

Multi-species Action Plan for Point Pelee National Park of Canada and Niagara National Historic Sites of Canada



2016

Recommended citation:

Parks Canada Agency. 2016. Multi-species Action Plan for Point Pelee National Park of Canada and Niagara National Historic Sites of Canada. *Species at Risk Act* Action Plan Series. Parks Canada Agency, Ottawa. iv + 39 pp.

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](http://sararegistry.gc.ca/default.asp?lang=En&n=24F7211B-1)¹.

Cover illustration: © Parks Canada Agency. Fort George National Historic Site of Canada photo credit: Dale Wilson.

French title:

Plan d'action visant des espèces multiples dans le parc national du Canada de la Pointe-Pelée et les lieux historiques nationaux du Canada du Niagara

© Her Majesty the Queen in Right of Canada, represented by the Minister of the Environment and Climate Change, 2016. All rights reserved.

ISBN 978-0-660-05597-8

Catalogue no. CW69-21/19-2016E-PDF

Content (excluding the illustrations) may be used without permission, with appropriate credit to the source.

¹ <http://sararegistry.gc.ca/default.asp?lang=En&n=24F7211B-1>

Recommendation and Approval Statement

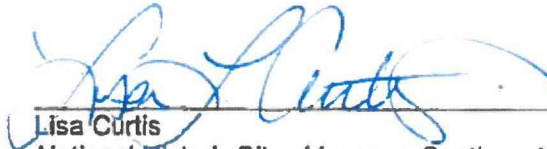
The Parks Canada Agency led the development of this federal action plan under the Species at Risk Act. The Vice-President Operations, upon recommendation of the relevant Park Superintendent, National Historic Sites Manager and Field Unit Superintendent, hereby approves this document indicating that the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

Recommended by:




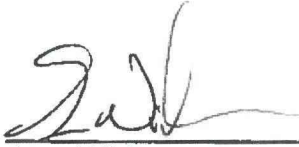
Karen Linauskas
Superintendent, Point Pelee National Park of Canada, Parks Canada Agency

Recommended by:



Lisa Curtis
National Historic Sites Manager, Southwestern Ontario Field Unit, Parks Canada Agency

Recommended by:



Jarred Picher
Field Unit Superintendent, Southwestern Ontario Field Unit, Parks Canada Agency

Approved by:



Carol Sheedy
Vice-President Operations, 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 direction 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 Point Pelee National Park (PPNP) and the Niagara National Historic Sites (NNHS) of Canada and has prepared this action plan to implement the recovery strategies as they apply to the park and the NNHS, as per section 47 of SARA. It has been prepared in cooperation with Walpole Island First Nation, Caldwell First Nation, Environment and Climate Change Canada, Fisheries and Oceans Canada 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.

Acknowledgments

Special thanks go out to all of those who contributed to the content of this plan and especially those who participated in the site analysis workshop in the fall of 2013 and contributed their time, expertise and information: Clint Jacobs, Jared Macbeth and Carl Smith Sr. (Walpole Island First Nation), Chief Louise Hillier (Caldwell First Nation).

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

Executive Summary

The *Multi-species Action Plan for Point Pelee National Park of Canada and the Niagara National Historic Sites of Canada* applies to lands and waters occurring within the boundaries of the two sites: Point Pelee National Park of Canada (PPNP) and the Niagara National Historic Sites of Canada (NNHS). The NNHS is being used as a term to collectively refer to two locations in the Niagara region that consist of three National Historic Sites: Fort George National Historic Site, Battlefield of Fort George National Historic Site, and Butler's Barracks National Historic Sites of Canada. 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 these sites. Measures described in this plan will also provide benefits for other species of conservation concern that regularly occur at PPNP and at NNHS.

Where it has been determined that the sites can conduct management activities to help recover and/or manage a species, site-specific objectives are identified in this plan and represent the site's contribution to 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 and national historic sites as well as by SARA. Additional measures that will contribute to the survival and recovery of the species at the sites are described in this plan. These measures were identified based on threats and actions outlined in federal and provincial status assessments and recovery documents, as well as knowledge of the status and needs of each species at each site. Population monitoring measures are also identified for the species for which management activities at the sites can contribute to recovery.

Critical habitat is identified for the Least Bittern and Prothonotary Warbler in this action plan. Measures used for protection of 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 PPNP or NNHS. 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 ecological integrity, greater awareness and appreciation of the value of biodiversity to Canadians, and opportunities for engagement of local communities and Indigenous groups.

Table of Contents

Preface	ii
Acknowledgments	ii
Executive Summary	iii
Table of Contents	iv
1. Context	1
1.1 Scope of the Action Plan	2
2. Site-based Population and Distribution Objectives	8
3. Conservation and Recovery Measures	8
4. Critical Habitat	10
4.1. Identification of Critical Habitat for the Least Bittern	11
4.1.1. Geographic Location	11
4.1.2. Biophysical Attributes	11
4.1.3. Examples of Activities Likely to Result in Destruction of Critical Habitat	11
4.2. Identification of Critical Habitat for the Prothonotary Warbler	12
4.2.1. Geographic Location	12
4.2.2. Suitable Habitat	13
4.2.3. Examples of Activities Likely to Result in Destruction of Critical Habitat	13
4.3. Proposed Measures to Protect Critical Habitat	14
5. Evaluation of Socio-Economic Costs and of Benefits	14
5.1. Costs	14
5.2. Benefits	14
6. Measuring Progress	15
7. References	16
Appendix A: Species information, objectives and monitoring plans for species at risk in PPNP	22
Appendix B: Species information, objectives and monitoring plans for species at risk in NNHS.	29
Appendix C: Conservation and recovery measures that will be conducted by PPNP and NNHS.	31
Appendix D: Other conservation and recovery measures that will be encouraged through partnerships or when additional resources become available.	36
Appendix E: Effects on the Environment and Other Species	39

1. Context

Point Pelee National Park (PPNP) is 15.5km² in size and is located in Essex County, Ontario, in the southern most part of Canada (Figure 1). It is a sandspit and marsh complex jutting out into Lake Erie. The park also includes Middle Island which is an 18.5 hectare island along the Canada – U.S. border that runs through Lake Erie. The park was established in 1918, primarily for its ecological significance as a stopover for migratory birds. Located at the crossroads of two major North American migratory flyways, the park provides habitat for over 380 species of birds and is recognized internationally as an Important Bird Area, attracting thousands of visitors each year.

The park protects three ecosystems - wetland, forest and coastal savannah in the Carolinian ecozone. Despite its small size, the park supports a high diversity of flora and fauna including many species at risk. Over 97% of the Essex region has been altered for agriculture, industry and urban development, emphasizing the park's ecological significance and fragility. It is isolated from other natural areas with over 46 million people living within a 450km radius of the park.

The health and viability of Caldwell First Nation and Walpole Island First Nations, their places of cultural and spiritual significance, and economic opportunities, are inextricably linked to the health of their surrounding traditional lands and waters, which include PPNP. Many shared interests exist between these First Nations and Parks Canada, including the protection of natural and cultural heritage and the desire to build appreciation of the natural and cultural resources and to share this knowledge. The development of this action plan was strengthened by the participation of representatives from both First Nations, who contributed to Parks Canada's current understanding of areas of mutual interest.

As well as being responsible for PPNP, the Field Unit Superintendent for the Southwestern Field Unit within Parks Canada is also responsible for the Niagara National Historic Sites (NNHS). The Battlefield of Fort George National Historic Site is located within a 302 acre property which was acquired by the Department of National Defence (DND) in 1908 and was used as a training facility and rifle range until the early 1980s. This is referred to as the Lakeshore Property and is located between St. Catharines and Niagara-on-the-Lake along Lake Ontario. The only portion of the property currently accessible to the public is a 41 acre parcel of land at the extreme west side of the site. A portion of the site is managed by the Regional Municipality of Niagara and contains sewage lagoons. The remainder of the site (195 acres) supports a mature Carolinian forest as well as the battlefield which are inaccessible to the public due to a remote risk of injury from unexploded ordinances. Butler's Barracks National Historic Site commemorates over 250 years of military history as Canada evolved into a nation. It consists of a few buildings, an open field (part of The Commons) and Carolinian forest (part of Oak Grove). Fort George National Historic Site is situated adjacent to Butler's Barracks National Historic Site and has similar habitat and makes up the other half of The Commons and Oak Grove.

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. In addition, the *Species at Risk Act* (SARA) prohibitions protecting individuals and residences apply automatically when a species is listed, and all critical habitat in national parks and national historic sites must be legally protected within 180 days of being identified.

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 ecological integrity at both sites by improving the conservation status of native species and their habitat and maintaining biodiversity.

A number of federal and provincial recovery strategies and plans, management plans, and action plans have been prepared for species considered in this action plan. Along with status assessments, those documents provide guidance for the recovery of individual species, including strategic directions, recovery objectives, critical habitat, and threats. This action plan was developed and will be implemented in a manner that is consistent with those recovery documents, and should be viewed as part of this body of linked strategies and plans.

1.1 Scope of the Action Plan

The geographic scope of this action plan includes all federally owned lands and waters managed by PPNP, including Middle Island (Figure 1). The scope also includes all lands and waters within the boundaries of the three National Historic Sites that make up the NNHS, and that are administered by the Parks Canada Agency as federal properties under the authority of the Federal Real Property and Federal Immovables Act (Figures 2 & 3). This multi-species action plan has been written specifically for PPNP and NNHS 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 sites.

