***Species at Risk Act***
Action Plan Series

# Multi-species Action Plan for La Mauricie National Park and National Historic Sites of the Mauricie and western Quebec regions

2022

Canada

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

**Cover illustration**: Wood turtle – © Parks Canada Agency/ Jacques Pleau; Eastern wolf – © Parks Canada Agency/ Jacques Pleau; Northern long-eared bat – © Parks Canada Agency/Jacques Pleau

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

# Preface

The federal, provincial, and territorial government signatories under the Accord for the Protection of Species at Risk (1996)[2] agreed to establish complementary legislation and programs that provide for effective protection of species at risk throughout Canada. Under the *Species at Risk Act* (S.C. 2002, c.29) (SARA), 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) provide the detailed recovery planning that supports the strategic direction set out in the recovery strategy 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 strategy. This includes 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 report, the recovery strategy, and other action plans produced for these species.

The Minister responsible for the Parks Canada Agency (Minister of Environment and Climate Change) is deemed the competent minister under SARA to recover species in La Mauricie National Park (LMNP) and Canada's national historic sites (NHS) that are part of the Mauricie and Western Quebec Field Unit (MWQFU). The conservation service of the MWQFU has prepared this action plan to implement recovery strategies as they apply to the LMNP and the MWQFU NHSs in accordance with section 47 of SARA. This plan has been prepared in consultation with Environment and Climate Change Canada, the Ministère de la Forêt, de la Faune et des Parcs, the Société d'histoire naturelle de la Vallée du Saint-Laurent and the Nature Conservancy of Canada in accordance with subsection 48(1) of SARA. The Council of the Atikamekws Nation, the Ndakinna office and the Grand Council of the Waban-Aki Nation, the Temiskaming First Nation and the Mohawks Council of Kahnawake were invited to contribute to this action plan. The Ndakinna office and the Grand Council of the Waban-Aki Nation and the Temiskaming First Nation has expressed their interest to comment this action plan. The Ndakinna office and the Grand Council of the Waban-Aki Nation already made comments that have been addressed in the actual proposition. In accordance with the subsection 48(1) of SARA, it is still possible for the other nations to contribute to this proposed action plan. The MWQFU will make sure to send them the current proposal and to address their comments if applicable.

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

# Acknowledgments

We would like to specifically thank those who contributed to the content of this document, especially those who gave their time and shared expertise and information.


# Executive summary


The Multi-species Action Plan for La Mauricie National Park and Canada's national historic sites (NHS) that are part of the Mauricie and Western Quebec Field Unit (MWQFU) applies to the land and waters within the boundaries of La Mauricie National Park (LMNP) and 13 NHSs in Quebec: Obadjiwan–Fort Témiscamingue; Forges-du-Saint-Maurice; Fort Chambly; Fort Lennox; Battle of the Châteauguay; Coteau-du-Lac; Carillon Barracks; Manoir Papineau; Louis-Joseph Papineau; Louis S. St-Laurent; Fur Trade at Lachine National Historic Site; Sir Wilfrid Laurier; and Sir George-Étienne Cartier. This plan meets the requirements for action plans set out in the *Species at Risk Act* (SARA; section 47) for species requiring an action plan that regularly occur on these sites. Measures described in this plan will also provide benefits for other species of conservation concern that regularly occur in LMNP and on associated NHSs.

Where it has been determined that the site can implement management activities to help recover and/or manage a species, site-specific objectives have been identified in this plan and represent the site's contribution to objectives presented in federal recovery programs and management plans. Species at risk, their residences and their habitat are protected by existing regulations and management regimes in national parks, national historic sites, and by SARA. Additional measures that will contribute to the survival and recovery of the species at the sites are described in this plan. The measures were identified based on threats and actions outlined in federal and provincial status assessments and recovery documents, and 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 their recovery.

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

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# 1. Context

The Mauricie and Western Quebec Field Unit (MWQFU) brings together La Mauricie National Park (LMNP) and 13 national historic sites (NHS). The MWQFU sites are distributed across a latitudinal gradient that spreads from the physiographic regions of the Appalachians and St. Lawrence Lowlands and Great Lakes to the Canadian Shield.

## La Mauricie National Park

La Mauricie National Park (LMNP) was founded in 1970 to protect an example of the Canadian Shield and the Laurentian mountain chain biodiversity. LMNP is north of the St. Lawrence River and halfway between Montreal and Quebec City, covering an area of 536 $km^2$. It is located in the Lower Saint-Maurice high hills, found in the maple/yellow birch-east bioclimatic domain. LMNP has similar topographical characteristics to the Precambrian Region of the Great Lakes-St. Lawrence. LMNP is on a hilly plateau slightly tilted to the east with an average altitude of 350 m. Forest ecosystems make up 93% of the park's area. Forest stands generally consist of maple and yellow birch, though some stands contain pinewood and red spruce. Four ecosystem types are found: peat bogs (5%); coniferous forests (21%); mixed woods (49%); and hardwood forests (25%). Additionally, the park crosses a major aquatic network made of over 174 lakes and ponds that are connected by a complex network of streams and rivers temporarily or permanently supplying the many bodies of water on the territory. Lake areas vary between 1 and 513 hectares with an average depth of 10 metres. Most of the park's water ecosystems are oligotrophic with abundant oxygen, are low in nutrients and are rarely productive. The park protects many individuals of a Wood Turtle population that is genetically different than the other studied populations found in Quebec. Three species of bats and the Eastern Wolf use habitats located on the park territory, as do a dozen bird species that are on Schedule 1 of SARA.

The Indigenous peoples were the first to occupy the territory, currently protected by the *Canada national park act*. Many archaeological sites were found in several areas along the lakes' riverbanks. The oldest evidence of Indigenous communities on the territory dates back about 5,000 years (Miller, 2010). Presently, the indigenous communities nearest to LMNP are the Wemotaci and Manawan Atikamekw and the Wôlinak and Odanak of the Abenakis Nation on the St. Lawrence's South Shore.

Logging began in the region in the 1800s, progressively ramping up until the start of the 20th century, when the Mauricie region became the major forestry and paper hub in Quebec. Even today, it is possible to see the remnants of logging activities in LMNP. This can be seen by the presence of dams at the outset of many lakes, which were used for log drives. The presence of private fish and game clubs is also part of the human history of this territory. These clubs played a major role in wildlife protection by preventing overuse of the resource but they also contributed to the introduction of several species of fish into the lakes and permanently changed the aquatic ecosystems. They also contributed to the interactions between the indigenous communities, local residents and clients of the private

clubs as Indigenous guides were often matched up with the clients of private clubs in their hunting and fishing expeditions as they were known for their near-perfect regional knowledge and were held in high regard by clients.

LMNP is now bordered by the Mastigouche and Saint-Maurice reserves and the ZEC Chapeau-de-Paille which are the northern and western boundaries of the park (Figure 1). Hunting, fishing, trapping and forestry activities are still allowed on these territories. The Saint-Maurice River demarcates the park on its east side. Outside the southern boundaries, where the Canadian Shield gives way to the St. Lawrence Lowlands, the land is mainly used for agricultural activities and residential development, whereas forest-, wildlife-related and tourism activities are carried out in the park's northernmost area. Human activities and land occupation outside of the park's boundaries resulted in the park's fragmentation and isolation along the Mauricie's southern portion. Consequently, collaboration with multiple partners, such as local residents, indigenous communities, governmental and non-governmental organizations is vital for the recovery of species at risk.


Figure 1. Location and boundaries covered by La Mauricie National Park.

The multitude of habitats created by the forest landscape and water networks make La Mauricie National Park a favourite place for outdoor activities and ecotourism enthusiasts, while being an important site for the conservation of the region's biodiversity. Of the park's many points of interest, here are a few:

- A 63-km road that crosses the park, connecting it with many camping sites and picnic areas;
- Geomorphological attributes of the landscapes are the results of glacial erosion and deposition from the last Glaciation;
- Remnants of indigenous peoples occupation that is estimated to be 5000 years old ;
- One Wood Turtle population, genetically distinct from other Wood Turtle populations studied across the Province of Quebec;
- An isolated Arctic Char population in one lake;
- The regular presence of Eastern Wolves;
- Over twenty species on Schedule 1 of SARA.

### Related National Historic Sites

The MWQFU contains 13 national historic sites (NHS). These sites are : Obadjiwan–Fort Témiscamingue, Manoir Papineau, Carillon Barracks, Coteau-du-Lac, Battle of the Châteauguay, Fur Trade at Lachine, Louis-Joseph Papineau, Sir George-Étienne Cartier, Fort Chambly, Fort Lennox, Louis-Saint-Laurent, Sir-Wilfrid-Laurier, Forges du Saint-Maurice (Figure 2).

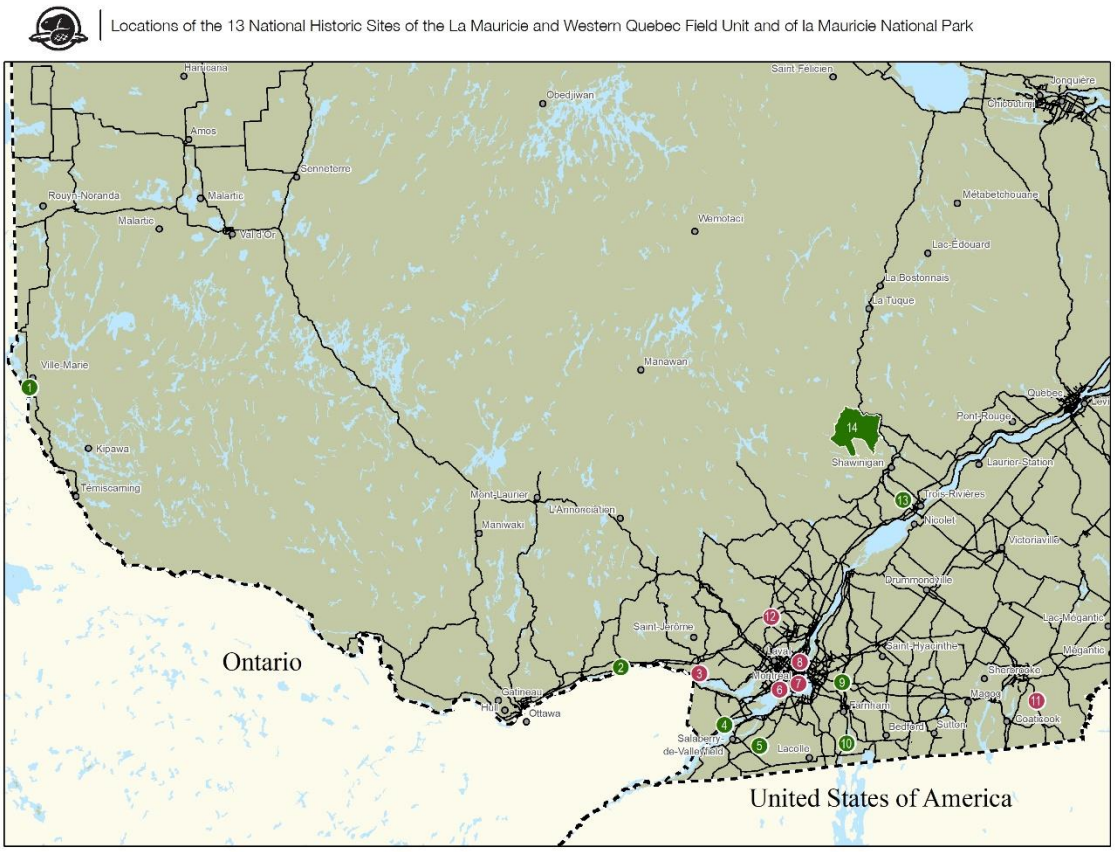


Figure 2. Location of historic sites and La Mauricie National Park, part of the Mauricie and Western Quebec Field Unit. Given the regular presence of species at risk, historic sites part of this action plan are represented by a green dot. Other historic sites are represented by a red dot. 1-Obadjiwan–Fort Témiscamingue National Historic Site, 2- Manoir Papineau National Historic Site, 3- Carillon Barracks National Historic Site, 4-Coteau-du-Lac National Historic Site, 5- Battle of the Châteauguay National Historic Site, 6- Fur Trade at Lachine National Historic Site, 7- Louis-Joseph Papineau National Historic Site, 8- Sir George-Étienne Cartier National Historic Site, 9- Fort Chambly National Historic Site, 10- Fort Lennox National Historic Site, 11- Louis S. St-Laurent National Historic Site, 12- Sir Wilfrid Laurier National Historic Site, 13- Forges du Saint-Maurice National Historic Site, 14- La Mauricie National Park.

