Federal-Provincial Program to Inventory Protected Areas in Southern Quebec: An Extraordinary Advance Toward Knowledge of the Biodiversity Around Us

Environment and Climate Change Canada

July 2017

Canada

www.planstlaurent.qc.ca

Québec

This document should be cited as:
Environment and Climate Change Canada. Federal-provincial program to inventory protected areas in southern Quebec: an extraordinary advance toward knowledge of the biodiversity around us. 2017. 11 pages. [Online]. http://planstlaurent.qc.ca/en/biodiversity/list_of_projects/areas_of_ecological_interest/create_a_portrait_of_protected_areas_and_other_complementary_conservation_measures.html (page accessed on day/month/year).

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Published under the authority of the Quebec Minister of Sustainable Development, Environment and the Fight Against Climate Change

Cat. No.: En154-95/2017E-PDF
ISBN: 978-0-660-08630-9

Aussi disponible en français : Le programme fédéral-provincial d’inventaire des aires protégées du sud du Québec : une avancée extraordinaire vers la connaissance de la biodiversité qui nous entoure.

Project team

A strong federal-provincial partnership allowed us to develop the southern Quebec protected areas inventory program. The departments originally involved were Environment Canada and the Ministère des Ressources naturelles et de la Faune. We would like to thank everyone who participated in developing the inventory program and collecting data in the field. Their expertise and enthusiasm have allowed us to achieve the findings outlined in this document and to significantly improve our knowledge of the biodiversity of the areas visited.

This document was drafted by Mélanie Chabot from Environment and Climate Change Canada (ECCC) with Benoît Jobin, Sylvain Giguère, Stéphanie Gagnon and Luc Bélanger (ECCC). Antoine Nappi and Anouk Simard from the Ministère des Forêts, de la Faune et des Parcs kindly provided comments.

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1. Introduction

Importance of surveying biodiversity in southern Quebec

Southern Quebec has a very rich biodiversity, but it is densely populated and its natural habitats are subject to many pressures. The objective of creating protected areas of various types is to protect the different ecosystems and make it possible to maintain healthy fauna and flora populations. It is surprising that our knowledge of the biodiversity of many of these areas is fragmentary and often focused on certain wildlife groups, such as waterfowl.

Southern Quebec protected area inventory program

Under this federal-provincial program, 24 areas covering a total of approximately 18,500 hectares were inventoried from 2004 to 2009. Some 553 species were identified, including 85 that are at risk. Nearly 24,000 observations were entered into various databases. The program has provided a wealth of information on our local biodiversity.

A better understanding of the biodiversity of protected areas is essential. Achieving this goal will result in determining which species at risk are present, obtaining baseline data on them and establishing monitoring programs or other management measures to help maintain them, among other things.

The benefits of a successful partnership

For many years, the federal government (Environment Canada[1]) and the provincial government (Faune Québec[2]) have shared common objectives with regard to acquiring knowledge about biodiversity and protecting species at risk.

- **1969:** The federal government, through the Canadian Wildlife Service (CWS) of Environment Canada (EC), launched a strategic habitat acquisition program along the St. Lawrence and created a network of protected areas mainly consisting of the National Wildlife Areas (NWAs) and Migratory Bird Sanctuaries (MBSs).

  1989: The Quebec government adopted the *Act Respecting Threatened or Vulnerable Species*. The responsibility for wildlife species at risk in Quebec now falls under Faune Québec, with the exception of migratory birds, marine mammals

1. “Environment Canada” is used in this document to refer to the Department currently called Environment and Climate Change Canada (2017).

2. “Faune Québec” refers to the names of the various departments that have succeeded each other over the years and to which the Quebec Government has mandated the conservation and development of wildlife and parks. The current Quebec departments are the Ministère des Forêts, de la Faune et des Parcs (MFFP) and the Ministère du Développement durable, de l’Environnement et de la Lutte contre les changements climatiques (MDDELCC).

and marine fish, which are the federal government's responsibility. Significant gaps need to be filled in our knowledge of species distribution in the province.

- **1998**: The Panel on the Ecological Integrity of Canada's National Parks underlined the lack of information available on the biotic communities that host protected areas.

- **2001**: The Commissioner of the Environment and Sustainable Development determined that there was no comprehensive and up-to-date inventory of the species present in NWAs and MBSs, especially species at risk.

