	13	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.	Ensure existing laws and regulations are being enforced and raise awareness to reduce collecting; Promote compliance with existing legislation.	Ongoing
ALL	14	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.	Encourage the submission of all records for all turtle species to the province.	Ongoing

Species	Measure #	Measure	Desired Outcome	Threat or recovery action addressed	Timeline
ALL	15	Work with partners to promote the protection of key species dispersal habitats. Work in partnership with the Leeds and Grenville Stewardship Council on issues related to gray ratsnake outreach and species at risk protection.	All partners consider landscape ecology in SAR decisions.	Promote protection of high ranking habitat parcels or networks through partners (municipalities, The Nature Conservancy of Canada, Ontario Parks, stewardship councils) and initiate acquisition, agreements, easements, etc.	Ongoing

Table 4: Other recovery measures that will be encouraged through partnerships or when additional resources become available.

Species	Measure #	Measure	Desired Outcome	Threat or recovery action addressed[9]
WETLAND COMMUNITY				
All Turtles	16	Continue investigating Thousand Islands Parkway turtle mortality hot spots and mitigations. Participate in partner led road mortality mitigation projects on the Thousand Islands Parkway and Highway 401.	Clearly understand where (or if) there are priority locations to invest in road mortality mitigation.	Identify areas with high road mortality rates and implement mitigation approaches.
All Turtles	17	Public outreach to help reduce road mortality.	Reduce turtle road mortality.	Identify areas with high road mortality rates. Develop, assess, and where feasible, implement appropriate mitigation approaches (e.g., eco-passages across roads) to reduce mortality in these areas.
All Turtles	18	Work with St. Lawrence Parks Commission to ensure Thousand Islands Parkway shoulders aren't tilled after turtle eggs are laid.	Destruction of turtle eggs due to tilling stopped.	Develop and share, or use existing (and improve, if needed), beneficial management practices (BMPs) for the general public, landowners, land managers, and industry.
All Turtles	19	Work with partners to mitigate turtle by-catch mortality in commercial fishing nets.	Reduce number of turtles killed in fishing nets	Where feasible, employ techniques to reduce turtle mortality from accidental fishing bycatch.
All Turtles	20	Provide turtle safety messaging to boaters around Central Grenadier and Mallorytown Landing.	Promote awareness and reduce turtle mortality around docking areas.	Identify areas with high rates of mortality from motorboats. Develop, assess, and, where feasible, implement appropriate mitigation approaches to reduce mortality in these areas.

[9] Threat or recovery measures as per most recent versions of relevant recovery documents found in References section.

Species	Measure #	Measure	Desired Outcome	Threat or recovery action addressed[9]
Coastal Wetland Community	21	Assess viability of conducting hemi-marsh restoration in the Jones Creek wetland complex.	(1) Determine the viability/desirability of restoration; (2) If criteria are met, complete hemi-marsh restoration.	Investigate the feasibility and effectiveness of different techniques for maintaining and creating open wetland areas, including prescribed burns or other artificial disturbance, within the Canadian range of Swamp Rose-mallow; Implement the appropriate techniques where feasible .
Coastal Wetland Community	22	Work with partners to assess the viability of conducting hemi-marsh restoration in west portion of Thompson Bay (an important component of the Grenadier Island wetland complex)	(1) Determine the viability/desirability of restoration; (2) If criteria are met and partner support is available, complete hemi-marsh restoration.	Investigate the feasibility and effectiveness of different techniques for maintaining and creating open wetland areas, including prescribed burns or other artificial disturbance, within the Canadian range of Swamp Rose-mallow; Implement the appropriate techniques where feasible.
Eastern Musk Turtle	23	Complete Eastern Musk Turtle inventory around TINP lands in Mallorytown Landing.	Distribution of musk turtles known in Mallorytown Landing.	Collect population, habitat and threat data to monitor turtles.
Least Bittern	24	Survey Skoryna property wetland and re-survey park wetlands to determine/confirm Least Bittern status	Least Bittern distribution in the park determined.	Conduct surveys and habitat assessments at priority sites as per Least Bittern recovery strategy .
Bridle Shiner, Pugnose Shiner and Grass Pickerel	25	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 Creek pond for Bridle Shiner, Pugnose Shiner and Grass Pickerel.	Park distribution of species at risk fish determined.	Conduct targeted surveys at new, suspected, and historic locations with advice from DFO.