Nine sites have been selected for this action plan based on the presence and potential to recover species at risk (see Figures 3 to 11).

*Obadjiwan–Fort Témiscamingue*

The territory of Obadjiwan–Fort Témiscamingue National Historic Site was used by the Indigenous peoples before it became a fortified fur trading post during the New France era (see Figure 3).The site is located along Lake Témiscamingue, eight kilometres from Ville-Marie, in the Abitibi-Témiscamingue region, the wooded areas comprise 80% of the historic site , where approximately 20 distinct forest stands are seen and pioneering species, such as birch and poplars, are abundant. Red pines can be found on the site's cliffs, whereas a century-old cedar bush, known as the "enchanted forest" by those in the region, is found

on the site's southwest tip. A species listed on Schedule 1 of SARA, the Hickorynut (*Obovaria olivaria*), is found in this area of the Ottawa River.

The site is home to a few plant species that are on Quebec's threatened and vulnerable species list or species that are likely to be designated threatened or vulnerable, including the Ram's Head Lady's Slipper (*Cypripedium arietinum*), Indian Milkvetch (*Astragalus australis var. glabriusculus*), Striped Coral Root (*Corallorhiza striata var. striata*), Western Tansymustard (*Descurainia pinnata subsp. Brachycarpa*), Woodland Pinedrops (*Pterospora andromedea*), and the American Vetch (*Vicia Americana var. Americana*). According to the Fort Témiscamingue management plan, specific measures must be put in place to guarantee their protection (Fort Témiscamingue Management Plan, 2007).

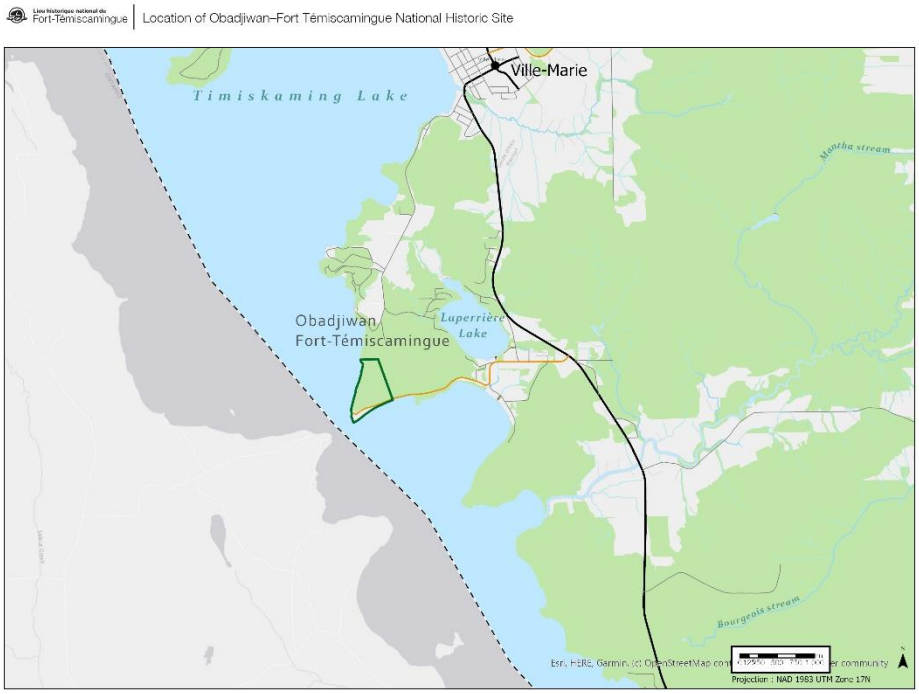


Figure 3. Obadjiwan–Fort Témiscamingue NHS location.

*Battle of the Châteauguay*

The Battle of the Châteauguay National Historic Site commemorates a clash between a US battalion of approximately 3,750 soldiers and 500 Canadian and indigenous peoples combatants in the War of 1812. This site is on the north shore of the Châteauguay River, in the Parish of Très-Saint-Sacrement municipality, located about 50 kilometres southwest of Montreal (see Figure 4). The natural environment is mainly represented by buffer strips that run alongside the Châteauguay River. Species listed on Schedule 1 of SARA, such as the Bridle Shiner (*Notropis bifrenatus*), Northern Brook Lamprey (*Ichthyomyzon fossor*), Channel Darter (*Percina copelandi*), Eastern Sand Darter (*Ammocrypta pellucida*) are found in this part of the river. This site has also been designated as part of the Red-headed Woodpecker's (*Melanerpes erythrocephalus)* critical habitat in the species recovery program.

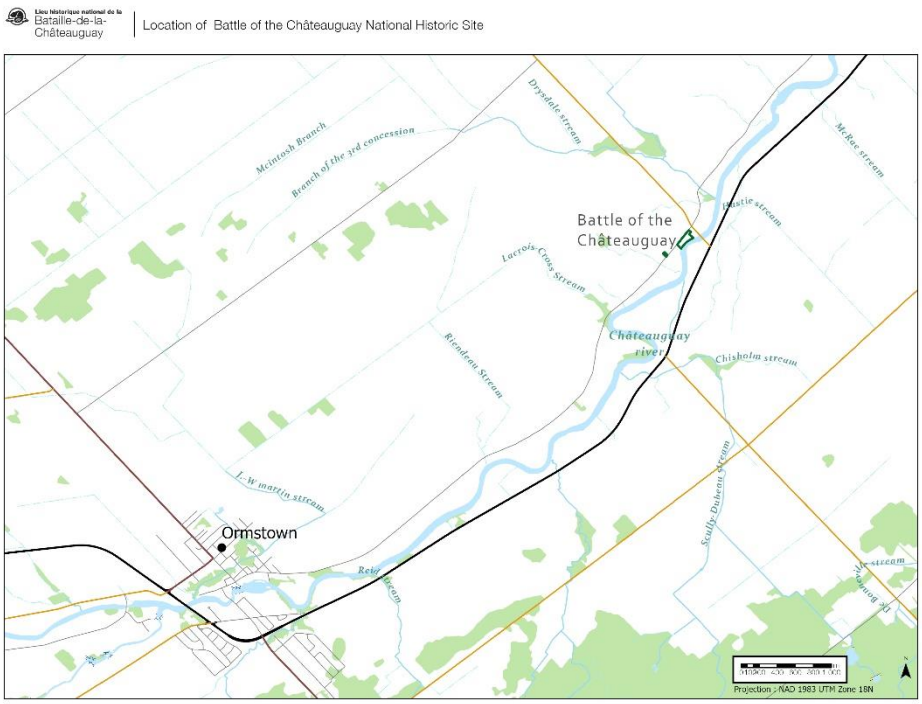


Figure 4. Battle of the Châteauguay NHS location.

## *Carillon Barracks*

The Carillon Barracks National Historic Site location was first used by the British army and the barracks were built in 1839. It is located in the Saint-André-d'Argenteuil municipality, along the Ottawa River (see Figure 5). The natural environment is mainly represented by a bank that connects the site to the Ottawa River. The Northern Map Turtle (*Graptemys geographica*) and the Snapping Turtle (Chelydra serpentina), listed on Schedule 1 of SARA, have been seen in the area, though its on-site presence has yet to be confirmed. This area of the Ottawa River is located in the distribution range of other species listed on Schedule 1 of SARA: the River Redhorse (*Moxostoma carinatum*), Northern Brook Lamprey (*Ichthyomyzon fossor*) and Silver Lamprey (*Ichthyomyzon unicuspis*), Channel Darter (*Percina copelandi*) and the Hickorynut (*Obovaria olivaria*).


Figure 5. Carillon Barracks NHS location.

### *Forges du Saint-Maurice*

The Forges du Saint-Maurice National Historic Site was built in 1730 and marked the beginning of the Canadian steel industry. Although there are no archaeological traces of occupation of the site by the Indigenous communities, the site of the Forges-du-Saint-Maurice is of cultural importance for certain communities, notably the Atikamekw. It is located on the western shore of the Saint-Maurice River, north of Trois-Rivières (Figure 6). This historic site is characterized by four physiographic units: the Lavoir stream valley, the north and south plateaus, and the shoreline strip of the Saint-Maurice River. A representative portrait of Mauricie's floristic diversity can be found through 24 tree species, 14 shrub species and 200 herbaceous species. Of the noteworthy forest stands, the cedar grove is on the east side of the site on the shoreline strip of the river. Inventories completed between 2003 and 2005 have recorded the presence of Butternut (*Juglans cinerea*), which are designated as endangered on Schedule 1 of SARA.

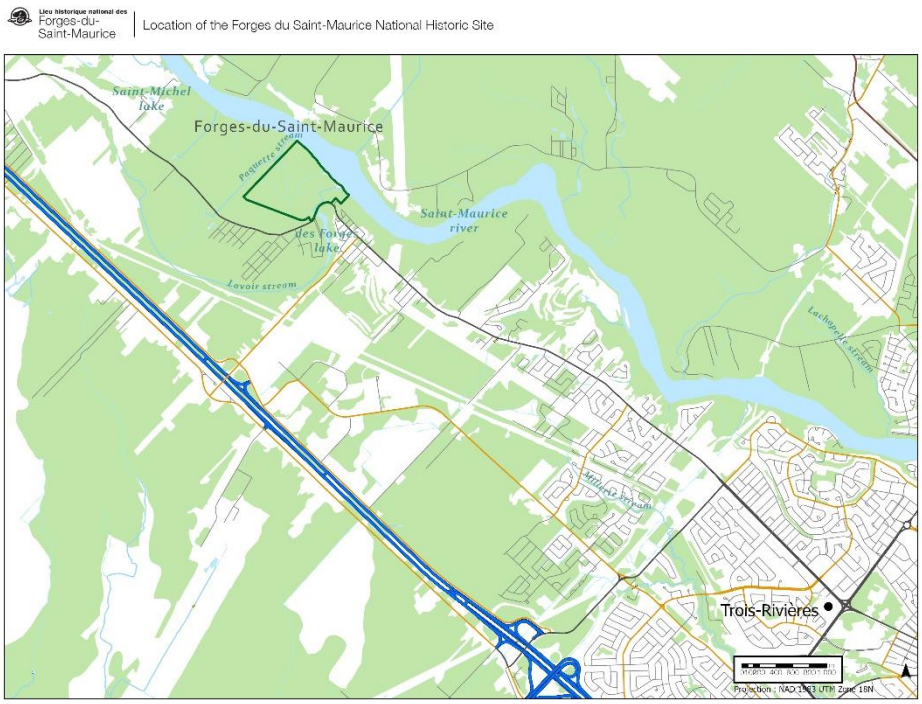


Figure 6. Forges du Saint-Maurice NHS location.

## *Fort Chambly*

Before the arrival of Europeans, the place was used as a portage site by Indigenous peoples between the rapids and the Chambly Basin. Fortified by French colonial authorities in the 17th century, Fort Chambly has become a symbol of Canadian military history. The Fort Chambly National Historic Site is on the western shore of the Richelieu River, at the foot of the Rapides de Chambly in the namesake municipality, approximately 30 kilometres away from Montreal (Figure 7). Today's Fort bears witness to the fortification built by the French colonial authorities from 1709 to 1711. The Fort's natural environment is the wooded shoreline strip that borders the Richelieu River. SARA-listed species like the River Redhorse (*Moxostoma carinatum*), Copper Redhorse (*Moxostoma hubbsi*), Bridle Shiner (*Notropis bifrenatus*), Channel Darter (*Percina copelandi*), Hickorynut (*Obovaria olivaria*), Eastern Sand Darter (*Ammocrypta pellucida*), Spiny Softshell Turtle (*Apalone spinifera*) and Northern Map Turtle (*Graptemys geographica*) are known to be present in this area of the Richelieu River.