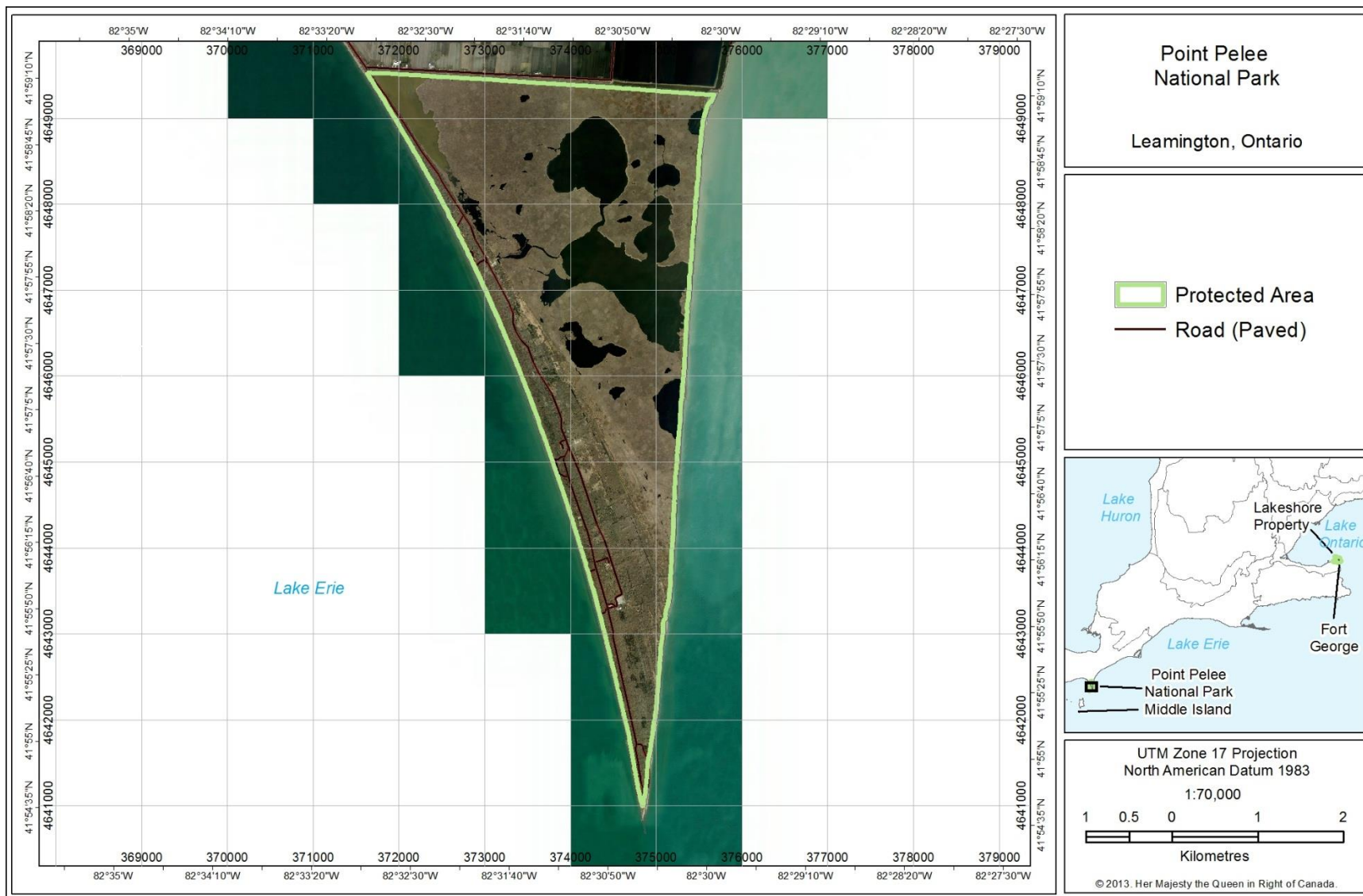


Figure 1. Mainland of Point Pelee National Park.

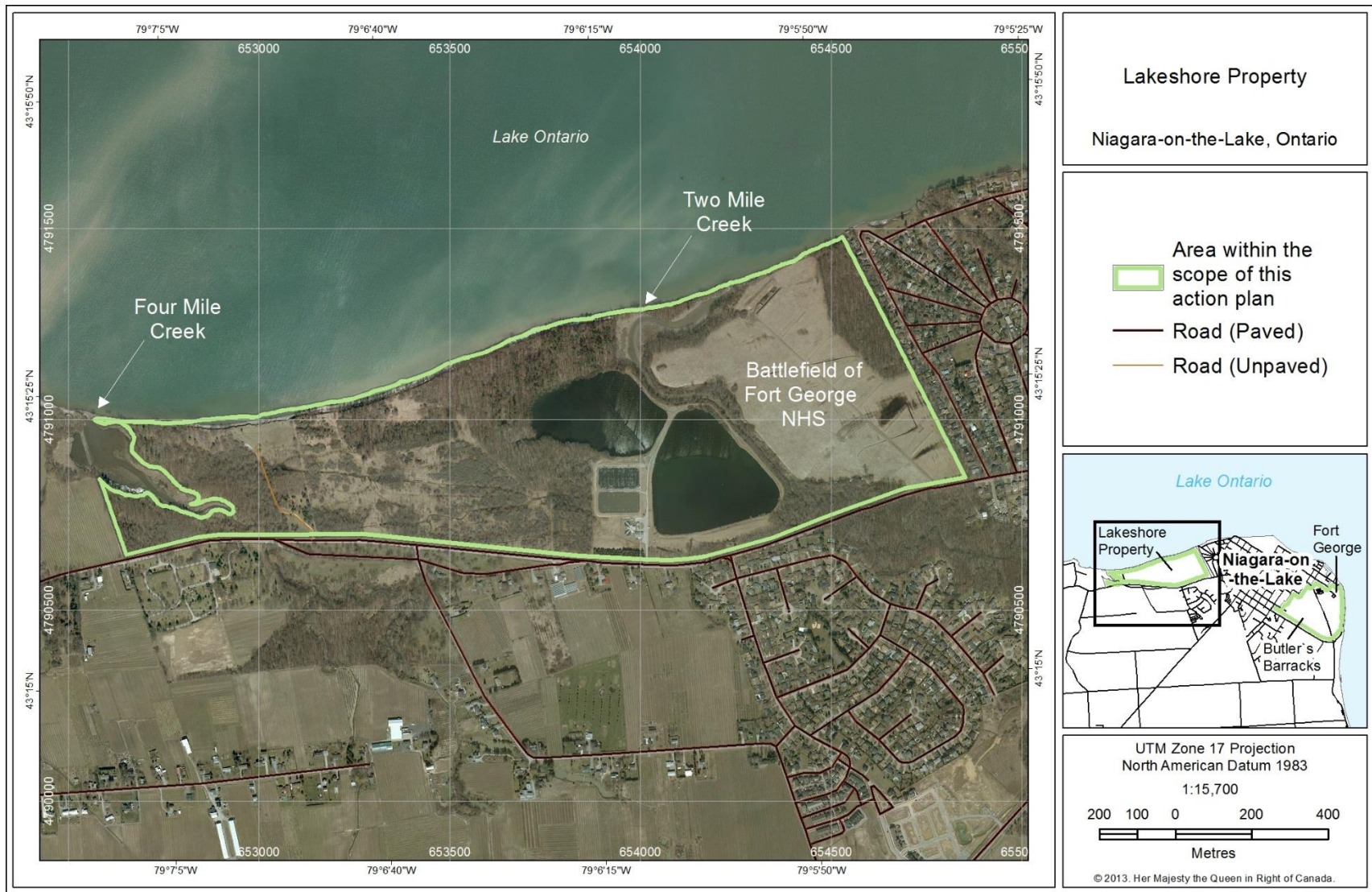


Figure 2. The Lakeshore Property included in the scope of this action plan that includes the Battlefield of Fort George National Historic Site.



Figure 3. Fort George National Historic Site and Butler's Barracks National Historic sites included in the scope of this action plan.

This action plan addresses SARA-listed species that regularly occur in PPNP and NNHS which require an action plan under SARA (s.47), as well as other species of conservation concern (Tables 1 and 2). 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 included in the action plan for PPNP.

Species	Scientific Name	COSEWIC Status	SARA Schedule 1 Status
Acadian Flycatcher	<i>Empidonax vireescens</i>	Endangered	Endangered
American Water-willow	<i>Justicia americana</i>	Threatened	Threatened
Blanding's Turtle (Great Lakes/St. Lawrence population)	<i>Emydoidea blandingii</i>	Threatened	Threatened
Butternut	<i>Juglans cinerea</i>	Endangered	Endangered
Canada Warbler	<i>Cardellina canadensis</i>	Threatened	Threatened
Channel Darter	<i>Percina copelandi</i>	Threatened	Threatened
Chimney Swift	<i>Chaetura pelagica</i>	Threatened	Threatened
Common Hoptree	<i>Ptelea trifoliata</i>	Threatened	Threatened
Dwarf Hackberry	<i>Celtis tenuifolia</i>	Threatened	Threatened
Eastern Foxsnake (Carolinian population)	<i>Pantherophis gloydi</i>	Endangered	Endangered
Eastern Musk Turtle	<i>Sternotherus odoratus</i>	Special Concern	Threatened
Eastern Pondmussel	<i>Ligumia nasuta</i>	Endangered	Endangered
Eastern Prickly Pear Cactus	<i>Opuntia humifusa</i>	Endangered	Endangered
Eastern Whip-poor-will	<i>Antrostomus vociferus</i>	Threatened	Threatened
Five-lined Skink	<i>Plestiodon fasciatus</i>	Endangered	Endangered
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	Threatened	Threatened
Henslow's Sparrow	<i>Ammodramus henslowii</i>	Endangered	Endangered
Hooded Warbler	<i>Setophaga citrina</i>	Not at Risk	Threatened
Kentucky Coffee-tree	<i>Gymnocladus dioicus</i>	Threatened	Threatened
King Rail	<i>Rallus elegans</i>	Endangered	Endangered
Kirtland's Warbler	<i>Setophaga kirtlandii</i>	Endangered	Endangered
Lake Chubsucker	<i>Erimyzon sucetta</i>	Endangered	Endangered
Lake Erie Watersnake	<i>Nerodia sipedon insularum</i>	Special Concern	Endangered
Least Bittern	<i>Ixobrychus exilis</i>	Threatened	Threatened
Little Brown Myotis	<i>Myotis lucifugus</i>	Endangered	Endangered
Loggerhead Shrike (<i>migrans</i> subspecies)	<i>Lanius ludovicianus migrans</i>	Threatened	Threatened
Northern Myotis	<i>Myotis septentrionalis</i>	Endangered	Endangered
Olive-sided Flycatcher	<i>Contopus cooperi</i>	Threatened	Threatened
Piping Plover, circumcinctus subspecies	<i>Charadrius melodus circumcinctus</i>	Endangered	Endangered
Prothonotary Warbler	<i>Protonotaria citrea</i>	Endangered	Endangered
Red Knot (<i>rufa</i> subspecies)	<i>Calidris canutus rufa</i>	Endangered	Endangered
Red Mulberry	<i>Morus rubra</i>	Endangered	Endangered