Species	Measure #	Measure	Desired Outcome	Threat or recovery action addressed[9]
Coastal Wetland Community	26	Retain TINP forest and wetlands adjacent to important TINP wetlands with known Blanding's Turtle, Eastern Musk Turtle and Least Bittern observations and work with partners/landowners to promote forest/wetland retention in these adjacent areas.	Ensure suitable terrestrial habitat for wetland species at risk.	Protect areas large enough to maintain viable populations and increase connectivity.
Blanding's Turtle	27	Create turtle-friendly eco-passage under County Road 5 near Polly Creek (initiate by getting involved in culvert planning process).	Reduce turtle road mortality.	Identify areas with high road mortality rates. Develop, assess, and, where feasible, implement appropriate mitigation approaches (e.g., eco-passages across roads) to reduce mortality in these areas.
Blanding's Turtle	28	Communicate with landowners adjacent to TINP to promote stewardship and nest protection.	Landowners protect turtles and turtle habitat.	Identify areas with high rates of nest predation and employ, where feasible and with appropriate permits in place, known techniques to protect nests and reduce predation.
FOREST COMMUNITY				
Butternut	29	Complete canker and site condition surveys for all known park Butternut, collect seeds from potentially resistant trees and share any data about canker-resistant trees or identify sites that promote localized recruitment / canker resistance to Butternut working group.	Create seed bank of any canker-resistant trees in the park.	Locate and monitor putatively resistant trees; Coordinate a seed collection program from resistant trees; Store backup seed/germplasm of resistant trees.

Species	Measure #	Measure	Desired Outcome	Threat or recovery action addressed[9]
Deerberry	30	Collaborate with the Frontenac Arch Biosphere Reserve, St. Lawrence Parks Commission, and Niagara Parks Commission to identify and protect potential habitat for species dispersal.	Ensure habitat exists to support future Deerberry populations.	Incorporate restoration of Deerberry into oak forest/savanna restoration measures being done by the Niagara Parks Commission.
Deerberry	31	Work with partners to determine conditions required for successful seedling establishment and habitat maintenance including the effect of fire, life history traits, pollination, and dispersal vectors.	Effectively manage habitat for Deerberry within the park.	Collect and cultivate a stock of cuttings and seeds from the two regions (underway); Continue to develop and improve a habitat model for Deerberry incorporating fire history and other life history and landscape variables as they become available.
Five-lined Skink	33	Finish previously initiated Five-lined Skink habitat suitability index and complete inventory on all new suitable properties to determine distribution in the park.	Determine occupancy of suitable habitat in the park.	Conduct surveys for Five-lined Skinks at priority sites along with studies of habitat use, typical movements and dispersal abilities in order to obtain better population-level data and to identify which element occurrences are viable.
Five-lined Skink	33	Work with researchers to identify TINP skink population dynamics, including population inventory, viability (numbers) and connections between different observations.	Learn about Five-lined Skinks in the area to determine the best ways to protect and recover populations.	Conduct surveys for Five-lined Skinks at priority sites along with studies of habitat use, typical movements and dispersal abilities in order to obtain better population-level data and to identify which element occurrences are viable.

Species	Measure #	Measure	Desired Outcome	Threat or recovery action addressed[9]
Five-lined Skink	34	Assess state of currently occupied habitats and determine if it is necessary to re-introduce fire/stop succession in priority habitats.	Determine if disturbance restorations are necessary for park populations.	Develop and implement habitat conservation guideline.
Gray Ratsnake	35	Conduct telemetry studies on mainland properties to identify new hibernacula sites.	Identification of all hibernacula on mainland properties.	Clarify essential habitat features associated with specific life history stages.
Gray Ratsnake	36	Work with partners to determine the location of and maintain/improve connectivity between adjacent hibernacula where juvenile recruitment is necessary to sustain TINP populations (Including U.S. populations - namely Wellesley Island).	With the help of partners ensure the maintenance of and connectivity with hibernacula adjacent to park properties.	Determine how genetic connectivity among sub-populations is maintained. This includes the relative importance of different mechanisms such as juvenile dispersal, adult dispersal and multiple paternity. Promote protection of high ranking habitat parcels or networks through partners (municipalities, The Nature Conservancy of Canada, Ontario Parks, Stewardship Councils) and initiate acquisition, agreements, easements, etc.
Gray Ratsnake	37	Work with partners to protect broad corridors that facilitate long- and short-term genetic linkages within the Frontenac Arch population.	Important corridors for ratsnakes are maintained for the Frontenac Arch population (either through partner acquisition, appropriate land-use planning or private owner stewardship).	Promote protection of high ranking habitat parcels or networks through partners (municipalities, The Nature Conservancy of Canada, Ontario Parks, Stewardship Councils) and initiate acquisition, agreements, easements, etc.
Gray Ratsnake	38	Make priority property acquisitions to connect more hibernacula or work with other partners (e.g., land trusts) to protect key linkages.	Acquire lands to add to the park that could help recovery of ratsnakes.	Promote protection of high ranking habitat parcels or networks through partners (municipalities, The Nature Conservancy of Canada, Thousand Islands Watershed Land Trust, Ontario Parks, Stewardship Councils)and initiate acquisition, agreements, easements, etc..