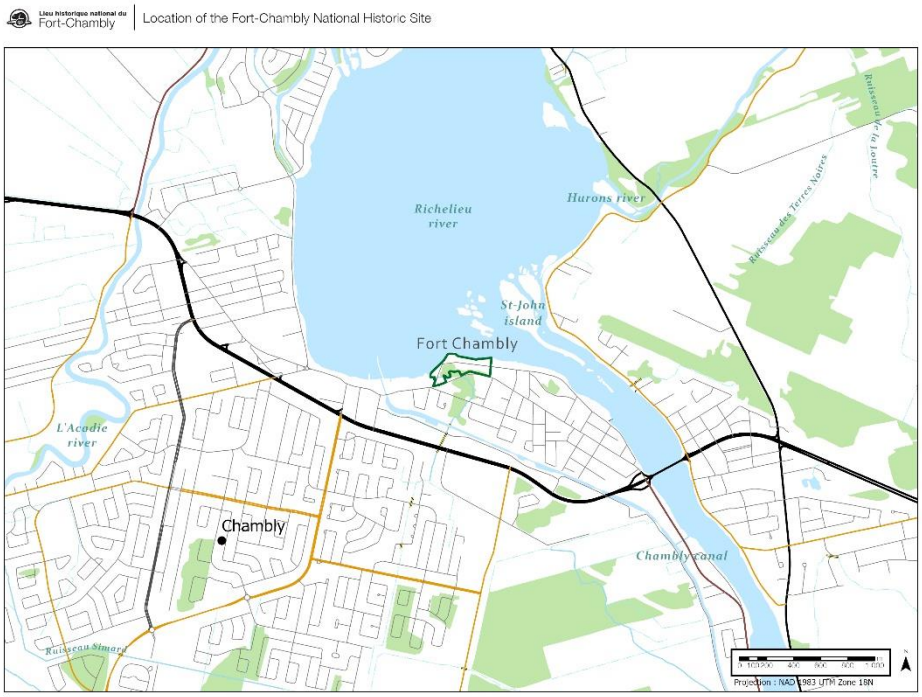


Figure 7. Fort Chambly NHS location.

## *Coteau-du-Lac*

Coteau-du-Lac National Historic Site commemorates one of the oldest lock canals in North America. This strategic location was important during the American Revolution and the War of 1812 as well as for the transportation of goods in Upper Canada. Artefacts, discovered in the 1960s by Parks Canada archaeologists, also attest to the indigenous communities' presence dating back 7,000 years. The Coteau-du-Lac National Historic Site is in the Salaberry-de-Valleyfield municipality along the St. Lawrence River (Figure 8). Three species at risk are on Quebec's endangered or vulnerable species list: Stonecat (*Noturus flavus*), Yellow Giant Hyssop (*Agastache nepetoides*) and Philadelphia Panic Grass (*Panicum philadelphicum subsp. philadelphicum*). The site is also located in the distribution area of three species listed on Schedule 1 of SARA: the Bridle Shiner (*Notropis bifrenatus*), the Eastern Sand Darter (*Ammocrypta pellucida*) and the River Redhorse (*Moxostoma carinatum*).


Figure 8. Coteau-du-Lac NHS location.

### *Fort Lennox*

The Fort Lennox National Historic Site is on Île-aux-Noix, part of the Saint-Paul-de-l'Île-aux-Noix municipality located a few kilometres from the Canada–U.S. border (Figure 9). The fort was built between 1819 and 1829 to protect the Canadian territory against possible American invasion. Although designated for military purposes, the national historic site also has evidence of use by indigenous communities dating back 5,000 years. The natural environment is mostly represented by an area left fallow, shoreline strips and wetlands that are part of the Richelieu River's nature system. SARA-listed species, such as the Eastern Sand Darter (*Ammocrypta pellucida*), Bridle Shiner (*Notropis bifrenatus*), Spiny Softshell Turtle (*Apalone spinifera*), Northern Map Turtle (*Graptemys geographica*), Least Bittern (*Ixobrychus exilis*) and Bobolink (*Dolichonyx oryzivorus*) are to be found in the area. Two species are also on Quebec's endangered or vulnerable species list. These are the Mississippi Loosestrife (*Lysimachia hybrida*) and Slender Bulrush (*Schoenoplectus heterochaetus*).

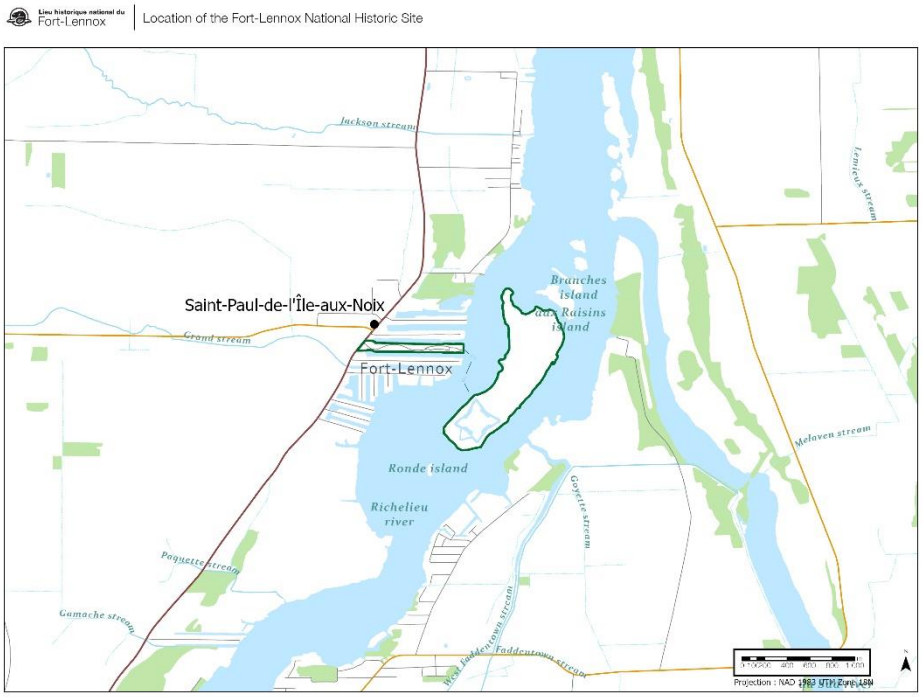


Figure 9. Fort Lennox NHS location.

*Louis S. St-Laurent*

Louis-S. Saint-Laurent National Historic Site commemorates the importance of the former Prime Minister of Canada. It is located in Compton, 20 kilometres southeast of Sherbrooke (Figure 10). The site is in part home to the residence of Louis Saint-Laurent, Canada's 12th prime minister, and the family's general store. Only one species at risk, the Butternut (*Juglans cinerea*), has been identified, though bats are suspected to live in some buildings, as per the management plan (Louis S. St-Laurent Management Plan, 2016). Bat species have yet to be identified.

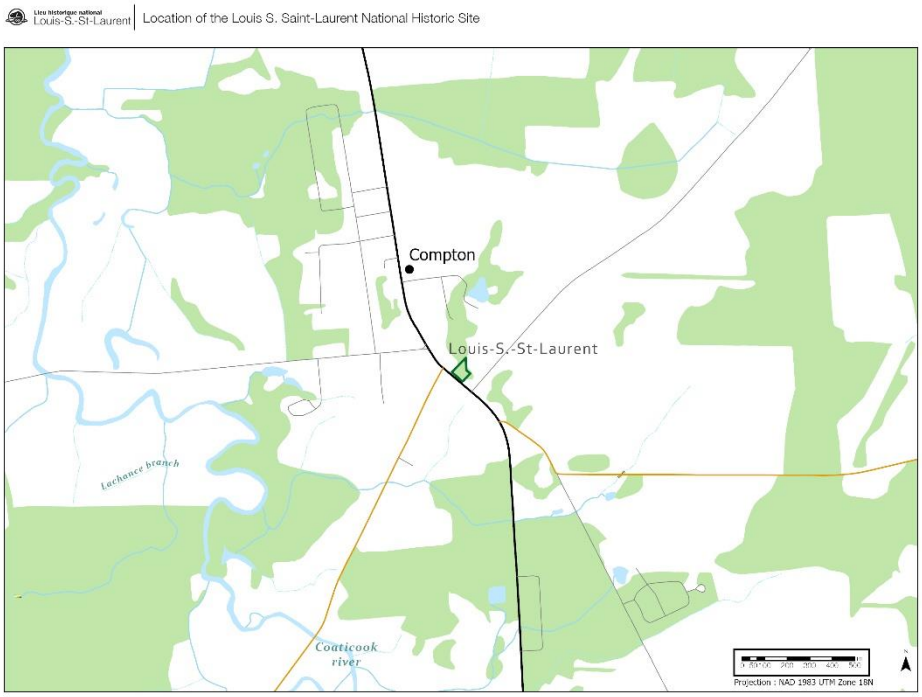


Figure 10. Louis S. St-Laurent NHS location.

*Manoir-Papineau*

The Manoir-Papineau National Historic Site commemorates the importance of Louis-Joseph Papineau, his manor and the landscaping of his estate. Some artefacts discovered during archaeological excavations suggest the use of this territory by the indigenous communities. The Manoir-Papineau National Historic Site is in Montebello, halfway between Gatineau and Montreal (Figure 11). Its natural environment is made of forest habitats and a stream. The site has a manor, granary, family museum, tearoom, an old belfry, a gardener's house and a funeral chapel. There is also a wooded area where over 15 species of trees are found, including the Black Ash (*Fraxinus nigra*), a species considered endangered by COSEWIC (COSEWIC, 2018). This area of the Ottawa River is also within the range of several endangered species in Canada: the River Redhorse (*Moxostoma carinatum*), the Northern Brook Lamprey (*Ichthyomyzon fossor*), Silver Lamprey (*Ichthyomyzon unicuspis*), Channel Darter (*Percina copelandi*), Cutlip Minnow (*Exoglossum maxillingua*), Northern Sunfish (*Lepomis peltastes*) and Hickorynut (*Obovaria olivaria*).A few endangered or vulnerable species, or likely to be designated species are on Quebec's list, including the Pickerel Frog (*Lithobates palustris*) and Downy Rattlesnake Plantain (*Goodyera pubescens*).

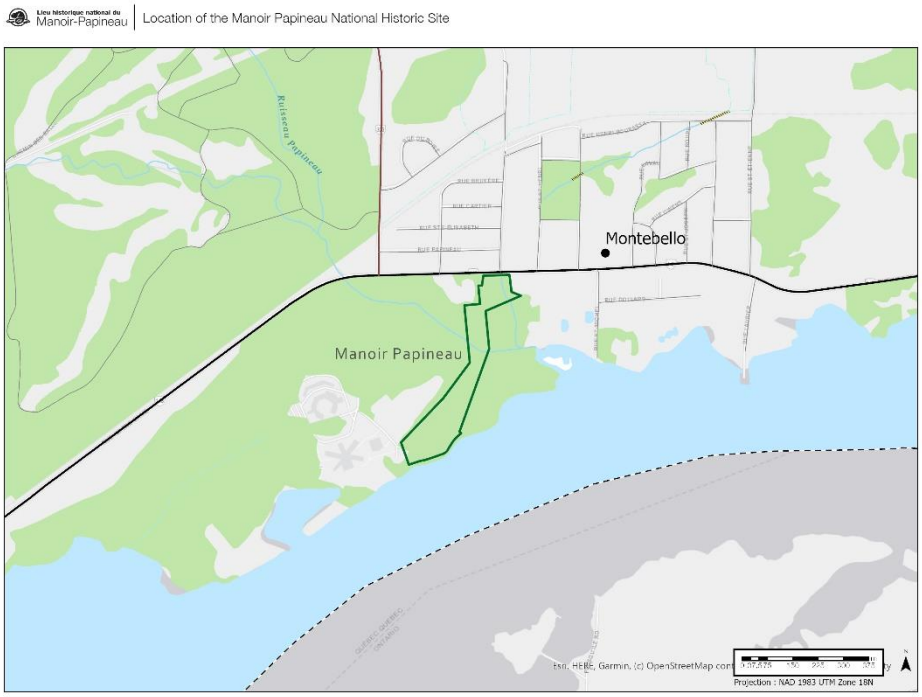


Figure 11. Manoir Papineau NHS location.