Species	Scientific Name	COSEWIC Status	SARA Schedule 1 Status
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	Threatened	Threatened
Spiny Softshell	<i>Apalone spinifera</i>	Threatened	Threatened
Spoon-leaved Moss	<i>Bryoandersonia illecebra</i>	Endangered	Endangered
Spotted Gar	<i>Lepisosteus oculatus</i>	Threatened	Threatened
Spotted Turtle ³	<i>Clemmys guttata</i>	Endangered	Endangered
Tri-colored Bat	<i>Perimyotis subflavus</i>	Endangered	Endangered
Wild Hyacinth	<i>Camassia scilloides</i>	Threatened	Threatened
Blue Ash	<i>Fraxinus quadrangulata</i>	Special Concern	Special Concern
Cerulean Warbler	<i>Setophaga cerulea</i>	Endangered	Special Concern
Climbing Prairie Rose	<i>Rosa setigera</i>	Special Concern	Special Concern
Eastern Mole	<i>Scalopus aquaticus</i>	Special Concern	Special Concern
Grass Pickerel	<i>Esox americanus vermiculatus</i>	Special Concern	Special Concern
Louisiana Waterthrush	<i>Parkesia motacilla</i>	Special Concern	Special Concern
Monarch	<i>Danaus plexippus</i>	Special Concern	Special Concern
Northern Map Turtle	<i>Graptemys geographica</i>	Special Concern	Special Concern
Peregrine Falcon (<i>anatum/tundrius</i>)	<i>Falco peregrinus anatum/tundrius</i>	Special Concern	Special Concern
Rusty Blackbird	<i>Euphagus carolinus</i>	Special Concern	Special Concern
Short-eared Owl	<i>Asio flammeus</i>	Special Concern	Special Concern
Snapping Turtle	<i>Chelydra serpentina</i>	Special Concern	Special Concern
Swamp Rose-mallow	<i>Hibiscus moscheutos</i>	Special Concern	Special Concern
Warmouth	<i>Lepomis gulosus</i>	Endangered	Special Concern
Yellow-breasted Chat <i>virens</i> subspecies	<i>Icteria virens virens</i>	Endangered	Special Concern
Barn Swallow	<i>Hirundo rustica</i>	Threatened	Not listed
Bobolink	<i>Dolichonyx oryzivorus</i>	Threatened	Not listed
Broad-banded Forestsnail	<i>Allogona profunda</i>	Endangered	Not listed
Buff-breasted Sandpiper	<i>Tryngites subruficollis</i>	Special Concern	Not listed
Clustered Sedge	<i>Carex cumulata</i>	Not assessed	Not listed
Eastern Meadowlark	<i>Sturnella magna</i>	Threatened	Not listed
Eastern Wood-pewee	<i>Contopus virens</i>	Special Concern	Not listed
Horned Grebe	<i>Podiceps auritus</i>	Special Concern	Not listed
Wood Thrush	<i>Hylocichla mustelina</i>	Threatened	Not listed

Table 2. Species included in the action plan for the NNHS.

Species	Scientific Name	COSEWIC Status	SARA Schedule 1 Status
Butternut	<i>Juglans cinerea</i>	Endangered	Endangered
Chimney Swift	<i>Chaetura pelagica</i>	Threatened	Threatened
Eastern Flowering Dogwood	<i>Cornus florida</i>	Endangered	Endangered
Hooded Warbler	<i>Setophaga citrina</i>	Not at Risk	Threatened
White Wood Aster	<i>Eurybia divaricata</i>	Threatened	Threatened

³ Species extirpated from the site(s) are only included in this plan if reintroduction is being considered as a recovery measure for the species.

Species	Scientific Name	COSEWIC Status	SARA Schedule 1 Status
Eastern Milksnake	<i>Lampropeltis triangulum</i>	Special Concern	Special Concern
Monarch	<i>Danaus plexippus</i>	Special Concern	Special Concern
Snapping Turtle	<i>Chelydra serpentina</i>	Special Concern	Special Concern
Bank Swallow	<i>Riparia riparia</i>	Threatened	Not Listed
Barn Swallow	<i>Hirundo rustica</i>	Threatened	Not Listed
Bobolink	<i>Dolichonyx oryzivorus</i>	Threatened	Not Listed
Shumard Oak	<i>Quercus shumardii</i>	Special Concern	Not Listed

2. Site-based Population and Distribution Objectives

The potential for PCA to undertake management actions at the sites that will contribute to the recovery of each species was assessed. Site-specific population and distribution objectives were developed (Appendices A & B) to identify the contribution that the site can make towards achieving the national objectives presented in federal recovery strategies and management plans. Because they are directly linked to the site-based population and distribution objectives, monitoring activities are reported in Appendices A and B rather than in the tables of recovery measures (Appendices C & D). If there is little opportunity for the sites 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, population monitoring, habitat maintenance and restoration through the existing management regimes at the sites. For many species, population and distribution objectives for PPNP or NNHS 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, alterations to the Lake Erie shoreline, loss of overwintering habitat elsewhere); 2) species is only transient; 3) population within the site is a very small part of the Canadian distribution or is unknown or unconfirmed.

3. Conservation and Recovery Measures

With so many rare, threatened and endangered species in these sites, the challenges can seem overwhelming. The park is one of the only remaining natural habitats in the region and it is completely isolated from other natural areas due to agriculture and urban sprawl. The marsh, one of the largest protected marshes in the Great Lakes, has been cut off from the flow of historic streams. Ecological impacts of past settlement and recreation activities include the introduction of numerous invasive alien plant species and feral animals, increased effects of hyper-abundant species, altered hydrological and fire regimes, the extirpation of several species, and the introduction of contaminants such as DDT. However, since the early 1970s, PPNP has worked with partners and volunteers to improve the ecological health of the park, and increase opportunities to support the recovery of many of these species. The broad visitor base of the park provides opportunities to engage and connect with visitors and get them involved in species recovery; to draw upon citizen science, volunteers and partnerships. Academic interest in the park has meant a consistent source of research and studies which support better management and restoration efforts. Visitor facilities have been

redesigned and continuously improved to provide meaningful experiences while protecting park habitats and species.

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 (Appendix C) and which measures will be encouraged through partnerships or when additional resources come available (Appendix D) involved a prioritization process. The process primarily considered ecological effectiveness of measures, and also included consideration of opportunities to increase the value of the visitor experience at 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.

Five themes emerge from these measures; habitat restoration, active management, invasive species management, filling knowledge gaps and working together.

Habitat Restoration

Point Pelee National Park is targeting for restoration the two habitats that are most at risk and together house almost half of all the park's species at risk – the Lake Erie Sand Spit Savannah (LESSS) and the freshwater marsh. The park will continue habitat improvements for the species at risk which depend on savannah habitats through clearing of invasive thickets, removal of invasive species, using prescribed fire and planting native species. Already these efforts are improving the fortunes of sun-loving plants such as Eastern Prickly Pear Cactus and open-habitat birds such as Henslow's Sparrow. A Marsh restoration plan will address major threats to marsh habitat including declining water quality and invasive species. Through mitigating these threats, PPNP expects to ensure the persistence of many marsh species at risk.

Active Management

While habitat restoration is important for many species at risk at Point Pelee, there continue to be individual needs for certain species. Active management measures will include creating nesting and hibernation habitat for Eastern Foxsnakes, installing nest boxes for Prothonotary Warblers, protecting known turtle nesting sites and exploring the possibility of reintroducing endangered turtles. Bobolink awareness signage and education will encourage stewardship and awareness to protect the species at NNHS while similar protection programs will ensure that Piping Plover could safely nest at PPNP.

Invasive Species Management

Currently, the park manages hyperabundant White-tailed Deer (*Odocoileus virginianus*) on PPNP's mainland, and Double-crested Cormorants (*Phalacrocorax auritus*) on Middle Island due to the threat posed to species at risk and the park's overall ecological integrity. Management since 2009 on Middle Island has resulted in a significant reduction in the loss of healthy forest canopy and an increase in the populations of

species at risk such as Kentucky Coffee-tree, Common Hoptree and Wild Hyacinth. Without historic predators such as wolves, cougars and bears, management of White-tailed Deer will need to continue to protect the park's vegetation communities. Developing and implementing an Invasive Species Management Plan will allow PPNP to target priority species which threaten species at risk and their habitats. Specific programs will combat invasive alien plant species such as Purple Loosestrife (*Lythrum salicaria*) in PPNP's marsh and Garlic Mustard (*Alliaria petiolata*) at NNHS. Species at risk trees such as Red Mulberry and Butternut are at the brink of extirpation due to hybridization with exotic plantings, which will be removed at both PPNP and NNHS.

Filling Knowledge Gaps

Research and monitoring is needed to fill gaps in the knowledge base necessary to build programs for some species at risk. Many of these measures will require partnerships and/or additional funding and will benefit from the opportunity to work with the academic community and citizen scientist programs. The anthracnose fungus may be threatening Eastern Flowering Dogwood at NNHS, and a study will assess if mitigations are needed to protect it in the future. At PPNP, a study will be sought to evaluate the threat of invasive plant species to Clustered Sedge on Middle Island, which is the only location in which it is found in Canada. Studies to learn more about the population, habitat or threats to bats, Spoon-leaved Moss, and Eastern Pondmussel are also planned.