Species	Measure #	Measure	Desired Outcome	Threat or recovery action addressed[9]
Gray Ratsnake	39	Work with partners to improve the delivery/evaluation of stewardship messaging (including translation of existing partner communication resources).	Improve effectiveness of ratsnake outreach messaging.	Develop a communications plan whose target audiences include landowners, land-use planners, natural resource managers and other affected stakeholders. Develop strategy for delivery of communication program to appropriate schools, Stewardship Councils, cottage associations, etc.. Plan and develop stand-alone resource presentation materials for adult audiences to be used by outreach extension volunteers .
Gray Ratsnake	40	Provide interpretation (communicate anti-persecution, snake appreciation) messaging to all Thousand Island Ecosystem school visitors to TINP.	Increase respect for snakes among local youth.	Develop (or improve) and distribute school education kits and lesson plans to schools within the range of Gray Ratsnake and other targeted school districts.
CROSS-COMMUNITY				
American Ginseng, Cerulean Warbler, King Rail, Little Brown Myotis, Western Chorus Frog	41	Complete park inventories.	Determine park distributions of species at risk to protect individuals and habitat.	N/A

Species	Measure #	Measure	Desired Outcome	Threat or recovery action addressed[9]
Snapping Turtle, Wood Thrush, Eastern Wood Pewee, Barn Swallow, Western Chorus Frog	42	Complete abundance surveys for newly listed *still common* species to establish a baseline for future restoration efforts.	Establish baseline for species at risk monitoring.	N/A
ALL	43	As opportunities arise to acquire property adjacent to TINP, focus on property that is important to SAR.	Park is expanded in areas beneficial to SAR.	Habitat loss, degradation, and modification.
ALL	44	Incorporate Indigenous Traditional Knowledge into Species at Risk recovery, planning, and action.	Incorporation of ATK into Species at Risk recovery at Thousand Islands National Park,	N/A

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3. Critical Habitat

Critical habitat is “the habitat that is necessary for the survival or recovery of a listed wildlife species and that is identified as the species’ critical habitat in the recovery strategy or in an action plan for the species” (SARA s.2(1)). At the time of writing of this document it was possible to identify additional critical habitat in TINP for the Least Bittern. Critical habitat has already been identified in TINP in recovery strategies for several species and more will be identified in the future when possible. Where critical habitat identification is not complete, it will be identified in an upcoming or revised action plan or revised recovery strategy; refer to the schedule of studies in relevant recovery strategies for further details.

3.1. Identification of Critical Habitat for the Least Bittern

3.1.1. Geographic Location

Parts of two wetland complexes at Jones Creek and Grenadier Island are identified as critical habitat for the Least Bittern. These parts were identified using the methodology outlined in the recovery strategy and include all suitable habitat within 500m of suitable breeding records.

3.1.2. Biophysical Attributes

The biophysical attributes of critical habitat for the Least Bittern in TINP are consistent with the critical habitat identified in the recovery strategy (Environment Canada 2014m). The biophysical attributes of suitable Least Bittern breeding habitat include:

- permanent wetlands (marshes and shrubby swamps within the boundaries of the high-water mark); **AND**
- tall and robust emergent herbaceous and/or woody vegetation interspersed with areas of open water (hemi-marsh conditions); **AND**
- water level fluctuations close to those of a natural regime.

3.1.3. Examples of Activities Likely to Result in Destruction of Critical Habitat

The examples of activities likely to result in destruction of Least Bittern critical habitat are consistent with the examples in the recovery strategy (Environment Canada 2014m):

Description of the Activity	Description of the Effect
Infilling, excavation or draining of wetlands (e.g., infrastructure development and construction, superficial mineral extraction; underground mineral/hydrocarbon extraction, dredging and channelization)	• Direct loss of wetland habitats; • Changes to the hydrological regime (e.g., water levels); • Creation of unsuitable conditions for the growth of wetland vegetation; • Introduction of exotic or invasive species