The remaining national historic sites under the MWQFU are not in this action plan because there is no information confirming the presence of SARA listed species or species on Quebec's endangered or vulnerable list on the site or in its surroundings.

## 1.1 Scope of the Action Plan

The geographic scope of this action plan includes all the forest and water ecosystems found in La Mauricie National Park and in nine of the 13 NHSs under the MWQFU (Figure 1). This multi-species action plan has been written specifically for MWQFU 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 these sites.

Keeping and restoring ecological integrity is one of the priorities of Canada's national parks. In addition to being protected under SARA, species at risk and their habitats are also protected under the *Canadian National Parks Act* in La Mauricie National Park. The Parks Canada Ecological Integrity Program contributes to the recovery of species at risk by providing inventories and the monitoring of population status, project implementation and conservation measures. The proposed conservation and habitat recovery measures in this plan will concretely contribute to maintaining the park's and national historic sites' ecological integrity by improving the status of native species and the quality of their habitats, which will guarantee that biodiversity will be maintained. Many recovery

strategies, management plans as well as federal and provincial action plans were considered in this multi-species action plan; the proposed conservation and recovery measures in this document are consistent with these various plans. Overall, 73 species are found in this plan: 33 species are on Schedule 1 of SARA or on Quebec's endangered species lists, and 40 species on the vulnerable or likely endangered or vulnerable list (Tables 1 and 2).

This action plan addresses 19 SARA-listed endangered and threatened species that regularly occur in MWQFU which requires an action plan under SARA (s.47), as well as other species of conservation concern (Tables 1 and 2). This approach 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 multi-species action plan for LMNP.

| Common name | Latin name | COSEWIC status (Canada) | Provincial status (Quebec) | Federal Status (Canada) |
|---|---|---|---|---|
| **Mammals** | | | | |
| Eastern red bat | *Lasiurus borealis* | | LEV | |
| Eastern wolf | *Canis sp. cf. lycaon* | Threatened (2015) | | Special concern (2003) |
| Hoary bat | *Lasiurus cinereus* | | LEV | |
| Least weasel | *Mustela nivalis* | | LEV | |
| Little brown bat | *Myotis lucifugus* | END (2013) | | END (2014) |
| Northern long-eared myotis | *Myotis septentrionalis* | END (2013) | | END (2014) |
| Rock vole | *Microtus chrotorrhinus* | | LEV | |
| Silver-haired bat | *Lasionycteris noctivagans* | | LEV | |
| Southern bog lemming | *Synaptomys cooperi* | | LEV | |
| Tricolored bat | *Perimyotis subflavus* | END (2013) | LEV | END (2014) |
| **Fish** | | | | |
| Sunapee trout | *Salvelinus alpinus oquassa* | | LEV | |
| **Amphibians and reptiles** | | | | |
| Midland painted turtle | *Chrysemys picta marginata* | Special concern (2018) | | Special concern (2021) |
| Pickerel frog | *Lithobates palustris* | | LEV | |
| Ring-necked snake | *Diadophis punctatus* | | LEV | |
| Smooth green snake | *Liochlorophis vernalis* | | LEV | |
| Snapping turtle | *Chelydra serpentina* | Special concern (2008) | | Special concern (2011) |
| Wood turtle | *Glyptemys insculpta* | Threatened (2018) | Vulnerable | Threatened (2010) |
| **Birds** | | | | |
| Bald eagle | *Haliaeetus leucocephalus* | | Vulnerable | |
| Barn swallow | *Hirundo rustica (Linnaeus)* | Threatened (2011) | | Threatened (2017) |
| Bank swallow | *Riparia Riparia* | Threatened (2013) | | Threatened (2017) |
| **Birds** | | | | |
| Canada warbler | *Wilsonia canadensis* | Threatened (2008) | LEV | Threatened (2010) |
| Chimney swift | *Chaetura pelagica* | Threatened (2018) | LEV | Threatened (2009) |
| Common nighthawk | *Chordeiles minor* | Special concern (2018) | LEV | Threatened (2010) |
| Eastern whip-poor-will | *Caprimulgus vociferus* | Threatened (2009) | LEV | Threatened (2011) |
| Eastern wood pewee | *Contopus virens* | Special concern (2012) | | Special concern (2017) |
| Evening grosbeak | *Coccothraustes vespertinus (Cooper)* | Special concern (2016) | | Special concern (2019) |
| Golden eagle | *Aquila chrysaetos* | | Vulnerable | |

| Common name | Latin name | COSEWIC status (Canada) | Provincial status (Quebec) | Federal Status (Canada) |
|---|---|---|---|---|
| Olive-sided flycatcher | *Contopus cooperi* | Special concern (2018) | LEV | Threatened (2010) |
| Peregrine falcon | *Falco peregrinus anatum/tundrius* | Not at Risk (2017) | Vulnerable | Special concern (2012) |
| Rusty blackbird | *Euphagus carolinus* | Special concern (2017) | LEV | Special concern (2009) |
| Wood thrush | *Hylocichla mustelina* | Threatened (2012) | | Threatened (2017) |
| **Arthropods** | | | | |
| Grey comma | *Polygonia progne* | | LEV | |
| Long-horned beetle | *Phymatodes maculicollis* | | LEV | |
| Monarch butterfly | *Danaus plexippus* | END (2016) | | Special concern (2003) |
| Variegated fritillary | *Euptoieta claudia* | | LEV | |
| Yellow-banded bumblebee | *Bombus terricola* | Special concern (2015) | LEV | Special concern (2018) |
| **Vascular plants** | | | | |
| American ostrich fern | *Matteuccia struthiopteris var. pensylvanica* | | Vulnerable | |
| Black ash | *Fraxinus nigra* | Threatened (2018) | | Not listed |
| Bloodroot | *Sanguinaria canadensis* | | Vulnerable | |
| Blue-eyed grass | *Sisyrinchium angustifolium* | | LEV | |
| Bottle gentian | *Gentiana clausa* | | LEV | |
| Butternut | *Juglans cinerea* | END (2017) | LEV | END (2005) |
| Canada lily | *Lilium canadense ssp. canadense* | | Vulnerable | |
| Carolina geranium | *Geranium carolinianum* | | LEV | |
| Flax-leaf ankle-aster | *Ionactis linariifolia* | | Vulnerable | |
| Great white trillium | *Trillium grandiflorum* | | Vulnerable | |
| Hairy-fruited sedge | *Carex trichocarpa* | | LEV | |
| Northern long sedge | *Carex folliculata* | | LEV | |
| Northern maidenhair fern | *Adiantum pedatum* | | Vulnerable | |
| Round leaved orchid | *Platanthera orbiculata var.macrophylla* | | LEV | |
| Two-leaved toothwort | *Cardamine diphylla* | | Vulnerable | |
| Virginia chain fern | *Woodwardia virginica* | | LEV | |
| Wild leek | *Allium tricoccum* | | Vulnerable | |

LEV: likely endangered or vulnerable

END: endangered

Table 2. Species included in the National Historic Site action plan associated with the MWQFU.

| Common name | Latin name | COSEWIC status (Canada) | Provincial status (Quebec) | Federal Status (Canada) |
|---|---|---|---|---|
| **Mammals** | | | | |
| Little brown myotis | *Myotis lucifugus* | END (2013) | | END (2014) |
| Northern myotis | *Myotis septentrionalis* | END (2013) | | END (2014) |
| Tricolored bat | *Perimyotis subflavus* | END (2013) | | END (2014) |
| **Fish** | | | | |
| Bridle shiner | *Notropis bifrenatus* | Special concern (2013) | Vulnerable | Special concern (2003) |
| Channel darter | *Percina copelandi* | Special concern (2016) | Vulnerable | Special concern (2006) |
| Copper redhorse | *Moxostoma hubbsi* | END (2014) | Vulnerable | END (2007) |
| Cutlip Minnow | *Exoglossum maxillingua* | Special concern (2013) | | Not listed |
| Eastern sand darter | *Ammocrypta pelluciada* | Threatened (2009) | | Threatened (2009) |
| Northern brook lamprey | *Ichthyomyzon fossor* | Special concern (2007) | Threatened (2009) | Special concern (2009) |
| Northern sunfish | *Lepomis megalotis (Lepomis pelstates)* | | LEV | Not at Risk |
| River redhorse | *Moxostoma carinatum* | Special concern (2015) | Endangered | Special concern (2007) |
| Silver lamprey | *Ichthyomyzon unicuspis* | Special concern (2011) | | Not listed |
| Stonecat | *Noturus flavus* | | LEV | |
| **Molluscs** | | | | |
| Hickorynut | *Obovaria olivaria* | END (2011) | LEV | END (2011) |
| **Amphibians and reptiles** | | | | |
| Midland painted turtle | *Chrysemys picta marginata* | Special concern (2018) | | Not registered |
| Northern map turtle | *Graptemys geographica* | Special concern (2012) | Vulnerable | Special concern (2005) |
| Pickerel frog | *Lithobates palustris* | | LEV | |
| Snapping turtle | *Chelydra serpentina* | Special concern (2008) | | Special concern (2011) |
| Spiny softshell turtle | *Apalone spinifera* | END (2016) | Endangered | END (2005) |
| **Birds** | | | | |
| Barn swallow | *Hirundo rustica* | Threatened (2011) | | Threatened (2017) |
| Bobolink | *Dolichonyx oryzivorus* | Threatened (2010) | | Threatened (2017) |
| Least bittern | *Ixobrychus exilis* | Threatened (2009) | Vulnerable | Threatened (2003) |
| Red-headed woodpecker | *Melanerpes erythrocephalus* | END (2018) | Endangered | Threatened (2009) |
| **Arthropods** | | | | |
| Monarch butterfly | *Danaus plexippus* | END (2016) | | Special concern (2003) |
| **Vascular plants** | | | | |
| American vetch | *Vicia americana var. americana* | | LEV | |
| Butternut | *Juglans cinerea* | END (2017) | LEV | END (2005) |
| Downy rattlesnake plantain | *Goodyera pubescens* | | Vulnerable | |
| Indian milkvetch | *Astragalus australis var. glabriusculus* | | LEV | |
| Mississippi loosestrife | *Lysimachia hybrid* | | LEV | |
| Philadelphia panicgrass | Panicum philadelphicum ssp. philadelphicum | | LEV | |
| **Vascular plants** | | | | |
| Pinedrop | *Pterospora andromedea* | | Endangered | |
| Slender bulrush | *Schoenoplectus heterochaetus* | | LEV | |
| Western tansymustard | *Descurainia pinnata subsp. brachycarpa* | | LEV | |

| Common name | Latin name | COSEWIC status (Canada) | Provincial status (Quebec) | Federal Status (Canada) |
|---|---|---|---|---|
| Yellow giant hyssop | *Agastache nepetoides* | | LEV | |

LEV= Likely endangered or vulnerable

END= Endangered

# 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 in La Mauricie National Park and its related historic sites was assessed. Site-specific population and distribution objectives were developed (Appendix A) 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 Appendix A rather than in the tables of recovery measures (Appendices B, C and 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 some species, population and distribution objectives for LMNP and its related historic sites are not meaningful at the scale of this action plan for various reasons, including 1) threats cannot be controlled within the park or do not exist in the park (e.g. loss of winter habitat elsewhere; effects on migration), or 2) the population within the site is a very small part of the Canadian distribution or is unknown or unconfirmed.

# 3. Conservation and Recovery Measures

LMNP is home to twenty-four species that are found on Schedule 1 of SARA. Considering the national historic sites linked to the MWQFU, more than 30 species are found on this list.

Major threats to species at risk and their habitats in LMNP and related NHS are the introduction of exotic invasive species, the disappearance or deterioration of habitat (e.g. historic elimination of fire or dam construction), urbanization, increasing pressure exerted by agricultural expansion in Southern Quebec, logging in the vicinity of the park's northern sector and road network. Climate change might also have major impacts on LMNP and associated NHS species at risk. For some of the species included in this plan, it is necessary to detail the threats more specifically in order to be able to specify the actions that will be implemented.