Working Together

Visitor experience and outreach opportunities are key to the success of this multi-species action plan. While PPNP can increase habitat for Monarch butterflies, the park is only one small stop for this migrating species. Through the education program -- a live exhibit and interpretive hikes -- the park can contribute to global Monarch conservation by building awareness and encouraging stewardship through planting nectar sources and milkweed. Furthermore, LESSS restoration relies on community engagement for success. Through a partnership with local high schools, students collect native seeds from the park, propagate them in their greenhouses and then return to plant seedlings in restoration sites. Over 66,000 plugs have been planted, with the hope that this program will help sustain LESSS sites well into the future. Finally, the actions to support the recovery of the Bobolink at the NNHS are exclusively through education and engagement -- developing exhibits to inform the public and engaging them in citizen science through the development of a breeding bird monitoring program.

4. 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 PPNP for the Least Bittern and Prothonotary Warbler. Critical habitat has already been identified in PPNP in recovery strategies for many species and in NNHS for the Eastern Flowering Dogwood 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.

4.1. Identification of Critical Habitat for the Least Bittern

4.1.1. Geographic Location

An area in and around Girardin Pond is identified as critical habitat for the Least Bittern. It has been identified using the methodology outlined in the recovery strategy and includes all suitable habitat within 500m of two breeding records from 2005.

4.1.2. Biophysical Attributes

The biophysical attributes of critical habitat for the Least Bittern in PPNP are consistent with the critical habitat identified in the recovery strategy.

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.

4.1.3. 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:

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)	<ul style="list-style-type: none"> • 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
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)	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Habitat alteration (e.g., increased turbidity or changes in prey availability reduces foraging success);

	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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)	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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 infrastructure that is not critical habitat but whose footprint 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).

4.2. Identification of Critical Habitat for the Prothonotary Warbler

4.2.1. Geographic Location

One area of swamp forest in PPNP is identified as critical habitat for the Prothonotary Warbler. It has been identified using the methodology outlined in the recovery strategy and meets the occupancy criteria based on evidence of breeding in 2011 and 2012.

The critical habitat consists of suitable habitat within 300m of the confirmed nesting record from 2012.

4.2.2. Suitable Habitat

The suitable habitat for the Prothonotary Warbler in PPNP is consistent with the suitable habitat identified in the recovery strategy.

Suitable habitat for the Prothonotary Warbler is identified using the Ecological Land Classification (ELC) framework for Ontario (from Lee et al. 1998) and includes the following ELC ecosite designations:

- Fresh-Moist Sugar Maple Deciduous Forest (FOD6)
- Fresh-Moist Lowland Deciduous Forest (FOD7)
- Oak Mineral Deciduous Swamp (SWD1)
- Ash Mineral Deciduous Swamp (SWD2)
- Maple Mineral Deciduous Swamp (SWD3)
- Mineral Deciduous Swamp (SWD4)
- Ash Organic Deciduous Swamp (SWD5)
- Maple Organic Deciduous Swamp (SWD6)
- Birch-Poplar Organic Deciduous Swamp (SWD7)
- Mineral Thicket Swamp: Willow (SWT2-2) and Buttonbush (SWT2-4) vegetation types
- Organic Thicket Swamp: Willow (SWT3-2) and Buttonbush (SWT3-4) vegetation types

Critical habitat excludes existing human-made structures (except for nest boxes), or cultural communities (anthropogenic influenced land designations as described in Lee et al. 1998 or subsequent ELC catalogues).

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

The examples of activities likely to result in destruction of Prothonotary Warbler critical habitat are consistent with the examples in the recovery strategy.

Activities that are likely to result in the destruction of Prothonotary Warbler critical habitat and its attributes are those which cause radical or lasting alterations to normal hydrological regimes (e.g. wetland drainage, construction of dams, infilling of swampy lowlands and associated marshes) or any reduction in the total canopy closure. Such activities include, but may not be limited to:

- high-grading forestry practices that selectively remove all of the largest diameter trees;
- construction of new infrastructure (buildings, roads, trails, footpaths etc.);
- upgrades and/or maintenance of existing infrastructure;
- deliberate introduction of non-indigenous, invasive species in the critical habitat; and
- firewood harvest, unless it is done as part of a prescribed management plan that considers Prothonotary Warbler habitat/nesting requirements.

4.3. Proposed Measures to Protect Critical Habitat

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

5. Evaluation of Socio-Economic Costs and of Benefits

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*”.

5.1. Costs

The total cost to implement this 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 Appendices C and D. No major socio-economic costs to partners, stakeholders or Indigenous groups are expected as a result of this action plan. Additional resources or partnerships will be sought to support the measures outlined in Appendix D.

Many of the proposed measures will be integrated into the operational management of the sites 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.

The action plan applies only to lands and waters in PPNP and NNHS, and does not bring any restrictions to land use outside the sites. As such, this action plan will place no 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.

5.2. Benefits

Measures presented in this action plan for PPNP and NNHS will contribute to meeting recovery strategy objectives for threatened and endangered species, and will also contribute to meeting management objectives for species of special concern. These measures are expected to have an overall positive impact on ecological integrity and enhance opportunities for appreciation of the sites 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.

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).

Potential economic benefits of the recovery of the species at risk found in these sites 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 positive benefits for park visitors, local residents, and Indigenous groups. Some activities in the plan may create opportunities for local residents to become involved in the recovery of species at risk and for cooperation and community partnerships in SAR recovery. Benefits should be relatively evenly distributed across individuals in local communities, and opportunities for involvement will be available to all local residents. These include opportunities to learn about and take part in the recovery of culturally important species at risk, opportunities for visitors and local communities to be involved in conservation issues, opportunities for integration of Indigenous Traditional Knowledge into conservation issues in PPNP, and greater awareness of Indigenous values and culture among local residents and visitors to the parks. In doing so the plan 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*".

6. Measuring Progress

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

7. References

- Beauchamp, J., A.L. Boyko, S. Dunn, D. Hardy, P.L. Jarvis, and S.K. Staton. 2012. Management plan for the Grass Pickerel (*Esox americanus vermiculatus*) in Canada. *Species at Risk Act* Management Plan Series. Fisheries and Oceans Canada, Ottawa. vii + 47 pp.
- DFO. 2011. Recovery Potential Assessment of Lake Chubsucker (*Erimyzon sucetta*) in Canada. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2011/033.
- DFO. 2013. Recovery Strategy for the Channel Darter (*Percina copelandi*) in Canada. *Species at Risk Act* Recovery Strategy Series. Fisheries and Oceans Canada, Ottawa. Viii + 82 pp.
- Donley, R.N., J. Jalava, and J. van Overbeeke. 2013. Management Plan for the Shumard Oak (*Quercus shumardii*) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. v + 59 pp.
- Doubt, J. 2005. Recovery Strategy for the Spoon-leaved Moss (*Bryoandersonia illecebra*) in Canada. v + 30 pp.
- Dougan & Associates, V. L. McKay, B. C. Hutchinson and P. Nantel. 2010. Recovery Strategy for the Eastern Prickly Pear Cactus (*Opuntia humifusa*) in Canada. *Species at Risk Act* Recovery Strategy Series. Parks Canada Agency, Ottawa. viii +19 pp.
- Edwards, A.L. and S.K. Staton. 2009. Management plan for the Blackstripe Topminnow, Pugnose Minnow, Spotted Sucker and Warmouth in Canada. *Species at Risk Act* Management Plan Series. Fisheries and Oceans Canada, Ottawa. viii + 43 pp.
- Environment Canada. 2006. Recovery Strategy for the Kirtland's Warbler (*Dendroica kirtlandii*) in Canada. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. vi + 23 pp.
- Environment Canada. 2007. Addendum to the Final Recovery Strategy for the Piping Plover (*Charadrius melodus circumcinctus*) in Canada. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. 12 pp.
- Environment Canada. 2010. Amended Recovery Strategy for the Henslow's Sparrow (*Ammodramus henslowii*) in Canada. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. Vi + 23 pp.
- Environment Canada. 2010. Recovery Strategy for the Butternut (*Juglans cinerea*) in Canada. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. vii + 24 pp.

Environment Canada. 2011. Management Plan for the Cerulean Warbler (*Dendroica cerulea*) in Canada. *Species at Risk Act* Management Plan Series. Environment Canada, Ottawa. iii + 19 pp.

Environment Canada. 2011. Recovery Strategy for the Prothonotary Warbler (*Protonotaria citrea*) in Canada. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. v + 26 pp.

Environment Canada. 2011. Management Plan for the Yellow-breasted Chat *virens* subspecies (*Icteria virens virens*) in Canada. *Species at Risk Act* Management Plan Series. Environment Canada, Ottawa. iii + 18 pp.

Environment Canada. 2012. Management Plan for the Louisiana Waterthrush (*Seiurus motacilla*) in Canada. *Species at Risk Act* Management Plan Series. Environment Canada, Ottawa. iii + 18 pp.

Environment Canada. 2012. Recovery strategy for the Acadian Flycatcher (*Empidonax virens*) and the Hooded Warbler (*Wilsonia citrina*) in Canada. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa, Ontario. viii + 32 pp.

Environment Canada. 2012. Recovery Strategy for the King Rail (*Rallus elegans*) in Canada. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. vi + 21 pp.

Environment Canada. 2013. Management Plan for the Swamp Rose-mallow (*Hibiscus moscheutos*) in Canada. *Species at Risk Act* Management Plan Series. Environment Canada, Ottawa. iv + 18 pp.

Environment Canada. 2014. Management Plan for the Climbing Prairie Rose (*Rosa setigera*) in Canada. *Species at Risk Act* Management Plan Series. Environment Canada, Ottawa. iii + 16 pp.

Environment Canada. 2014. Management Plan for the Monarch (*Danaus plexippus*) in Canada [Proposed]. *Species at Risk Act* Management Plan Series. Environment Canada, Ottawa. iv + 39 pp.

Environment Canada. 2014. Management Plan for the Snapping Turtle (*Chelydra serpentina*) in Canada [Draft]. *Species at Risk Act* Management Plan Series. Environment Canada, Ottawa. iii + 20 pp.

Environment Canada. 2015. Management Plan for the Milksnake (*Lampropeltis triangulum*) in Canada. *Species at Risk Act* Management Plan Series. Environment Canada, Ottawa. iii + 27 pp.