Description of the Activity	Description of the Effect
Activities that generate soil run-off and increased water turbidity or nutrient influx (e.g., cultivating the land next to a wetland without proper vegetation buffers)	• Proliferation of vegetation associated with eutrophication (floating or emergent); • Habitat alteration (e.g., increased turbidity reduces foraging success)
Introduction of invasive vegetation, fish and invertebrate species	• Habitat alteration (e.g., increased turbidity or changes in prey availability reduces foraging success); • Changes to the conditions for nest building (e.g., structure and/or composition of the vegetation)
Repeated use of vehicles and motor boats within or close to wetlands	• Habitat degradation (via erosion) • Generation of waves that can flood nests (reduced suitable breeding habitat)
Prescribed burns or other means of natural vegetation removal within wetland habitats	Removal of elements that are used for nest construction or other activities (e.g., foraging)
Deposition of deleterious substances (including snow), either directly (in water) or indirectly (upstream, soil)	• Reduced water quality (e.g., turbidity, pollution) decreases prey availability and foraging success; • Bioaccumulation of toxic substances in feathers and eggs
Construction of infrastructures (e.g., roads, houses, boat ramps) which increase the access to critical habitat	• Disturbance of breeding activities by an increased use of wetlands (reduced suitable breeding habitat); • Can increase predation by facilitating access to nests; • Increased occurrence of other threats (e.g., collisions)
Presence of livestock that removes or tramples the vegetation	Destruction of emergent aquatic vegetation (directly and via erosion and soil compaction)

Activities required to manage, inspect and maintain existing infrastructures that are not critical habitat but whose footprints may be within or adjacent to critical habitat units are not examples of activities likely to result in the destruction of critical habitat provided that they are carried out in a manner consistent with Least Bittern critical habitat

conservation. Furthermore, management of wetlands for wildlife conservation purposes does not typically result in destruction of critical habitat if activities take place when the individuals are not present in the habitat (after migration).

3.2 Proposed Measures to Protect Critical Habitat

Critical habitat identified in this action plan and in other recovery documents within TINP will be legally protected from destruction as per section 58 of the SARA.

4. Evaluation of Socio-Economic Costs and of Benefits

4.1. Socio-Economic Overview

The Species at Risk Act requires the responsible federal minister to undertake *"an evaluation of the socio-economic costs of the action plan and the benefits to be derived from its implementation."*

4.2. Costs

The total cost to implement the action plan will be 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 Table 3. No major socio-economic costs to partners, stakeholders or Indigenous groups are expected as a result of this action plan.

4.2.1. Cost to Parks Canada

Many of the proposed measures will be integrated into the operational management of Thousand Islands National Park and there will be few new costs. These costs to the government will be covered by prioritization of existing funds and salary dollars at the site and thereby will not result in additional costs to society.

4.2.2. Socio-economic costs of implementation

The action plan applies only to lands and waters in Thousand Islands National Park, and does not bring any restrictions to land use outside the park. As such, this action plan will place no direct socio-economic costs on the public. However, minor restrictions may be placed on visitor activities on park lands and waters to protect and recover species at risk.

4.3. Benefits

Measures presented in this action plan for Thousand Islands National Park will contribute to meeting recovery strategy objectives for Butternut, Deerberry, Pugnose Shiner, and American Water-willow, and will also contribute to meeting management objectives for Five-lined Skink (*Plestiodon fasciatus*) and Swamp Rose-mallow (*Hibiscus moscheutos*). These measures are expected to have an overall positive impact on ecological integrity and enhance opportunities for appreciation of the park and the species by visitors and the general public. This action plan includes measures that could result in benefits to Canadians, such as positive impacts on biodiversity and

the value individuals place on preserving biodiversity (Federal, Provincial, Territorial Governments of Canada, 2014).

The proposed measures seek a balanced approach to reducing or eliminating threats to species-at-risk populations and habitats, and include 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, and highlights in communication media).

For Butternut, this action plan will contribute to the recovery objectives of locating and monitoring putatively resistant trees and collecting seeds from potentially resistant trees. Specific measures in this action plan will complete canker surveys for all known Butternut in the park, collect seeds from park trees, and share data with the Butternut working group.

For Deerberry, implementation of this action plan will contribute to the recovery objectives of halting the decline of mature individuals and the number of populations and of maintaining and augmenting (where necessary) two planted populations on Thwartway and Georgina Island in Thousand Islands National Park (and planting two new additional populations, if introductions are deemed feasible). Specific measures in this action plan will enhance the available ecological knowledge of the plants' life history, will reduce impacts from trampling, and will facilitate mapping, assessment and protection of Deerberry habitat in and adjacent to the park.