Wood Turtle, Snapping Turtle and Midland Painted Turtle

The threats identified for these three species of turtle present in the territories of the MWQFU have been identified in the recovery programs for these three species both at federal and provincial levels (ECCC 2020, MRNF 2005, EC, 2016). The road network poses a significant threat to turtles due to the mortality from vehicle collisions,

fragmentation and loss of habitat it generates. Similarly, agricultural activities, residential and industrial development have direct impacts on water quality in rivers and on the loss of habitat for these species. The illegal collection of individuals has also been identified as a threat, but to a lesser extent than previous threats, such as predation. However, certain threats are specific to LMNP have also been identified. Log driving and increased water levels of lakes before the creation of the park favoured the accumulation of logs on banks and beaches thus decreasing the quality of the habitat, the availability of nesting sites as well as general habitat loss (Masse and Rheault, 2019).

Eastern Wolf

The threats identified for the Eastern Wolves of LMNP are also representative of the threats identified in the species management plan (ECCC, 2017). At LMNP, trapping and poaching outside the park are among the main threats identified for this species. Similarly, the loss of habitat and fragmentation associated with the road network, residential, industrial and agricultural development have also been identified as important elements to consider for the maintenance of this species on the territory. Anthropogenic disturbances in certain areas of LMNP used as rendezvous sites or dens could also pose a threat within the park boundaries as little is known about their locations. The proximity of other canine species (Coyote, Dogs, Gray Wolf, Boreal Wolf) and the possibilities of hybridization is also an important element to consider. The importance of the phenomenon at LMNP is currently unknown but hybridization remains a major threat to the recovery of the species.

Bats

The threats to the recovery of the 3 bat species listed in Schedule 1 of SARA are mainly based on the recovery strategy for these 3 species (ECCC, 2018). At the MWQFU, as elsewhere in the country, the threat associated with the white-nose syndrome (WNS) has been identified as the most significant. The loss of habitat associated with the renovation of buildings used as maternity dens or hibernacula is also on the list of major threats. The importance of WNS as well as the existence and location of hibernacula and maternity in natural structures within the territories of the MWQFU are actually unknown. Efforts to protect these species against habitat loss and WNS are therefore compromised.

Butternut and Black Ash

For these two species, the main threats are related to the presence of exotic species (Walnut canker and Emerald Ash Borer) and to the lack of knowledge related to the existence of resistant individuals on the territory of the MWQFU (EC, 2010).

The declines in Wood Turtles, Eastern Wolves, Long-eared Bats, Tri-colored bats, Little Brown Bats, Butternut and Black Ash are well known. However, factors leading to declines of many bird species, insects and fishes are still poorly understood and / or exist beyond the limits of the territories of the MWQFU. Parks Canada will take measures to support the protection and recovery of these species in La Mauricie National Park and associated NHS whenever possible.

This action plan specifically identifies measures to achieve the site-based population and distribution objectives, along with measures required to protect the species and learn more

about them. These measures are listed in Appendix B. They were assessed using a prioritization process. The process primarily considered ecological effectiveness of measures, and also considered opportunities for working with partners, increasing the value of visitor experience, and increasing awareness through external relations. Whenever possible, Parks Canada takes an ecosystem approach, prioritizing actions that will benefit multiple species to efficiently and effectively protect and recover species at risk.

These measures emerge from various themes such as active management, disease management, knowledge gaps and collaboration to recover species at risk. The paragraphs below outline the themes and associated conservation measures.

## 3.1 Active Management

The protection and conservation of critical habitat identified in the recovery strategy for the Wood Turtle in La Mauricie National Park is one important element to ensure the viability of the species. The restoration of a portion of the habitats affected by forestry activities on the territory before the park was created will also help ensure the viability of the Wood Turtle population. Due to high water levels and presence of wood on banks from log drives on lakes before the park was created, the habitat needed for this species has been drastically reduced in LMNP. Road mortality is also a major factor to consider; mitigation measures include building crossing structures for turtles are also to be developed. Building nest boxes for bats would also mitigate for habitat loss and exclusion from human buildings.

## 3.2 Disease and Invasive Exotic Species Management

Three invasive exotic diseases threaten five indigenous species at risk under this plan. White-nose Syndrome (WNS) is a fungal disease that targets many bat species and is having a devastating impact on bats in the easternmost region of North America. Although it is difficult to halt or control the introduction of WNS by infected bats, it will be crucial to minimize the risks of introduction of WNS by humans into the territory to ensure the local population's persistence. Under the *National Parks General Regulations*, it is forbidden for an individual to walk into a cave or mine in a national park without permission; those who have a permit must adhere to the current decontamination procedures. Butternut canker is another fungal infection that targets Butternut. To ensure this species' longevity, identifying and planting trees resistant to Butternut canker is the main strategy. We are currently monitoring this species and identifying resistant individuals. Lastly, the Emerald Ash Borer is an insect that targets Black Ash. The same strategies used for the Butternut will be used here.

## 3.3 Filling Knowledge Gaps

Parks Canada will do some research and monitoring to fill gaps in the knowledge base necessary to build programs for some species at risk. This work will be particularly important in the NHSs associated with the MWQFU since few surveys have been carried out in recent years on these sites and it is therefore difficult to determine their importance for the species at risk targeted by this action plan. For instance, it is important to continue to implement the protocols and standardized monitoring for the three resident bat species

and their habitat in order to improve population estimates and knowledge in terms of hibernaculum and maternity location. Additionally, a greater understanding is needed of populations and natural nesting places for the Common Nighthawk, Eastern Whip-poor-will, Olive-sided Flycatcher, Evening Grosbeak, Wood Thrush, Chimney Swift, Barn Swallow, Sand Martin, Canada Warbler, Rusty Blackbird, Peregrine Falcon, Red-headed Woodpecker, Eastern Wood Pewee, Bobolink, Least Bittern, Common Snapping Turtle, Painted Turtle, Northern Map Turtle, and Spiny Softshell Turtle. Monitoring movement and habitat use of wolves will give us an opportunity to increase our knowledge of some components of Mauricie landscape ecological connectivity. A better knowledge of the Arctic Char population structure and abundance will help us better understand factors that currently threaten this species and take the necessary measures to maintain and / or improve the state of the population.

## 3.4 Collaboration

Bringing people together to recover species at risk, by giving indigenous communities a participatory role, building partnerships, designing visitor experiences and external relation activities for the general public are vital components of this multi-species action plan. Park visitors will be able to learn more about species at risk and behaviours to adopt to contribute to species conservation through on-site interpretation activities. Because visitors would be aware and informed, they could play an active role in recovery measures (e.g. making visitors aware of the importance of risks related to the road network that affect many turtle species could drastically reduce threats for this population). Visitors will be able to contribute to the different citizen science platforms such as Carapace, eBird and iNaturalist. In this way, they will provide valuable and needed information for recovery measures in a future action plan, and provide better representation of the territory's spatial and temporal species occupancy.

Communication activities serve to provide public awareness, promote good management practices and ensure that the territory is managed in accordance with regulations and conditions imposed for some activities such as tree cutting and building demolition. These are important measures to ensure the recovery for Little Brown Myotis, Northern Myotis and Tri-colored bat, which are vulnerable to habitat loss or the accidental spread of WNS because of human activity. This measure will additionally benefit some bird species like the Chimney Swift.

Education and awareness programs will also target the general public, which is essential, since most of the species affected by this action plan are present elsewhere in the province of Quebec, far beyond the park and associated NHSs. External communications can also facilitate general support for the protection of species at risk.

Collaboration with the indigenous communities of the province of Quebec is important for the development and implementation of recovery measures for species at risk present in the province. Elsewhere in Canada, the sharing of traditional knowledge has led to the adoption of more effective management practices in several Parks Canada jurisdictions (e.g. the recovery of caribou in Qausuittuq National Park in Nunavut).

# 4. Critical Habitat

Subsection 2(1) of the *Species at Risk Act* defines critical habitat as "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." At the time this document was written, it was not possible to identify new critical habitat or additional critical habitat for any species at LMNP or in the related NHSs. If the identification of critical habitat is not complete, it will be identified in a future or revised action plan or an updated recovery strategy. Refer to the schedule of studies to identify critical habitat in relevant recovery strategies for further details.

Critical habitat is identified or partially identified in recovery strategies for the Wood Turtle, Spiny Softshell Turtle, Copper Redhorse, Least Bittern and Red-headed woodpecker in MWQFU. The federal recovery strategy for the Little Brown bat, Tri-colored bat and Northern Long-eared Bat contains a partial definition of critical habitat: any hibernaculum used at least once by the species since 1995. No other critical habitat was identified in La Mauricie National Park or in associated national historic sites for one or any other species identified in this plan (as of January 2020). As more knowledge of species habitat requirements and occupancy expands, other critical habitat fragments may be identified in a future or revised action plan or an updated recovery strategy. Refer to the schedule of studies to identify critical habitat in relevant recovery strategies for more details.

## 4.1 Proposed Measures to Protect Critical Habitat

Critical habitat identified in other recovery documents and located within La Mauricie National Park boundaries and associated NHSs are legally protected from destruction in accordance with section 58 of the SARA.

# 5. Evaluation of Socio-economic Costs and Benefits

Under the *Species at Risk Act*, the responsible federal minister must 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 of implementing the action plan will be borne by Parks Canada, out of existing salaries and goods and services dollars. This includes incremental salary costs, materials, equipment and contracting of professional services for measures outlined in Appendices B, C and D. No major socio-economic costs to partners, stakeholders or indigenous communities are expected as a result of this action plan. Additional resources or partnerships will be sought to support the measures outlined in Appendix C.

Many of the proposed measures will be incorporated into the national park and national historic site operational management activities. The costs that will be incurred by the government will be covered by fund prioritization and existing salaries in LMNP and related NHSs; there will be no additional costs for the Canadian society.

The action plan applies only to land and waters in LMNP and related NHSs administered by Parks Canada and under the MWQFU that provides suitable habitat for species in this action plan (Obadjiwan–Fort Témiscamingue NHS; Fort Lennox NHS; Fort Chambly NHS; Coteau-du-Lac NHS; Battle of the Châteauguay NHS; Manoir Papineau NHS; Forges du Saint-Maurice NHS; Louis S. St-Laurent NHS; Carillon Barracks NHS) and does not impose any restrictions on land use outside the park and the NHSs. Consequently, there will be no socio-economic impact on the public. Visitor activities on the park's land and in its waters, however, may be subject to minor restrictions to ensure the protection and recovery of species at risk.

## 5.2 Benefits

Measures presented in this action plan for the LMNP and related NHSs will contribute to meeting species at risk recovery strategy objectives and those related to management for species of special concern. These measures are expected to have an overall positive impact on ecological integrity of LMNP, visitors and public, and should increase opportunities to appreciate the park, the NHSs, and the presence of species. This action plan includes measures that could result in benefits to Canadians, such as positive impacts on biodiversity and the value individual's place on preserving biodiversity.

The proposed measures seek a balanced approach to reducing or eliminating threats for populations of species at risk and their habitats. The actions include protection of individuals and their habitat (e.g. restricting human activities in areas occupied by species combined with ongoing monitoring and research activities); potential re-establishment of species; and increasing public awareness and stewardship actions (e.g. signage, visitor programs and sharing of highlights in media).

It is hard to quantify the possible economic benefits of recovering species at risk in LMNP and related NHSs, because many values from wild species are non-market commodities that cannot easily be assessed in financial terms. All wild species have an intrinsic value and are appreciated by Canadians for aesthetic, cultural, spiritual, recreational, educational, historical, economic, medicinal, ecological and scientific reasons. Conserving wildlife species at risk is a key component of the Government of Canada's commitment to conserving biological diversity; this is crucial for Canada's current and future economic and natural wealth.

Implementing this action plan is expected to provide positive benefits to the public, local residents and indigenous communities. Some of the activities in this plan may create opportunities for local residents to participate in the recovery of species at risk or may foster cooperation and community partnerships to recovery species at risk. These benefits must be equally shared between local communities, and opportunities for involvement will be available to all local residents. These possibilities include opportunities to learn about and take part in the recovery of culturally important species at risk, and be part of recovery efforts. 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 the implementation of the action plan will be done by assessing progress towards implementing the measures listed in Appendices B and C (in accordance with section 55 of the SARA). 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.