Environment Canada. 2015. Management Plan for the Rusty Blackbird (*Euphagus carolinus*) in Canada. *Species at Risk Act* Management Plan Series. Environment Canada, Ottawa. iv + 26 pp.

Environment Canada. 2014. Recovery Strategy for the Eastern Flowering Dogwood (*Cornus florida*) in Canada. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. 16 pp. + Appendices.

Environment Canada. 2014. Recovery Strategy for the Five-lined Skink (*Plestiodon fasciatus*) – Carolinian Population in Canada [Proposed]. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. 27 pp. + Appendices.

Environment Canada. 2014. Recovery Strategy for the Golden-winged Warbler (*Vermivora chrysoptera*) in Canada [Proposed]. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. vi + 57 pp.

Environment Canada. 2014. Recovery Strategy for the Kentucky Coffee-tree (*Gymnocladus dioica*) in Canada. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. vi + 36 pp.

Environment Canada. 2014. Recovery Strategy for the Least Bittern (*Ixobrychus exilis*) in Canada. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. vi + 41 pp.

Environment Canada. 2014. Recovery Strategy for the Olive-sided Flycatcher (*Contopus cooperi*) in Canada. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. vii + 52 pp.

Environment Canada. 2015. Management Plan for the Peregrine Falcon *anatum/tundrius* (*Falco peregrinus anatum/tundrius*) in Canada [Proposed]. *Species at Risk Act* Management Plan Series. Environment Canada, Ottawa iv + 27 pp.

Environment Canada. 2015. Management Plan for the Eastern Mole (*Scalopus aquaticus*) in Canada. *Species at Risk Act* Management Plan Series. Environment Canada, Ottawa. iii + 18 pp.

Environment Canada. 2015. Management Plan for the Northern Map Turtle (*Graptemys geographica*) in Canada [Draft]. *Species at Risk Act* Management Plan Series. Environment Canada, Ottawa. iv + 26 pp.

Environment Canada. 2015. Recovery Strategy for the Blanding's Turtle – Great Lakes/St. Lawrence Population (*Emydoidea blandingii*) in Canada [Draft]. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. iv + 32 pp.

Environment Canada. 2015. Recovery Strategy for the Eastern Foxsnake (*Pantherophis gloydi*) Carolinian and Great Lakes/St. Lawrence populations in Canada [Draft]. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. Xx pp. + Appendix.

Environment Canada. 2015. Recovery Strategy for the Eastern Musk Turtle (*Sternotherus odoratus*) in Canada (Draft). *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. iv + 32 pp.

Environment Canada. 2015. Recovery Strategy for the Eastern Whip-poor-will (*Antrostomus vociferus*) in Canada [Proposed]. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. v+ 59 pp.

Environment Canada. 2015. Recovery Strategy for the Lake Erie Watersnake (*Nerodia sipedon insularum*) in Canada [Draft]. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. XX p. + Appendix.

Environment Canada. 2015. Recovery Strategy for the Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), and Tri-colored Bat (*Perimyotis subflavus*) in Canada [Proposed]. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. ix + 110 pp.

Environment Canada. 2015. Recovery Strategy for the Loggerhead Shrike, *migrans* subspecies (*Lanius ludovicianus migrans*), in Canada. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. Vii + 35 pp.

Environment Canada. 2015. Recovery Strategy for the Spiny Softshell (*Apalone spinifera*) in Canada (Draft). *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. iv + 32 pp.

Environment Canada. 2015. Recovery Strategy for the Spotted Turtle (*Clemmys guttata*) in Canada [Draft]. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. xx + XX pp.

Environment Canada. 2015. Recovery Strategy for the Wild Hyacinth (*Camassia scilloides*) in Canada [Proposed]. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. 21 pp. + Annexes.

Environment Canada. 2016. Management Plan for Blue Ash (*Fraxinus quadrangulata*) in Canada). *Species at Risk Act* Management Plan Series. Environment Canada, Ottawa. iv + 25 pp.

Environment Canada. 2016. Recovery Strategy for the Canada Warbler (*Cardellina canadensis*) in Canada. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. vii + 56 pp.

Environment Canada. 2016. Recovery Strategy for the Common Nighthawk (*Chordeiles minor*) in Canada. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. vii + 49 pp.

Fisheries and Oceans Canada. 2013. Recovery strategy and action plan for the Eastern Pondmussel (*Ligumia nasuta*) in Canada [Draft]. *Species at Risk Act* Recovery Strategy Series. Fisheries and Oceans Canada, Ottawa. vi + 54 pp.

Heagy, A., D. Badzinski, D. Bradley, M. Falconer, J. McCracken, R.A. Reid and K. Richardson. 2014. Recovery Strategy for the Barn Swallow (*Hirundo rustica*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. vii + 64 pp.

Jalava, J.V., P.L. Wilson and R.A. Jones. 2008. COSEWIC-designated Plant Species at Risk Inventory, Point Pelee National Park, including Sturgeon Creek Administrative Centre and Middle Island, 2007, Volume 1: Summary Report & Volume 2: Managed Area Element Status Assessments. Prepared for Parks Canada Agency, Point Pelee National Park, Leamington, Ontario. Vol. 1 vii + 126 pp., Vol. 2 ii + 103 pp.

Kirk, D. A. 2014. Management Plan for the Horned Grebe (*Podiceps auritus*) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. viii + 32pp.

Lee, H.T., D. Leadbeater, P. Uhlig and K. Ursic. 1998. Ecological land classification for southern Ontario: training Manual. Ontario Ministry of Natural Resources, Science and Information Resources Division, Science and Information Branch, Southcentral Science and Information Section, SCSIS Training Manual TM-01

McCracken, J.D., R.A. Reid, R.B. Renfrew, B. Frei, J.V. Jalava, A. Cowie, and A.R. Couturier. 2013. Recovery Strategy for the Bobolink (*Dolichonyx oryzivorus*) and Eastern Meadowlark (*Sturnella magna*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. viii + 88 pp.

Parks Canada Agency. 2010. Point Pelee National Park Management Plan. Parks Canada Agency. Ottawa. xiv + 81 pp.

Parks Canada Agency. 2011. Recovery Strategy for the American Water-willow (*Justicia americana*) in Canada. *Species at Risk Act* Recovery Strategy Series, Parks Canada Agency, Ottawa. vi + 36 pp.

Parks Canada Agency. 2011. Recovery Strategy for Dwarf Hackberry (*Celtis tenuifolia*) in Canada. *Species at Risk Act* Recovery Strategy Series. Parks Canada Agency. Ottawa. vi + 43 pp.

Parks Canada Agency. 2011. Recovery Strategy for the Red Mulberry (*Morus rubra*) in Canada. *Species at Risk Act* Recovery Strategy Series. Parks Canada Agency. Ottawa, Ontario. vi + 47 pp.

Parks Canada Agency. 2012. Recovery Strategy for the Common Hoptree (*Ptelea trifoliata*) in Canada. *Species at Risk Act* Recovery Strategy Series. Parks Canada Agency. Ottawa. vi + 61pp.

Parks Canada Agency. 2015. Operational Review of the Ecological Integrity Monitoring Program of Pointe-Pelee National Park. Monitoring and Ecological Information Division. Natural Resource Conservation. Parks Canada Agency. Gatineau, QC. 70 pp.

Staton, S.K., A.L. Boyko, S.E. Dunn, and M. Burrige. 2012. Recovery strategy for the Spotted Gar (*Lepisosteus oculatus*) in Canada. *Species at Risk Act* Recovery Strategy Series. Fisheries and Oceans Canada, Ottawa. vii + 57 p.

Staton, S.K., K.L. Vlasman, and A.L. Edwards. 2010. Recovery Strategy for the Lake Chubsucker (*Erimyzon sucetta*) in Canada. *Species at Risk Act* Recovery Strategy Series, Fisheries and Oceans Canada, Ottawa. vi + 49 pp.

Appendix A: Species information, objectives and monitoring plans for species at risk in PPNP.

Species	National objectives ⁴	Site-based Population & distribution objectives	Population Trend in PPNP ⁵	Population monitoring ⁶	General information and broad park approach
American Water-willow	Maintain (and if possible increase) the current number of individuals within existing populations, the number of locations (10) and prevent a decline in the quality of habitat.	Maintain occupancy in the park.	Unknown.	Survey every 5 years and record incidental observations.	This species has a naturally fluctuating population in the park. The park approach will be to manage the only known threat to the species in the park – <i>Phragmites</i> encroachment.
Blanding's Turtle – Great Lakes - St. Lawrence Population	Long term: increase abundance and maintain, and if possible increase, the area of occupancy. Medium term: maintain the presence of known local populations.	Maintain occupancy in the park.	Unknown.	Survey every 5 years and record incidental observations.	PPNP is a small portion of the range of Blanding's Turtle in Ontario. The park approach focuses on protecting nests and restoring habitat.
Blue Ash	Maintain current distribution and abundance.	Maintain occupancy on Middle Island and on the mainland.	Appears to be stable.	Determine the abundance of saplings and mature trees every 5 years.	On-going active management on Middle Island is successfully mitigating impacts from hyper-abundant nesting Double-crested Cormorants.
Bobolink	Provincial objective: maintain stable, self-sustaining populations of Bobolinks in Ontario.	Increase savannah habitat by 10 ha.	Savannah habitat has increased over the last 5 years due to restoration efforts.	Determine amount of savannah habitat using air photos.	Bobolink does not currently nest in PPNP but is seen regularly in the park. Savannah restoration efforts within the park contribute to improved habitat conditions for the species.

⁴ National objectives as per most recent versions of relevant recovery documents found in References section.

⁵ Population trend is from 2009-2014.

⁶ Where population and distribution objectives have been established for PPNP, monitoring is designed to directly measure success in achieving those goals.