For the Pugnose Shiner, the measures in this action plan will contribute to the recovery objective of conducting targeted surveys at new, suspected, and historic locations. As well, TINP will be working with DFO to ensure installations of signage related to Pugnose Shiner critical habitat. Specific measures in this action plan will survey numerous locations within park boundaries for Pugnose Shiner.

For American Water-willow, implementation of this action plan will contribute to recovery approaches of engaging landowners and managers in protection of sites that neighbour or harbour American Water-willow populations and enhancing current knowledge of the distribution and abundance of American Water-willow (Parks Canada Agency, 2011). No specific measures in this plan are directly linked to recovery strategies because American Water-willow does not occur on land administered by Parks Canada. However, specific measures to preserve habitat within the park will benefit adjacent American Water-willow habitat and populations.

For the Five-lined Skink, this action plan will contribute to meeting the management objective of maintaining the distribution and number of viable element occurrences of Five-lined Skink (Great Lakes/St. Lawrence population). Specific measures in this action plan will ensure the maintenance of appropriate habitat for the Landon Bay population.

For Swamp Rose-mallow, this action plan will contribute to meeting the management objective of maintaining the current distribution and area of occupancy of extant Swamp Rose-mallow populations in Canada. Specific measures in this action plan will ensure the maintenance of existing plants on Main Duck Island and will potentially contribute to population augmentation.

Measures described in this plan will also provide benefits for other species of conservation concern that regularly occur in Thousand Islands National Park. These include Gray Ratsnake, Milksnake, Least Bittern, Blanding's Turtle (Great Lakes/St. Lawrence population), Eastern Musk Turtle, Northern Map Turtle, and Snapping Turtle.

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. The conservation of wildlife at risk is an important component of the Government of Canada's commitment to conserving biological diversity, and is important to Canada's current and future economic and natural wealth. Implementing this action plan is expected to have benefits for park visitors, local residents and Indigenous groups. These include opportunities to learn about and take part in the recovery of culturally important species at risk, opportunities for visitors, local communities, and Indigenous groups to be involved in conservation issues in the Thousand Islands ecosystem, and greater awareness of the value of conservation in the region.

Parks Canada will also seek a Mohawk Council of Akwesasne Scientific Permit for this Action Plan to demonstrate the shared partnership between Parks Canada and the Mohawks of Akwesasne. Where possible, Thousand Islands National Park will incorporate traditional knowledge in the implementation of actions that protect species at risk. This also supports the goals under the Species at Risk Act "*the traditional knowledge of the aboriginal peoples of Canada should be considered in the assessment of which species may be at risk and in developing and implementing recovery measures*."

5. Measuring Progress

Reporting on implementation of the action plan (under s. 55 of SARA) will be done by assessing progress towards implementing the measures. Reporting on the ecological impacts of the action plan will be done by assessing progress towards meeting the site-based population and distribution objectives.

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Appendix A: Effects on the Environment and Other Species

A strategic environmental assessment (SEA) is conducted on all SARA recovery planning documents, in accordance with the *Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals*. The purpose of a SEA is to incorporate environmental considerations into the development of public policies, plans, and program proposals to support environmentally sound decision-making and to evaluate whether the outcomes of a recovery planning document could affect any component of the environment or achievement of any of the Federal Sustainable Development Strategy's[10] goals and targets.

Recovery planning is intended to benefit species at risk and biodiversity in general. However, it is recognized that recovery measures may also inadvertently lead to environmental effects beyond the intended benefits. The planning process, which is based on national guidelines, directly incorporates consideration of all environmental effects, with a particular focus on possible impacts upon non-target species or habitats. The results of the SEA are incorporated directly into the plan itself, and are summarized below.

Overall, it is anticipated that implementation of this action plan will have a beneficial impact on non-target species, ecological processes, and the environment in Thousand Islands National Park. This plan puts into practice recovery goals presented in recovery strategies already developed for some of the species at risk in this plan, which were subject to SEAs during the development of those documents. Further, this action plan was developed to benefit all species at risk that regularly occur in Thousand Islands National Park; all of these species were considered in the planning process, any potential secondary effects were considered and mitigated, and where appropriate, measures were designed to benefit multiple species. The planning process was also guided by priorities identified in the park's ecological integrity monitoring program and the park's management plan (Parks Canada Agency, 2010b). Consequently measures outlined in this plan address key management priorities aimed at improving the broader ecological health of the park. Finally, this plan outlines stewardship measures, educational programs, and awareness initiatives that will involve park visitors, local residents, Indigenous organizations, and the general public. This will lead to greater appreciation, understanding, and action towards the conservation and recovery of species at risk in general.

[10] www.ec.gc.ca/dd-sd/default.asp?lang=En&n=F93CD795-1