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## Appendix A: Species information, objectives and monitoring plans for species at risk in LMNP. The national level information presented in this table is based on documents related to recovery strategies, management plans and status reports on the species presented when these documents were available. See the document references for each species in the References section presented above.

| Species | National objectives | Population and distribution objectives[3] | Population Trends in the LMNP | Population monitoring | General information and broad park approach |
|---|---|---|---|---|---|
| **Mammals** | | | | | |
| Eastern wolf | None | None | Stable | Compilations of incidental observations by visitors and Park employees. Monitoring of wolves within the park using cameras and snow tracking. | Update knowledge of the presence of the species at the LMNP. The Park continues to protect individuals and habitats and help partners protect and restore populations. |
| Northern Myotis,<br><br>Tri-colored Bat,<br><br>Little Brown Myotis | Maintain (or re-establish, if any) the pre-WNS area of occurrence (an area encompassing the known geographic range of the species in Canada. In areas affected by WNS, the short-term goal (12 to 18 years) for the population is to put an end to the declining trend of the population or, if possible, to achieve an upward trend in the population. In the regions affected by the WNS, the long-term population goal (many generations) is to reach a self-sufficient, resilient, redundant and representative population, in areas that are not yet affected by the WNS, the population objective is to maintain stable populations or, if possible, to achieve an upward trend in the population. | None | Unknown | Use the standardized protocol developed by the LMNP along with incidental observations to identify large bat colonies (species and numbers) in natural areas and human structures. Monitor these sites for any changes. | The park continues to protect suitable individuals and habitats and to help partners protect and restore bat populations. Find and protect hibernacula and maternity colonies. Contribute to provincial and federal conservation efforts, in particular by providing data to databases such as Chauves-Souris aux abris.<br><br>Determine the spatial distribution and protect habitat quality available within the LMNP. Protect all known hibernacula and maternity colonies units in the LMNP. |

[3] "None" means that no objective established: because no threats known in park or no known LMNP management actions can contribute to conservation within the park at this time; or LMNP is of limited importance to the species' national recovery.

| Species | National objectives | Population and distribution objectives[3] | Population Trends in the LMNP | Population monitoring | General information and broad park approach |
|---|---|---|---|---|---|
| **Fish** | | | | | |
| Arctic Char | None | None | Unknown | Fish inventories will be conducted to compare population abundance and structure with previous inventories. | Update knowledge about the presence of the species in La Mauricie National Park. The Park continues to protect appropriate individuals and habitats and to help partners protect and restore the population. Inform citizens living on the periphery of the PNLM territory of the uniqueness of the Arctic char population and the risks associated with the introduction of species into lakes and streams that are part of the Lac Français watershed. |
| **Amphibians and reptiles** | | | | | |
| Wood Turtle | Long-term:<br><br>Ensure the viability of local populations in watersheds where the wood Turtle is currently present in Canada; Medium-term: Increase the abundance of Wood Turtle populations in streams where the species is in decline. Across the Canadian species' range maintain and, where possible, increase the suitable habitat, and reduce or mitigate threats that could lead to population decline. Across the Canadian species' range, determine baseline values or trends of abundance in streams occupied by the species but where population abundance or trend is unknown. | Maintain or increase the Wood Turtle population in LMNP. | Stable | Turtle sightings in the LMNP are routinely reported by Parks Canada employees. In addition, public awareness to report their observations will also be carried out over the next five years. The spawning site will be monitored using visual inventory to count the number of different females identified during the spawning period. | Support stewardship projects outside the Park, continue annual monitoring and maintenance of the spawning site, a capture-recapture census is conducted every 5 years to monitor the abundance and quality of the habitat as well as the extent of the occupied area. Initiate a research program to identify alternative egg-laying sites and how often they are used; Continue to acquire knowledge about the threats to the species, including road mortality. |

| Species | National objectives | Population and distribution objectives[3] | Population Trends in the LMNP | Population monitoring | General information and broad park approach |
|---|---|---|---|---|---|
| Midland Painted Turtle | None | None | Unknown | Compilations of incidental observations by visitors and Park employees. | Update knowledge of the presence of the species at the LMNP. The Park continues to protect suitable individuals and habitats and help partners protect and restore populations.<br><br>Confirm the presence of the species in LMNP. |
| Snapping Turtle | Maintain and, if possible, increase the Canadian Snapping Turtle Area of Occupancy Index (858,000 km2) and, if possible, increase the abundance of Snapping Turtles in Canada, reducing the main threats to adults in particular. | None | Unknown | Compilations of incidental observations by visitors and Park employees. | Update knowledge about the presence of the species. The Park continues to protect suitable individuals and habitats and help partners protect and restore populations.<br><br>Confirm the presence of the species in LMNP. |
| Pickerel frog<br><br>Ring-necked snake<br><br>Smooth green snake | None | None | Unknown | Compilations of incidental observations by visitors and Park employees. | Update knowledge about the presence of the species. The Park continues to protect suitable individuals and habitats and help partners protect and restore populations. |
| **Birds** | | | | | |
| Olive-sided Flycatcher | End the national decline by 2025 (within 10 years of the release of the recovery strategy in the Species at Risk Act Public Registry while ensuring that the population does not decline by more than 10% during this period. Ensure a 10-year positive demographic trend for the Olive-sided Flycatcher in Canada. Maintain the current area of occurrence (an area that encompasses the geographic distribution of all known populations) in Canada. | None | Unknown | Incidental observations by visitors and Park employees. Inventory of forest birds by an ornithologist every 5 years at the LMNP. | Adopt good management practises ensuring to protect all suitable habitats for the species. |

| Species | National objectives | Population and distribution objectives[3] | Population Trends in the LMNP | Population monitoring | General information and broad park approach |
|---|---|---|---|---|---|
| Common Nighthawk | End the national decline by 2025 (10 years after the publication of this recovery strategy in the Species at Risk Act Public Registry), while ensuring that the population does not decline by more than 10% during this period. Ensure a 10-year positive demographic trend for the Common Nighthawk in Canada. Maintain the current area of occurrence (i.e. the area that includes the geographic distribution of all known populations) in Canada. | None | Unknown | Incidental observations by visitors and Park employees. Inventory of forest birds by an ornithologist every 5 years at the LMNP. | Adopt good management practises ensuring to protect all suitable habitats for the species. |
| Eastern Whip-Poor-Will | Slow the decline so that the population does not lose more than 10% (i.e. 12,000 individuals) over the period 2018 to 2028, and maintain the area of occupied habitat at 3,000 $km^2$ or more. Ensure a positive 10-year population trend from 2028, while promoting an increase in occupied habitat areas, including the gradual recolonization of areas in the southern portion of the breeding range. | None | Unknown | Incidental observations by visitors and Park employees. Inventory of forest birds by an ornithologist every 5 years at the LMNP. | Adopt good management practises ensuring to protect all suitable habitats for the species. |
| Canada Warbler | End the national decline by 2025 (i.e. within 10 years of the publication of the recovery strategy in the Species at Risk Act Public Registry), ensuring that the population does not decline by more than 10% during this period; Ensure a positive 10-year demographic trend across the country; maintain the current area of occurrence (an area that encompasses the geographic distribution | None | Unknown | Incidental observations by visitors and Park employees. Inventory of forest birds by an ornithologist every 5 years at the LMNP. | Adopt good management practises ensuring to protect all suitable habitats for the species. |

| Species | National objectives | Population and distribution objectives[3] | Population Trends in the LMNP | Population monitoring | General information and broad park approach |
|---|---|---|---|---|---|
| | of all known populations) in Canada. | | | | |
| Chimney Swift | End national decline by 2029 (i.e. 10 years after the release of the recovery strategy in the Species at Risk Act Public Registry), while ensuring that the population does not decline by more than 10%. Maintain a stable chimney swift population in Canada over a period of at least 10 years, starting in 2029. | None | Unknown | Incidental observations by visitors and Park employees. Inventory of forest birds by an ornithologist every 5 years at the LMNP. | Adopt good management practises ensuring to protect all suitable habitats for the species.<br><br>Conduct a survey of the chimneys present on the buildings and check their occupancy by the Chimney Swift if they are suitable.<br><br>If work on chimneys is necessary, plan to do so, making sure to respect the concept of residence (as defined in SARA) for the species.<br><br>If new buildings are planned, explore the possibility of including false chimneys to provide the species with nesting sites.<br><br>Confirm the presence of the species in LMNP. |
| Rusty Blackbird | End the population decline and then keep the population at the 2014 level. Secondly, increase population abundance to achieve a sustained 10-year increase in the abundance of the Rusty Blackbird population in Canada. | None | Unknown | Incidental observations by visitors and Park employees. Inventory of forest birds by an ornithologist every 5 years at the LMNP. | Adopt good management practises to ensure that the habitat of the species where it has been observed is protected. |
| Bald Eagle, Bank swallow, Barn swallow, Eastern Wood Pewee, Evening Grosbeak, Golden Eagle, Peregrine falcon, Wood Trush, | None | None | Unknown | Incidental observations by visitors and Park employees. Inventory of forest birds by an ornithologist every 5 years at the LMNP. | Adopt good management practises ensuring to protect all suitable habitats for the species. |

| Species | National objectives | Population and distribution objectives[3] | Population Trends in the LMNP | Population monitoring | General information and broad park approach |
|---|---|---|---|---|---|
| **Arthropods** | | | | | |
| Grey comma, Long-horned beetle, Monarch butterfly, Variegated fritillary, Yellow-banded bumblebee | None | None | Unknown | Incidental observations by Parks Canada visitors and employees. | Update knowledge of the presence of this species at the LMNP. Integrate milkweed population protection into the management of the LMNP. |
| **Vascular plants** | | | | | |
| Butternut | Maintain conditions that will allow the recovery of viable, ecologically functional and widely distributed populations within the species' current range in Canada. Address key gaps in knowledge and research needed to implement recovery activities (including research on disease resistance, the level of adaptive genetic variation and on the environmental factors limiting the spread of the disease). | None | Decline | Monitor the condition of healthy individuals previously identified according to established protocol. | Update knowledge of the spatial distribution of walnuts and their general condition in La Mauricie National Park and in the national historic sites where their presence has been noted; continue to monitor previously identified resistant individuals. Introduce new individuals to areas where the occurrence of the disease is low. Contribute to research to identify factors contributing to walnut resistance.<br><br>Confirm healthy individuals' presence within the park and protect habitats where the species is found. |
| Black Ash | None | None | Unknown but disappearance of some sites where its presence had been noted. | Monitor the condition of healthy individuals previously identified according to the established protocol. | Update knowledge of the abundance and distribution of the species within the Park. Participate in the development of the species recovery strategy, if any. The Park will continue to protect individuals and habitats and help partners protect and restore the species. Work with partners to conduct opportunistic censuses of the species in the Park. Contribute to research on resistance to the Emerald Ash Borer. Adopt best management practises as a result of new observations. |

| Species | National objectives | Population and distribution objectives[3] | Population Trends in the LMNP | Population monitoring | General information and broad park approach |
|---|---|---|---|---|---|
| Wood Garlic, Linen-leaf Aster, Narrow-leaved Bermudian, Toothwort, Hairy Sedge, Hairy Fruit Sedge, Tetraploid Sea Bream, Closed Gentian, Carolina Geranium, Canada Lily, Ostrich Fern, Large-leaf Orchid, Rhyncospore Fern, Sanguinaria, Cattail, White Trillium, Humped Bladderwort, Reversed Flowered Bladderwort, Virginia Chain Fern. | None | None | Unknown | Incidental observations by visitors, volunteers and Park employees. | Update knowledge about the presence of these species in La Mauricie National Park. The Park continues to protect individuals and habitats and to help partners protect and restore populations if the situation arises. |

## Appendix A (cont'd.): Species information, objectives and monitoring plans for species at risk in NHSs associated with the MWQFU.