Species	National objectives ⁴	Site-based Population & distribution objectives	Population Trend in PPNP ⁵	Population monitoring ⁶	General information and broad park approach
Climbing Prairie Rose	Maintain extant populations at their current abundance and distribution and better document abundance and distribution.	Establish occupancy in the park.	Extirpated from the park.	Survey annually to determine occupancy.	Was extirpated from the park around 1991. Reintroductions from wild populations near the park are possible.
Clustered Sedge	N/A	Maintain occupancy at a minimum of 3 locations on Middle Island.	Stable.	Survey known locations and look for new locations in suitable habitat on Middle Island every 5 years.	Only place it occurs in Canada is on Middle Island. On-going active management on Middle Island is successfully mitigating impacts from hyper-abundant nesting Double-crested Cormorants.
Common Hoptree	Maintain populations in seven core areas: including Middle Island and PPNP. Ensure that the number of mature individuals does not decline below 1000.	Maintain a population of at least 1000 individuals in PPNP.	Both populations are stable.	Determine the abundance of saplings and mature trees every 5 years.	Common Hoptree is abundant and stable (>20,000) in both the mainland Park and Middle Island. The main threats are being addressed on the mainland and Middle Island.
Dwarf Hackberry	Halt the decline in the species' population size at Point Pelee National Park.	To reverse population decline documented in most recent survey (Jalava et al. 2008).	Declining based on latest survey in b 2008.	Survey every 5 years and record incidental observations.	The PPNP population was only Canadian population showing decline in 2008 (Jalava et al. 2008). Recent savannah restoration efforts may have reversed this decline.
Eastern Foxsnake - Carolinian Population	Maintain the current abundance, area of occupancy and, where feasible, increase habitat connectivity within local populations.	Maintain occupancy on the mainland	Unknown.	Record incidental observations and mark-recapture those individuals caught.	Despite several studies a population estimate is still unclear as the foxsnake is a very cryptic species.
Eastern Meadow lark	Provincial objective is to maintain stable, self-sustaining populations of meadow larks in Ontario.	Increase savannah habitat by 10 ha.	Savannah habitat has increased over the last 5 years due to restoration efforts.	Determine amount of savannah habitat using air photos.	Meadow larks do not currently nest in PPNP so only a habitat goal can be chosen.

Species	National objectives ⁴	Site-based Population & distribution objectives	Population Trend in PPNP ⁵	Population monitoring ⁶	General information and broad park approach
Eastern Musk Turtle	Maintain, and if feasible, increase the area of occupancy and abundance.	Maintain occupancy in the park.	Unknown.	Survey every 5 years and record incidental observations.	PPNP is a small portion of the range of the musk turtle in Ontario. The park approach focuses on protecting nests and restoring habitat.
Eastern Prickly Pear Cactus	Maintain the current number of microsites (345) of the Eastern Prickly Pear Cactus in Point Pelee National Park over the next five years, and increase the total number of microsites by 5% over the next 10 years.	Maintain the current population (#of microsites and cladodes) at Point Pelee.	Unknown.	Number of cladodes and microsites will be counted in 32 plots every 5 years.	PPNP is one of only two sites in Canada. PPNP has the significant population. Savannah restoration continues to address the major threat of natural succession.
Eastern Whip-poor-will	Short-term: Slow the decline and maintain the area of occupancy;	Maintain occupancy in the park.	Unknown.	Report on presence through incidental observations.	Not much is known for this species in the park. It has nested at PPNP and is a regular migrant. Will benefit from ongoing savannah restoration.
Eastern Wood-Pewee	N/A	Maintain occupancy in the park.	Stable.	Continue to conduct annual forest breeding bird survey.	Although there is no targeted survey for this species, it is frequently recorded during the annual breeding bird survey at PPNP.
Five-lined Skink (Carolinian population)	Ensure long-term viability and survival of both sub-populations in Ontario.	Maintain a population capable of long-term viability and survival, determined to be 107 skinks during one monitoring season.	Stable.	Record number of skinks observed over 10 transects every year.	The PPNP population is a significant Carolinian population in Canada. Ongoing savannah restoration and habitat augmentation efforts will help maintain a stable population.
Grass Pickerel	Ensure the long-term persistence throughout their current and historical distribution in Canada.	Maintain occupancy in the park.	Unknown.	Survey every 5 years and record incidental observations.	This is a very cryptic species and could be affected by declining water quality.

Species	National objectives ⁴	Site-based Population & distribution objectives	Population Trend in PPNP ⁵	Population monitoring ⁶	General information and broad park approach
Henslow's Sparrow	Establish and secure at least one large patch (greater than 50 ha) of suitable grassland habitat and achieve at least one stable breeding population of 5-10 pairs.	Increase savannah habitat by 10 ha.	Savannah habitat has increased over the last 5 years due to restoration efforts.	Determine amount of savannah habitat using air photos.	Henslow's Sparrow does not currently nest in PPNP so only a habitat goal can be chosen.
Kentucky Coffee-tree	Maintain extant native populations within natural settings at their current abundance and distribution.	Maintain population size as assessed in 2007 (268 trees, 29% were seedlings) on Middle Island.	Stable.	Determine the abundance of saplings and mature trees every 5 years.	On-going active management on Middle Island is successfully mitigating impacts from hyper-abundant nesting Double-crested Cormorants.
Lake Chubsucker	Maintain current distributions and densities of known extant populations	Maintain occupancy in the park.	Unknown (DFO, 2011)	Survey every 5 years and record incidental observations.	PPNP is one of 10 sites. Population estimates and population trends cannot be completed due to limited data and therefore a specific P&D Objective cannot be set at this time. The population could be affected by declining water quality.
Least Bittern	To maintain and, where possible, increase the current Canadian population size and area occupancy in Canada.	Maintain occupancy in the park.	Unknown.	Survey every 5 years and record incidental observations.	Due to the low number of records for this very cryptic species, no population or distribution objective can be set. The park approach will be to manage the only known threat to the species in the park – Phragmites encroachment.

Species	National objectives ⁴	Site-based Population & distribution objectives	Population Trend in PPNP ⁵	Population monitoring ⁶	General information and broad park approach
Loggerhead Shrike - migrans subspecies	Short-term: stabilize the existing population and prevent further declines, Medium-term: foster overall population growth, Long-term: ensure consistent breeding in at least three of the six core areas in Ontario.	Increase savannah habitat by 10 ha.	Savannah habitat has increased over the last 5 years due to restoration efforts.	Determine amount of savannah habitat using air photos.	Shrikes do not currently nest in PPNP so only a habitat goal can be chosen.
Northern Map Turtle	Stabilize population levels and thereafter maintain the distribution and abundance through threat reduction and mitigation as well as habitat management.	Maintain occupancy in the park.	Unknown.	Survey every 5 years and record incidental observations.	PPNP is a small portion of the range of the Northern Map Turtle in Ontario. The park approach focuses on protecting nests and restoring habitat
Prothonotary Warbler	Increase the current population to at least 15 to 20 pairs, spread among at least five geographically distinct nesting areas by 2015.	Maintain occupancy in the park.	Unknown.	Record incidental observations and nesting success if breeding birds found.	PPNP is one of only a few nesting sites in Ontario. The park can maintain swamp habitat to be free of invasive species and provide nesting structures, as well as protect the nesting birds from disturbance. But, the habitat might still not be suitable if the water levels in Lake Erie are not high enough.
Red Mulberry	Maintain all currently existing populations and prevent further decline in the number of individuals	Maintain occupancy at PPNP on the mainland and Middle Island.	Declining.	Visit known individuals each year and assess their overall health and condition.	PPNP has 2 of 10 populations in Canada. Largest threat is hybridization with White Mulberry. PPNP will continue to eliminate White Mulberry that threaten park populations.

Species	National objectives ⁴	Site-based Population & distribution objectives	Population Trend in PPNP ⁵	Population monitoring ⁶	General information and broad park approach
Red-headed Woodpecker	N/A	Maintain occupancy in the park.	Unknown.	Record incidental observations.	PPNP is a very small portion of the distribution of this species. Not a regular nester in the park. No known threats occur in the park. Savannah restoration improves habitat.
Snapping Turtle	Implement measures to address the main threats and document population trends across Canada.	Maintain occupancy in the park.	Unknown.	Survey every 5 years and record incidental observations.	PPNP is a small portion of the range of the Snapping Turtle in Ontario. The park approach focuses on protecting nests and restoring habitat.
Spiny Softshell	Long term: Maintain, and where necessary and feasible, increase the abundance and distribution. Medium term: stabilize and, if necessary and feasible, increase population abundance in areas where local populations are suspected to be declining through increasing suitable habitat and/or mitigating threats.	Maintain suitable habitat in the park.	Unknown.	Report on presence through incidental observations and nest protection. Monitor suitable habitat using aerial vegetation community assessments.	It was not possible to set a P&D Objective for this species as a population may not exist in the park. Therefore a habitat objective was set.
Spotted Gar	Protect, enhance and maintain populations within the three coastal wetlands of Lake Erie, where extant populations occur.	Maintain occupancy in the park.	Unknown.	Survey every 5 years and record incidental observations.	This is a cryptic species and could be declining with declining water quality.
Swamp Rose-mallow	Maintain the current distribution and area of occupancy of extant Swamp Rose-mallow populations in Canada.	Maintain occupancy in the park.	Stable.	Survey every 5 years and record incidental observations.	Jalava et al. (2008) estimated a total of 327,748 Swamp Rose-mallow stems (not individual plants) at Point Pelee National Park in 2007.