The national level information presented in this table is based on documents related to recovery strategies, management plans and status reports on the species presented when these documents were available. See the document references for each species in the References section presented above.

| Species | National objectives | Population and distribution objectives | Population Trends in the NHS of the MWQFU | Population monitoring | General information and broad MWQFU approach |
|---|---|---|---|---|---|
| **Mammals** | | | | | |
| Little Brown Myotis, Northern Myotis, Tri-colored Bat | Maintain (or re-establish, if any) the pre-WNS area of occurrence (an area encompassing the known geographic range of the species in Canada. In areas affected by WNS, the short-term goal (12 to 18 years) is to put an end to the declining trend of the population or, if possible, to achieve an upward trend in the population. In the areas affected by the WNS, the long-term goal (many generations) in terms of population is to reach a self-sufficient, resilient, redundant and representative population. In areas that are not yet affected by the WNS, the population objective is to maintain stable populations or, if possible, to achieve an upward trend in the population. | None | Stable | Use the standardized protocol developed by the LMNP for incidental observations to identify large bat colonies (species and numbers) in natural areas and human structures. Monitor these sites for any changes. | Continue to participate in the development of recovery strategies and management plans and the designation of critical habitat. The NHSs continue to protect individuals and habitats and to help partners protect and restore bat populations. Find and protect hibernacula and maternity wards.<br><br>Determine the spatial distribution and maintain habitat quality available within the MWQFU. |

| Species | National objectives | Population and distribution objectives | Population Trends in the NHS of the MWQFU | Population monitoring | General information and broad MWQFU approach |
|---|---|---|---|---|---|
| **Amphibians and reptiles** | | | | | |
| Pickerel Frog | None | None | Unknown | Incidental observations by Parks Canada visitors and employees. | Track the use of land by the species.<br><br>Awareness and communication.<br><br>Stewardship and improving habitat.<br><br>Update knowledge about the presence of the species within the MWQFU. Continue to participate in the development of recovery strategies and management plans and in the designation of critical habitat, where appropriate. The NHSs continue to protect individuals and habitats and to help partners protect and restore populations. |
| Northern Map Turtle | Stabilize population levels and thus maintain the distribution and abundance of the Canadian population of the species through threat reduction, mitigation and habitat management. | None | Unknown | Incidental observations by visitors, volunteers and NHS staff. If observed, a validation questionnaire will be completed and confirmation by specialists will be made. | Set up communication and awareness activities.<br><br>Survey and track local populations of Northern Map Turtles, their habitat, and threats to them. Support stewardship projects outside of the NHS. |
| Snapping Turtle | Maintain and, if possible, increase the Canadian Snapping Turtle Area of Occupancy Index (858,000 km2) and, if possible, increase the abundance of Snapping Turtles in Canada, reducing the main threats to adults in particular. | None | Unknown | Compilation of incidental observations by visitors and Park employees. If observed, a validation questionnaire will be completed and confirmation by specialists will be made. | Update knowledge about the presence of the species within the MWQFU. The NHSs continue to protect individuals and habitats and to help partners protect and restore populations. Support stewardship projects outside of the NHS. |

| Species | National objectives | Population and distribution objectives | Population Trends in the NHS of the MWQFU | Population monitoring | General information and broad MWQFU approach |
|---|---|---|---|---|---|
| Spiny Softshell Turtle | Maintain and, if necessary and achievable, increase the abundance and distribution of the Spiny Softshell Turtle to ensure the persistence of self-sustaining local populations in areas where the species is present in Canada. | None | Unknown | Incidental observations by visitors, volunteers and NHS staff. If observed, a validation questionnaire will be completed and confirmation by specialists will be made. | Set up communication and awareness activities.<br><br>Conduct surveys and monitor local populations of Spiny Softshell, their habitat, and threats to them.<br>Support stewardship projects outside of the NHS. |
| **Fish** | | | | | |
| Bridle Shiner | Maintain and increase Bridle Shiner populations and habitat to ensure that viable populations are present throughout Canada's current and historical range. | None | Unknown | Compilations of incidental observations by visitors and Park employees. | Track the territory used by the species.<br><br>Awareness and communication.<br><br>Stewardship and improve habitat.<br><br>Update knowledge about the presence of the species within the MWQFU. Continue to participate in the development of recovery strategies and management plans and in the designation of critical habitat, where appropriate. The NHSs continue to protect individuals and habitats and to help partners protect and restore populations. Maintain and develop new partnerships. |
| Copper Redhorse | The ratio of Copper Redhorse progenitors to all fish of all species should be 3%; the autumnal catches of young copper redhorses of the year must account for at least 3% of the catches of all young fish of all species. Over the next few years, juveniles from seeding will have to make a significant contribution to inventories, while those from natural | None | Unknown | Compilations of incidental observations by visitors and Park employees. | Follow-up observations reported on the territory.<br><br>Awareness and communication.<br><br>Stewardship and improve habitat. Keep buffer strips healthy.<br><br>Update knowledge about the presence of the species within the MWQFU. Continue to participate in the development of recovery strategies and management plans and in the designation |

| Species | National objectives | Population and distribution objectives | Population Trends in the NHS of the MWQFU | Population monitoring | General information and broad MWQFU approach |
|---|---|---|---|---|---|
| | reproduction will need to gradually take over the current range and will have to be maintained. | | | | of critical habitat, where appropriate. The Park and NHS continue to protect individuals and habitats and to help partners protect and restore populations. Maintain and develop new partnerships. |
| Northern Brook Lamprey | Ensure the long-term persistence of Northern Brook Lamprey throughout its current and historical ranges in the Great Lakes – Upper St.Lawrence DU. | None | Unknown | Compilations of incidental observations by visitors and Park employees. | Follow-up observations reported on the territory.<br><br>Awareness and communication.<br><br>Stewardship and improve habitat. Keep buffer strips healthy.<br><br>Update knowledge about the presence of the species within the MWQFU. Continue to participate in the development of recovery strategies and management plans and in the designation of critical habitat, where appropriate. The NHSs continue to protect individuals and habitats and to help partners protect and restore populations. Maintain and develop new partnerships. |
| River Redhorse | Understanding the abundance and distribution of existing populations to improve our knowledge of the biology and ecology of the species and its habitat requirements. Understand long-term trends in populations and their habitat. Improving habitat assessment and mitigate threats to the species and its habitat. Optimize the use of resources in the | None | Unknown | Compilations of incidental observations by visitors and Park employees. | Follow-up observations reported on the territory.<br><br>Awareness and communication.<br><br>Stewardship and improve habitat. Keep buffer strips healthy.<br><br>Update knowledge about the presence of the species within the MWQFU. Continue to participate in the development of recovery strategies and management plans and in the designation |

| Species | National objectives | Population and distribution objectives | Population Trends in the NHS of the MWQFU | Population monitoring | General information and broad MWQFU approach |
|---|---|---|---|---|---|
| | management of the River Redhorse. Increase public interest and involve landowners, indigenous communities and the general public in conservation efforts to protect the River Redhorse. | | | | of critical habitat, where appropriate. The NHSs continue to protect individuals and habitats and to help partners protect and restore populations. Maintain and develop new partnerships. |
| Channel darter, Long-eared Sunfish, Stonecat, Silver Lamprey, Cutlips Minnow | None | None | Unknown | Compilations of incidental observations by visitors and Park employees. | Track the territory used by the species.<br><br>Awareness and communication.<br><br>Stewardship and improve habitat.<br><br>Update knowledge about the presence of the species within the MWQFU. Continue to participate in the development of recovery strategies and management plans and in the designation of critical habitat, where appropriate. The NHSs continue to protect individuals and habitats and to help partners protect and restore populations.<br><br>Maintain and develop new partnerships. |

| Species | National objectives | Population and distribution objectives | Population Trends in the NHS of the MWQFU | Population monitoring | General information and broad MWQFU approach |
|---|---|---|---|---|---|
| **Molluscs** | | | | | |
| Hickorynut | None | None | Unknown | Incidental observations by Parks Canada visitors and employees. | Track the territory used by the species.<br><br>Awareness and communication.<br><br>Stewardship and improve habitat.<br><br>Update knowledge about the presence of the species within the MWQFU. Continue to participate in the development of recovery strategies and management plans and in the designation of critical habitat, where appropriate. The NHSs continue to protect individuals and habitats and to help partners protect and restore populations. Maintain and develop new partnerships. |
| **Birds** | | | | | |
| Barn Swallow | None | None | Unknown | Incidental observations by Parks Canada visitors and employees. | Adopt good management practises to ensure that the habitat of the species where it has been observed within the MWQFU is protected. Identify nesting sites. |
| Bobolink | None | None | Unknown | Incidental observations by Parks Canada visitors and employees. | Update knowledge about the presence of this species within the MWQFU. Identify nesting sites. |
| Least Bittern | Maintain and, where possible, increase population abundance and the area of the species' current occupancy in Canada. | None | Unknown | Incidental observations by Parks Canada visitors and employees. | Update knowledge about the presence of this species within the MWQFU. Identify nesting sites. |

| Species | National objectives | Population and distribution objectives | Population Trends in the NHS of the MWQFU | Population monitoring | General information and broad MWQFU approach |
|---|---|---|---|---|---|
| Red-headed Woodpecker | End the declining demographic trend. Achieving an increase in the abundance of the species in Canada as well as a self-sustaining population and maintaining or, to the extent biologically or technically possible, increasing the range and area of occupancy of the species. | None | Unknown | Incidental observations by visitors and Park employees. Inventory of forest birds by an ornithologist every 5 years at the LMNP. | Adopt good management practises to ensure that the habitat of the species where it has been observed within the MWQFU is protected. Identify and inspect trees that could be nesting sites. |
| **Arthropods** | | | | | |
| Monarch | None | None. | Unknown | Incidental observations by Parks Canada visitors and employees. | Update knowledge about the presence of this species within the MWQFU. Integrating milkweed population protection into the management of the MWQFU NHSs. |
| **Vascular Plants** | | | | | |
| Butternut | Maintain conditions that will allow the recovery of viable, ecologically functional and widely distributed populations within the species' current range in Canada. Address key gaps in knowledge and research needed to implement recovery activities (including research on disease resistance, the level of adaptive genetic variation and on the environmental factors limiting the spread of the disease). | None | Decline | Monitoring the condition of healthy individuals previously identified according to established protocol. | Update knowledge of the spatial distribution of walnuts and their general condition in the national historic sites where their presence has been noted; continue to monitor previously identified resistant individuals. Introduce new individuals to areas where the occurrence of the disease is low. Contribute to research to identify factors contributing to walnut disease resistance. |

| Species | National objectives | Population and distribution objectives | Population Trends in the NHS of the MWQFU | Population monitoring | General information and broad MWQFU approach |
|---|---|---|---|---|---|
| Black Ash | None | None | Unknown but disappearance of some sites where its presence had been noted. | Monitor the condition of healthy individuals previously identified according to the established protocol. | Update the knowledge of the abundance and distribution of the species within the NHS. Participate in the development of the species recovery strategy, if any. The NHS will continue to protect individuals and habitats if possible and help partners protect and restore the species. Work with partners to conduct opportunistic censuses of the species in the Park. Contribute to research on resistance to the Emerald Ash Borer. Adoption of management practises as a result of new observations. |
| Tongue, Hybrid Loosestrife, Patchy Silk Bulrush, Downy Rattlesnake-Plantain, Fernald's Milkvetch, Striped Coralroot, Ram's Head Lady's-slipper, Pine Drops, Lupines. | None | None | Unknown | Inventories will be carried out to count the number of locations and individuals at each site | Update knowledge about the presence of these species within the MWQFU. |

## Appendix B: Conservation and recovery measures that will be conducted by LMNP and associated NHSs. The information presented in this table is based on documents related to recovery strategies, management plans and status reports on the species presented when these documents were available. See the document references for each species in the References section presented above.

| Species | Measure # | Measure | Desired outcome | Threats or recovery measures targeted | Timeline |
|---|---|---|---|---|---|
| Wood Turtle, Snapping Turtle, Painted Turtle | 1 | Collaborate in the creation of a turtle conservation group for the Mauricie region. | Develop a regional plan for the conservation of turtles for the Mauricie region | Better knowledge of current threats to turtles in Mauricie | 2021 |
| Wood Turtle | 2 | Protection, maintenance and monitoring of egg-laying sites within and outside the Park boundaries. | Maintain or increase the number of turtle hatchlings returning to the river. Maintain or increase the number of turtle sightings inside and outside the park. | Contribute to the maintenance of or increase in Wood Turtle Populations | Every year until 2024 |

| Species | Measure # | Measure | Desired outcome | Threats or recovery measures targeted | Timeline |
|---|---|---|---|---|---|
| Wood Turtle | 3 | Continue monitoring the Wood Turtle population within the Park and abundance in a control section of a river | The abundance of turtles is monitored and known in the park and outside. Abundance is stable or increasing. | Contribute to the maintenance of or increase in the population | Every year inside the Park and in 2021 for follow-up outside the Park. |
| Wood Turtle | 4 | Improving the habitat of the Wood Turtle in the LMNP by removing logs from the beaches of Lake Wapizagonke (Basin 1) | Removal of logs from the beaches of Wapizagonke Lake | Contributing to the maintenance and increase of the Wood Turtle population by improving their habitats and increasing nesting sites. | 2021 |
| Wood Turtle, Midland Painted Turtle, Snapping Turtle | 5 | Implementation of a research program to identify and protect alternative and potential egg-laying sites for the 3 species of turtles in La Mauricie National Park. | Increase the number of known spawning sites and the number of known occurrences. | Contribute to the maintenance and increase of turtle populations by improving knowledge of the location of egg-laying sites and potential threats and improving reproductive success. | 2023 |

| Species | Measure # | Measure | Desired outcome | Threats or recovery measures targeted | Timeline |
|---|---|---|---|---|---|
| Wood Turtle, Midland Painted Turtle, Snapping Turtle | 7 | With the help of regional partners, work together to identify road sections that pose a risk to turtles and to implement measures to mitigate road mortality on the periphery of the LMNP and in the LMNP. | Implementation of mitigation measures | Improve knowledge about the area of high road mortality and the cause of road mortality in the region to identify effective mitigation measures. | 2023 |
| Little Brown Myotis, Northern Myotis, Tri-Colored Bat, | 10 | Track bat populations at each of the MWQFU sites, hibernacula and maternity colonies identified using the standardized protocol. | Confirm the presence of bats in areas where bats have been reported in the past. | Improve knowledge of population abundance and long-term trends at MWQFU sites. | 2024 |
| Little Brown Myotis, Northern Myotis, Tri-Colored Bat | 12 | Install a heated nest box from the guardhouse at Fort Lennox to compensate for the loss of access to the guardhouse. | The nest box is built and installed | Mitigate the effect of habitat loss related to the exclusion of bats from certain buildings after renovations. | 2022 |

| Species | Measure # | Measure | Desired outcome | Threats or recovery measures targeted | Timeline |
|---|---|---|---|---|---|
| Little Brown Myotis, Northern Myotis Tri-Colored Bat | 13 | Write and implement best management practises (BMPs) for the maintenance or decommissioning of Park and NHS infrastructure that serves as maternity colonies and bat hibernacula. Work with partners and the community to protect these important places of residence. | BMPs are implemented and employees are trained. | Mitigate the effect of habitat loss related to the exclusion of bats from certain buildings after renovations. | 2020 |
| Eastern Wolf | 16 | Monitor the presence of the Eastern Wolf in the territory of La Mauricie National Park | Monitoring of the presence of the Eastern Wolf in the territory of La Mauricie National Park | Improve knowledge of wolves habitat used within the parks. | Every year until 2024 |

| Species | Measure # | Measure | Desired outcome | Threats or recovery measures targeted | Timeline |
|---|---|---|---|---|---|
| Snapping Turtle, Midland Painted Turtle | 19 | Identify population status, locate and protect egg-laying sites at the LMNP and associated NHSs, and map the current distribution of the species within the MWQFU. | Knowledge update on the presence of Snapping Turtle in the MWQFU to be able to map its presence. | Improve knowledge about the locations of these species to be able to provide better protection for them. | Every year until 2024 |
| All species | 37 | Map the cumulative information on the presence of species at risk acquired over time to be able to integrate this information into the management planning of each site. | Production of observation mapping and knowledge relative to its presence contribute to provincial and federal databases | Improve knowledge of the presence of species at risk at all MWQFU sites to integrate this information into the general management of all sites. Share information with relevant provincial and federal databases (eg CDPNQ). | 2024 |

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

The information presented in this table is based on documents related to recovery strategies, management plans and status reports on the species presented when these documents were available. See the document references for each species in the References section presented above.

| Species | Measure # | Measure | Threats or recovery measures targeted | Desired outcome |
|---|---|---|---|---|
| Wood Turtle, Midland Painted Turtle, Snapping Turtle | 6 | With the help of university partners, conduct a study to characterize the hydrology of the Wapizagonke river and lake and the habitat of the Wood Turtle before and after the construction of the dam at the Wapizagonke Lake outlet. | Improve Wood Turtle habitat and knowledge of the influence of river hydrology on the availability of spring nesting sites. Would better predict the potential impact of climate change on turtle reproduction. | Produce report in connection with this study. |
| Wood Turtle | 8 | With the help of partners, raise neonate turtles that have been hatched outside the protection zone of the spawning site for 1 or 2 years and relocate them within the limits of the LMNP. Install GPS transmitters on these individuals to be able to track their movements in real time. | Maintain or increase the abundance of the Wood Turtle population. | Maintain or increase the number of Wood Turtle sightings within PNLM boundaries. |

| Species | Measure # | Measure | Threats or recovery measures targeted | Desired outcome |
|---|---|---|---|---|
| Little Brown Myotis, Northern Myotis, Tri-Colored Bat | 11 | In partnership with the Groupe Chiroptère, determine the spatial distribution of bats within the MWQFU by trying to identify natural structures with hibernacula and maternity colonies using telemetry. | Fill gaps in knowledge surrounding the locations of maternity and hibernacula in natural structures to be able to protect these structures and integrate them into the way sites are managed. | Maternity roosts and hibernacula in natural habitat are identified and protected. |
| Eastern Wolf | 15 | With the help of management partners and trappers in the surrounding territories, implement a research program to clarify the status of the Eastern Wolf in Mauricie using genetic tools to quantify hybridization with other canines in the region. | Filling knowledge gaps about the presence of genetically pure Eastern Wolves in the region. | Knowledge relative to wolf population, dens, meeting points and movement corridors in the park is updated |
| Eastern Wolf | 18 | With the help of regional partners, identify with telemetry the spatial distribution of Eastern Wolves within and outside the limits of the LMNP, with a particular focus on identifying dens, rendezvous points and corridors that can then be integrated into Park planning and protect these | Fill information gaps in habitat use in and around the Park to ensure better protection of the species and be able to incorporate new knowledge in the management of the Park. | Corridors, meeting points and dens location are known. These elements are integrated into the prescribed burning plan and the visitor experience planning. |

| Species | Measure # | Measure | Threats or recovery measures targeted | Desired outcome |
|---|---|---|---|---|
| | | sensitive elements for the species on and off the LMNP. | | |
| Arctic Char | 22 | Implement a research program to clarify the structure and abundance of the population and competing species and, where appropriate, identify the factors responsible for changes in the population. | Improve knowledge of the status of the population to be able to determine appropriate restoration and conservation measures where appropriate. | Population structure and spawning ground are known |
| Arctic Char | 23 | Implement a research program to locate spawning grounds in the French Lake. | Improve knowledge of the condition of spawning grounds to determine whether restoration actions should be undertaken. | Document the location of spawning grounds and their physicochemical characteristics |

# Appendix D: Measures related to external relations, education and visitor experience of species at risk at LMNP and associated NHS.

| Measures | Measure # | Desired results | Proposed measures |
|---|---|---|---|
| Public awareness campaign and targeted messages in support of measures to prevent turtle road mortality | 27 | To raise public awareness of the issue of road mortality for the maintenance of turtle populations. | Create target messages on social media each year during the egg-laying period. |
| Implement a communication strategy to create messages to:<br>1) raise awareness and educate the public and MWQFU staff about the importance of bats and the risks associated with their presence in buildings.<br>2) Encourage the public and MWQFU staff to report their bat sightings to MWQFU-managed territories. | 28 | 1) To raise awareness and educate the public and MWQFU staff about the importance of bats and the risks associated with their presence in buildings.<br>2) Encourage the public and MWQFU staff to report their bat sightings to MWQFU-managed territories. | Training workshop for MWQFU employees on the importance of bats and the risks associated with their presence in buildings. Creating target messages on social media a few times during the summer season. |
| Implement a communication strategy based on the educational package to raise awareness, educate and improve the perception of the wolves in the region and the importance of the ecological role played by the wolf in maintaining the balance of ecosystems in the region. | 29 | To raise awareness about, educate people and improve the perception of the Eastern wolf population as well as to highlight the ecological role played by the wolf in maintaining the balance of the region's ecosystems. The target audience would be managers of the surrounding territories and hunters/trappers. | Awareness workshops carried out at the park and in various events held in Mauricie (e.g., 24 hours of science) carried out each year. |
| Develop an awareness program for landowners located in | 30 | To raise awareness of landowners located in the watershed of the French Lake to the precariousness of this | An awareness workshop as well as information sessions at various events held in Mauricie (e.g., 24 hours of science) each year. These would highlight the |

| Measures | Measure # | Desired results | Proposed measures |
|---|---|---|---|
| the French Lake watershed. | | population of isolated Arctic Char in the French Lake. | precariousness of the species and the uniqueness of its presence at the park. |
| Organize urban outreach activities for young families and youth to showcase species at risk in the MWQFU | 31 | To make visitors of the LMNP and historic sites aware of the presence and importance of these species in the ecosystem. | Education workshops on the precariousness of species at risk and how they are important for conservation |
| Implement a program to enhance public observations for existing citizen science databases (eBird, iNaturalist, shell). | 32 | The public reports their observations on existing platforms (eBird, iNaturalist, shell). | Targeted messages on social media to raise awareness of the importance of reporting their observations. Public comments are highlighted on social media. |
| Incorporate indigenous knowledge about these SAR in Park interpretation products and highlight the importance of these species to Indigenous Peoples' culture | 33 | Indigenous Peoples' communities will be contacted in the first year. Interpretation panels and other products to showcase the traditional knowledge of communities related to species at risk will be installed in LNP and the NHSs of MWQFU. | Indigenous knowledge is showcased on social networks and in different places in the form of an interpretive panel. |
| Implement a communication strategy in traditional and social media to raise awareness of species at risk at the MWQFU | 34 | The Canadian public will be better informed about the presence and identity of species at risk within the MWQFU and about the precarious situation of these species.. | Species at risk are featured in various social media publications that inform about the biology of these species, their vulnerability and how the public can get involved in the protection of these species by providing concrete examples of actions that the public can take. |
| Design a visitor experience program that showcases species at risk. | 35 | Visitors will be better informed about the presence and identity of species at risk within the MWQFU and about the precarious situation of these species. | Various activities for visitors are organized each year to present the species their biology and the situation of the species present at the park and within the MWQFU as well as the ways in which people can get involved in the conservation of these different species by proposing concrete actions that the public can implement. |

# Appendix E: Effects on the environment and other species

A Strategic Environmental Assessment (SEA) is conducted on all recovery planning documents under the VEA, 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 implementation measures proposed in a recovery planning document could affect any component of the environment or the achievement of the Federal Sustainable Development Strategy for Canada (FSDS) goals and targets.

Recovery planning is intended to benefit species at risk and biodiversity in general. It is recognized, however, that recovery actions may 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 action plan, and are also summarized below.

Overall, it is anticipated that the implementation of this action plan will have a beneficial impact on non-target species, ecological processes, and the environment of LMNP and associated NHSs. The plan puts into practice recovery objectives outlined in the recovery strategies already developed for some species at risk addressed in this plan, which were subject to SEAs during the development of those documents. In addition, this action plan was developed to benefit all species at risk that regularly occur in LMNP and associated NHSs. 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, 2010). Consequently, the measures outlined in this plan address key management priorities aimed at improving the broader ecological health of the park. Finally, the plan outlines stewardship measures, educational programs and outreach initiatives for visitors, local residents, indigenous communities' 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.