Species	National objectives ⁴	Site-based Population & distribution objectives	Population Trend in PPNP ⁵	Population monitoring ⁶	General information and broad park approach
Warmouth	Maintain or enhance existing populations in Canada, and improve the quality and quantity of their associated habitats.	Maintain occupancy in the park.	Unknown.	Survey every 5 years and record incidental observations.	This species is restricted to south-western Ontario. PPNP is one of 4 sites. Population estimates and population trends cannot be completed due to limited data and therefore a specific P&D Objective cannot be set. The population could be declining with declining water quality.
Wild Hyacinth	Maintain, or where necessary and biologically and technically feasible, increase the species' current abundance and distribution at existing populations in Canada.	Maintain a population of not less than 500 individuals in at least two colonies.	Stable and increasing.	Survey every 5 years and record incidental observations.	The PPNP population is one of 7 populations in Canada. Ongoing active management on Middle Island is successfully mitigating impacts from hyper-abundant nesting Double-crested Cormorants.
Yellow-breasted Chat	Maintain current population level in Canada.	Maintain at least 4 ha of suitable Yellow-breasted Chat habitat in the park.	Amount of suitable habitat and number of nesting pairs has been decreasing over the last 10 years.	The total amount of suitable habitat will be calculated using air photos at least every 5 years.	It was not possible to identify a P&D objective because the Yellow-breasted Chat population is decreasing across Canada and Ontario beyond PPNP's boundaries, so only a habitat objective was chosen.
Acadian Flycatcher, Barn Swallow, Buff-breasted Sandpiper, Butternut, Canada Warbler, Cerulean Warbler, Chimney Swift, Common Nighthawk, Eastern Mole, Eastern Pondmussel, Golden-winged Warbler, Hooded Warbler, Horned Grebe, King Rail, Kirtland's Warbler, Lake Erie Watersnake, Little Brown Myotis, Louisiana Waterthrush, Monarch, Northern Myotis, Olive-sided Flycatcher, Peregrine Falcon, Piping Plover, Red Knot, Rusty Blackbird, Short-eared Owl, Spoon-leaved Moss, Spotted Turtle, Tri-colored Bat, Wood Thrush,		No objective established: because no threats known in park or no PPNP management actions can contribute to conservation within the park and PPNP is of limited importance to the species' national recovery.	Unknown	Record incidental observations.	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, PPNP 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.

Appendix B: Species information, objectives and monitoring plans for species at risk in NNHS.

Species	National objectives ⁷	Site-based Population & distribution objectives	Population Trend in NNHS	Population monitoring ⁸	General information and broad park approach
Bobolink	Provincial objective: maintain stable, self-sustaining populations of Bobolinks in Ontario.	Maintain a breeding presence at the site at least once in a 5-year period.	Unknown	Breeding bird survey every spring at The Commons	Reported as breeding at The Commons since at least the mid-1990s, with 5 pairs noted in 2011. A 5-hectare reserve was established in 2011 to maintain optimal habitat for the species using a mowing regime.
Eastern Flowering Dogwood	Conserve existing populations, reduce the rate of decline and, if biologically and technically feasible, restore populations across its range in Canada.	Conserve the existing population of 36 stems at the known sites.	Stable	Count individuals each spring.	Anthraco-nose has been observed at the site and restoration is needed at the lagoon to prevent existing individuals from drowning due to over-spill.
Monarch	Mitigate threats to Monarch and ensure that there is sufficient breeding, nectaring and staging habitat in Canada.	Ensure habitat is available.	Unknown	Survey suitable milkweed habitat every 5 years.	Restoration at the site could include planting milkweed to offset impact of new sewage treatment facility.
Snapping Turtle	Implement measures to address the main threats and document population trends across Canada.	Maintain occupancy at the site.	Unknown	Confirm occupancy by observing at least one individual each year.	Long-term restoration of the site includes improvements to Two Mile Creek where snapping turtles are regularly observed.

⁷ National objectives as per most recent versions of relevant recovery documents found in References section.

⁸ Where population and distribution objectives have been established for NNHS, monitoring is designed to directly measure success in achieving those goals.

Species	National objectives ⁷	Site-based Population & distribution objectives	Population Trend in NNHS	Population monitoring ⁸	General information and broad park approach
White Wood Aster	N/A	Maintain 3 patches of individuals at Oak Grove and 4 patches at the Lakeshore Property.	Unknown	Count patches and individuals at least once every 5 years.	Removal of invasive species will improve habitat for this species.
Bank Swallow, Barn Swallow, Butternut, Chimney Swift, Hooded Warbler, Eastern Milksnake, Shumard Oak	No objective established: because no threats known at the site or no NNHS management actions can contribute to conservation within the site and NNHS is of limited importance to the species' national recovery.		Unknown	Record incidental observations.	The site will continue to protect individuals and protect suitable habitat on PCA lands and support partners where feasible on recovery and protection of these species.

Appendix C: Conservation and recovery measures that will be conducted by PPNP and NNHS.

Species	Measure #	Measure	Desired Outcome	Threat or recovery measure addressed ⁹	Timeline
FOREST COMMUNITY					
Clustered Sedge, Red Mulberry, Wild Hyacinth, Kentucky Coffee-tree, Blue Ash	1	<u>Species at Risk Protection:</u> Double-crested cormorant nest removal from and around SAR plants and the use of deterrents to protect SAR plants on Middle Island.	Remove direct threat from double-crested cormorant nests in and around SAR plants on Middle Island.	Threat of harm from hyper-abundant Double-crested Cormorants	2016-2021
Clustered Sedge, Red Mulberry, Kentucky Coffee-tree, Common Hoptree, Blue Ash, Eastern Wood Peewee, Wild Hyacinth, Lake Erie Watersnake	2	<u>Hyperabundant Double-crested Cormorant Management:</u> Removal of nesting Double-crested Cormorants on Middle Island.	Double-crested cormorant nest numbers are reduced to target densities (30-60 nests/ha) by 2020 to maintain a healthy ecosystem and sustain species at risk.	Threat of harm from hyper-abundant Double-crested Cormorants	2016-2021
Red Mulberry, Blue Ash, Common Hoptree, Dwarf Hackberry, Eastern Wood Peewee-	3	<u>Manage Hyperabundant White-tailed Deer Population:</u> Reduce population in PPNP to allow for forest regeneration and direct protection of SAR.	Deer population density is reduced to target levels (24-32 deer per km ²) by 2020 to maintain a healthy forest ecosystem and sustain species at risk.	Threat to individuals or loss of habitat from deer browsing	2016-2021
WETLAND COMMUNITY					
Prothonotary Warbler, Swamp Rose-mallow, all turtles, King Rail, Short-eared Owl, Least Bittern, American Water-willow	4	<u>Phragmites Removal:</u> Strategically remove priority invasive, alien plants such as <i>Phragmites australis</i> in PPNP wetlands to protect species at risk and their critical habitat.	Reduce the amount of priority invasive alien plants in areas targeted for management to benefit SAR species	Threat of loss of habitat from the European Common Reed (<i>Phragmites australis</i>)	Ongoing

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 measure addressed ⁹	Timeline
Blanding's Turtle - Great Lakes/St. Lawrence population, Eastern Musk Turtle, Northern Map Turtle, Snapping Turtle, Spiny Softshell	5	<u>SAR Turtle Nest Protection:</u> Protect SAR turtle nests from egg predation and hatchling road mortality through the placement of protection structures.	By 2020, monitoring of population shows increase in abundance and recruitment from previous 2005 study.	Threat of predation and road mortality	Ongoing
All fish and turtles, American Water-willow, Least Bittern, Swamp Rose-mallow	6	<u>PPNP Marsh Management Plan:</u> Address major threats (hydrology, water quality, invasive plants and wildlife, lack of interspersion) and assess potential for re-introduction of Spotted Turtle.	An adaptive marsh management plan completed and approved by 2020.	Threat of degradation of wetlands through loss of water quality, nutrient and sediment loading and exotic/invasive plants	2021
Prothonotary Warbler	7	<u>Nesting Protection:</u> Protect and enhance nesting opportunities at PPNP.	Reduce threats to Prothonotary nesting: disturbance, predation, lack of nesting cavities.	Threat of predation and habitat loss	Ongoing
Swamp Rose-mallow	8	<u>Purple Loosestrife Control:</u> Control spread and invasion	Prevent increase in abundance and distribution of Purple Loosestrife.	Threat of invasive species	Ongoing
Five-lined Skink	9	<u>Skink Habitat Protection and Augmentation:</u> Protect and rehabilitate five-lined skink habitat through habitat augmentation and education programs.	Through partnership and education programs, ensure microhabitat exists to support skink populations in PPNP.	Threat of habitat loss	Ongoing
Piping Plover	10	<u>Piping Plover Protection:</u> Protect individuals and nesting locations of Piping Plover at PPNP. Includes areas closures in nest vicinity coupled with fencing, signage, and patrols to promote compliance.	Reduce threats to Piping Plover nesting including: predation and disturbance.	Reduce human disturbance to breeding pairs.	Ongoing as needed.
Yellow-breasted Chat	11	<u>Yellow-breasted Chat Habitat Management:</u> Consider and manage for Yellow-breasted Chat habitat during savannah restoration.	Effectively manage for a minimum of 4 hectares of suitable chat habitat in PPNP.	Maintain existing suitable habitat.	2021

Species	Measure #	Measure	Desired Outcome	Threat or recovery measure addressed ⁹	Timeline
Climbing Prairie Rose	12	<u>Reintroduction of Climbing Prairie Rose:</u> Reintroduce rose as part of increasing biodiversity of savannah habitat through restoration project.	Successful reintroduction of Climbing Prairie Rose in savannah habitat.	Maintain extant populations.	2021
Monarch	13	<u>Education and Interpretation Programs:</u> Continue annual volunteer monitoring and education program (tagging of reared monarchs), Monarch counts, formal education, and "Monarch Live" exhibit.	Monarch conservation messages are incorporated into park programming and education programs.	Continue to promote and support citizen engagement in conservation and monitoring.	Ongoing
Monarch	14	<u>Milkweed Planting and Population Monitoring:</u> Develop a monitoring program and continue volunteer planting program for 4 Milkweed species in PPNP.	Increase abundance of native milkweed species in park to provide food source for adult Monarchs and larvae. A minimum of 100 volunteers participating annually in planting Milkweed.	Threat of habitat loss	2016-2021
Eastern Prickly Pear Cactus, Five-lined Skink, Common Hoptree, Bobolink, Dwarf Hackberry, Eastern Foxsnake - Carolinian population, Loggerhead Shrike (<i>migrans</i>), Eastern Meadow lark, Henslow's Sparrow, Red-headed Woodpecker, Eastern Whip-poor-will, Climbing Prairie Rose, Monarch	15	<u>Restore Savannah Habitat in PPNP:</u> Continue savannah restoration project in PPNP; clear invading shrubs, remove invasive exotic species and keep habitat open through prescribed fire, investigate DDT remediation, savannah education and outreach programs.	Ensure that through restoration, savannah habitat is healthy and stable in PPNP to support the SAR that depend on this habitat.	Threat of habitat loss, invasive species and contamination	2021

Species	Measure #	Measure	Desired Outcome	Threat or recovery measure addressed	Timeline
MULTIPLE COMMUNITIES					
Eastern Foxsnake - Carolinian population	16	<u>Habitat Augmentation:</u> Create artificial hibernacula and nesting mounds for Eastern Foxsnake at PPNP. Includes incorporating educational messaging into park programs.	Through partnership and education programs, improve hibernation and nesting opportunities to support foxsnake population in PPNP.	Identify and protect habitat within the current distribution	2021
All birds	17	<u>Manage Rare Bird Sightings:</u> Mitigate visitor disturbance to migrating individuals or nesting SAR birds at PPNP; communication, area closures, and patrols to promote compliance.	Reduce threat of human disturbance to SAR birds during migration and nesting periods, while promoting memorable visitor birding experience.	Protect individuals from harassment.	Ongoing
Turtles, Eastern Foxsnake, Five-lined Skink	18	<u>Integrated Road Mortality Prevention Program:</u> Conduct monitoring and mitigation measures during peak breeding and migration, including: signage, traffic direction and communication and in-park education products.	Reduce the threat of road mortality to SAR herptiles in PPNP.	Threat of road mortality	Ongoing
Eastern Prickly Pear Cactus, Common Hoptree, Dwarf Hackberry, American Water-willow, Red Mulberry, all fish, all turtles, Swamp Rose-mallow, Climbing Prairie Rose, Least Bittern, Yellow-breasted Chat, Red-headed Woodpecker, Five-lined Skink	19	<u>Invasive Species Management Plan:</u> Produce and implement invasive species management plan for PPNP to target priority species that would alter species at risk habitat.	Reduce threat of priority invasive species on SAR and their habitat by completing management plan. Goals, targets, objectives outlined in the plan are accomplished according to timelines outlined in plan.	Threat of invasive species	2021
Red Mulberry, Dwarf Hackberry, Butternut, Common Hoptree, Blue Ash and Kentucky Coffee Tree	20	<u>Recovery of SAR Trees at PPNP:</u> Reduce main threats and increase population viability of SAR Trees; genetic mapping, controlled pollination and propagation, invasive species removal and habitat augmentation.	Reduce main threats to SAR tree populations in PPNP and for select species, increase health and population viability.	Threats of hybridization, invasive species and habitat loss	2015-2019

Species	Measure #	Measure	Desired Outcome	Threat or recovery measure addressed	Timeline
All species in this plan	21	<u>Inclusion of Indigenous Traditional Knowledge:</u> Engage the Caldwell First Nation and the Walpole Island First Nation to collaboratively develop and implement methods to meaningfully incorporate ATK into management practices for SAR at PPNP and NNHS.	Increased engagement and incorporation of ATK into management practices for SAR.	Inclusion of Traditional Ecological Knowledge To better inform assessment, monitoring, and recovery of the ecosystems that support species at risk.	On-going
Niagara National Historic Sites					
Butternut	22	Remove hybrid Butternut trees to mitigate threat to 9 pure-strain Butternut at west end of Lakeshore Property.	Hybrids (81 trees) removed from Lakeshore Property, in addition to the 19 removed to clear the footprint for the new Waste water Treatment Plant.	Loss of Canadian population through hybridization	2021
Eastern Flowering Dogwood	23	Assess and mitigate threat of overflow at southwest corner of north sewage lagoon at the Lakeshore Property.	Protect individuals from harm.	Protect existing population from threat of human disturbance.	2021
Bobolink	24	Install interpretive signage to recognize Bobolink reserve and PCA protection efforts at The Commons.	Information is available to visitors to encourage stewardship and increase awareness.	Reduce threat of habitat loss and human disturbance at breeding sites.	2021
Bobolink	25	Encourage the implementation of a volunteer breeding bird survey at The Commons.	Information and support are available to the public to encourage monitoring. Increased partnering with local birding groups.	Clarify population status and determine trend.	2021
Monarch	26	Plant milkweed as habitat for Monarchs as part of the site remediation actions on the old Waste Water Treatment Facility.	Monarch is functionally using the Lakeshore Property (e.g. egg-laying) and milkweed is planted and established at multiple sites post-extirpation at the new waste water plant facility (WWTF). These Monarch fields are incorporated into the design of the WWTF.	Loss of habitat in the form of milkweed plants	2021

Appendix D: Other conservation and recovery measures that will be encouraged through partnerships or when additional resources become available.

Species	Measure #	Measure	Desired Outcome	Threat or recovery measure addressed ¹⁰
FOREST COMMUNITY				
Clustered Sedge	27	Evaluate threat of invasive species to Clustered Sedge and begin recommended control efforts.	Studies/surveys completed and report produced to evaluate the threat of invasive species to clustered sedge on Middle Island and recommend control measures.	Threat of invasive species
Little Brown <i>Myotis</i> , Northern <i>Myotis</i> and Tri-Colored Bat	28	Bat Inventory for PPNP: assess the distribution and relative abundance of species at risk bats in PPNP, with emphasis on identifying hibernacula and any buildings used for roosting.	Baseline data on distribution and relative abundance of bats in PPNP is understood and a long-term monitoring protocol is developed.	Determine population trends
Spoon-leaved Moss	29	Investigate habitat requirements and protect spoon-leaved moss in PPNP	Increase knowledge of habitat requirements for spoon-leaved moss.	Threat of forest habitat degradation and fragmentation
WETLAND COMMUNITY				
Prothonotary Warbler, Louisiana Waterthrush, Rusty Blackbird, Blanding's Turtle, Spotted Turtle	30	<u>Hydrological Study:</u> Conduct hydrological flow study to determine if historical landscape alterations are negatively impacting PPNP swamp forest habitat.	Complete study and receive recommendations for possible habitat interventions.	Threat of habitat loss
Eastern Pondmussel	31	<u>Conduct Inventory:</u> Conduct standardized population survey in suitable habitat in PPNP marsh to determine if species is present in park.	Increased knowledge of Eastern Pondmussel distribution in the park.	Determine distribution of species
COASTAL COMMUNITY				

¹⁰ 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 ¹⁰
Lake Erie Watersnake	32	<u>Lake Erie Watersnake Protection and Conservation:</u> Determine visitor experience/education opportunities to promote stewardship, protection and conservation.	Lake Erie watersnake protection and conservation content incorporated into at least one park program at PPNP.	Provide education and outreach to promote stewardship
Eastern Prickly Pear Cactus	33	<u>Relocation of Eastern Prickly Pear Cactus:</u> Move plants to more suitable habitat in cases where natural succession will not be mitigated by savannah restoration.	No net loss of cactus microsites due to infrastructure activities or habitat succession.	Threat of loss of through succession and alteration of natural disturbance regimes
MULTIPLE COMMUNITIES				
Eastern Foxsnake, Eastern Mole, Least Bittern, American Water-willow, Dwarf Hackberry, Broad-banded Forestsnail, all turtles and fish	34	<u>Develop and Implement Monitoring Protocols:</u> Develop a standardized population, habitat survey and monitoring protocol for each species.	To develop and implement an established monitoring protocol for each species that is accurate and sustainable and shared with conservation partners.	Develop monitoring protocols
Five-lined skink, all turtles and fish, Eastern Foxsnake, Eastern Prickly pear cactus, Swamp Rose Mallow	35	<u>Law enforcement:</u> Increased patrols to prevent poaching and disturbance of species at risk and their habitat.	Patrols are conducted during critical time periods to prevent disturbance to SAR and their habitats.	Threat of poaching and human disturbance
Turtles, Eastern Foxsnake, Five-lined Skink	36	<u>Prevent Wildlife Road Mortality through infrastructure improvements and habitat restoration:</u> Research and implement options at PPNP to reduce traffic mortality for SAR reptiles. Where possible, link to future road improvement projects.	Clearly understand where or if there are priority locations and option analysis of optimal design for road mortality mitigation structures. Implement effective structures or restoration areas (ie. turtle nesting areas)..	Threat of road mortality
Blanding's Turtle - Great Lakes/St. Lawrence population, Eastern Musk Turtle, Northern Map Turtle, Snapping Turtle, Spiny Softshell, Eastern Foxsnake, Five-lined Skink	37	<u>Predation Management:</u> Develop and implement approaches to manage human-subsidized predators at PPNP to protect SAR reptiles (ie. Raccoons, Skunks, Opossums).	Threat of human-subsidized predators on SAR reptiles at PPNP is reduced.	Threat of predation
Niagara National Historic Sites				

Species	Measure #	Measure	Desired Outcome	Threat or recovery measure addressed ¹⁰
White Wood Aster	38	Determine if it is feasible to remove threat of garlic mustard at Oak Grove and at the Lakeshore Property. If feasible, begin implementing.	Feasibility is determined and implementation of garlic mustard control measures initiated if feasible.	Reduce threat of invasive species
Butternut, White Wood Aster	39	Determine feasibility of restoration of Black Oak savannah at Oak Grove. If feasible, begin restoration.	Feasibility is determined and restoration initiated if feasible.	Reduce threat of invasive species and address succession due to lack of natural fire.
Eastern Flowering Dogwood	40	Assess and if necessary, mitigate threat of anthracnose fungus.	Maintain existing population at the Lakeshore Property.	Threat of anthracnose fungus

Appendix E: 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](#)'s¹¹ goals and targets.

Recovery planning is intended to benefit species at risk and biodiversity in general. However, it is recognized that recovery actions 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 PPNP and NNHS. 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 PPNP and NNHS; 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, 2010). Consequently activities outlined in this plan address key management priorities aimed at improving the broader ecological health of both sites. Finally, this plan outlines stewardship actions, educational programs, and awareness initiatives that will involve 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.

¹¹ www.ec.gc.ca/dd-sd/default.asp?lang=En&n=F93CD795-1