White Trillium
Photo: Benoît Jobin, ECCC

- **2003**: The *Species at Risk Act* (LEP) was enacted by the federal government. Federal departments, including EC, have to enforce this legislation on federal lands. To do this, it is essential to know the distribution of species at risk. However, knowledge on the distribution of species at risk in the NWAs is incomplete.

- **2004**: The Quebec biodiversity strategy 2004-2007 was launched. One of Quebec's objectives was to consolidate its network of protected areas so that it would be representative of all biodiversity and protect threatened or vulnerable species.

- **2004**: The CWS publishes the conservation plans for each of the NWAs. The review of knowledge of wildlife communities presented in this report highlights gaps in knowledge about several wildlife groups.

Given the complementarity of their objectives, the CWS and Faune Québec shared their expertise and set up a wildlife and flora inventory program in protected areas in southern Quebec. Each has benefited from the other's expertise to carry out this major project, to improve and to develop its capacities. In fact, the CWS has great expertise in the conservation of migratory birds, while Faune Québec has extensive expertise in other groups of terrestrial and freshwater fauna. Their partnership has maximized the productivity and efficiency of inventories.

In 2005, the project is also aligned with the fourth five-year plan of the Canada-Quebec Agreement on the St. Lawrence (2005–2010 St. Lawrence Action Plan). Under this plan, the governments of Canada and Quebec and many other organizations are working together to conserve, restore, protect and enhance the St. Lawrence River.

2. An extraordinary advance toward knowledge of biodiversity

2.1 Key program objectives

The program has a dual objective:

1. Identify species at risk that are present in protected areas;

2. Complete and update knowledge on the biodiversity of these areas.

Wetland
Photo: Benoît Jobin, ECCC

In theory, all living species should be included in a biodiversity inventory, but since that would require a disproportionate amount of available resources, choices have to be made. With regard to species at risk, efforts have focused on particular vertebrate fauna and vascular flora species that are on both federal and provincial lists. For the biodiversity component, it was agreed to focus on terrestrial and semi-aquatic species of vertebrates (amphibians, reptiles, birds and mammals). In some exceptional cases, inventories of fish and invertebrates (insects and freshwater mussels) were also conducted. The decision to conduct particular inventories in each area was made according to gaps found (e.g., knowledge of Quebec's eight NWAs) and the time and resources available.

2.2 Twenty-four areas visited in six years

Different types of areas were selected under the program: areas owned or managed by Environment Canada and, where the federal *Species at Risk Act* applies, provincial protected areas with species where the information was incomplete, as well as private areas that had legal protection status or that were likely to obtain it. A total of 24 areas were visited, with almost all of the areas located near the St. Lawrence River or its major tributaries (Table1, Map 1).

Areas inventoried as part of the program to inventory protected areas in southern Quebec between 2004 and 2009	Area (ha)*	
	Total	Inventoried
Federal management or ownership		
Baie de l'Isle-Verte NWA	532	532
Pointe-au-Père NWA	23	23
Îles de Contrecoeur NWA	312	312
Îles de la Paix NWA	120	120
Îles de l'Estuaire NWA	407	407
Cap Tourmente NWA	2,399	2,399
Lac Saint-François NWA	1347	1347
Pointe de l'Est NWA and wildlife refuge**	5,000	5,000
Gros Cacouna marsh birding site	246	246
Grandes battures Tailhandier	101	101
Îles de Varennes	100	100
Îles de Verchères	22	22
Îles du lac Saint-Pierre	682	682
Philipsburg Migratory Bird Sanctuary	540	540
Mont-Saint-Hilaire Migratory Bird Sanctuary	1,000	1,000
Provincial management or ownership		
Claude-Mélançon ecological reserve	534	534
Chênaie-des-Îles-Finlay ecological reserve	94	94
Île-Garth ecological reserve	17	17
Proposed Grande plée Bleue ecological reserve	910	910
Parc national du Lac-Témiscouata	17,500	500
Proposed Bristol wildlife refuge	2,595	2,595
Private management or ownership		
NCC – Lake Champlain	500	500
Commune de l'Île Dupas	460	460
Total	35,441	18,441

* Approximate area

** Considered as two separate areas since the NWA is federal property and the wildlife refuge is provincial property.

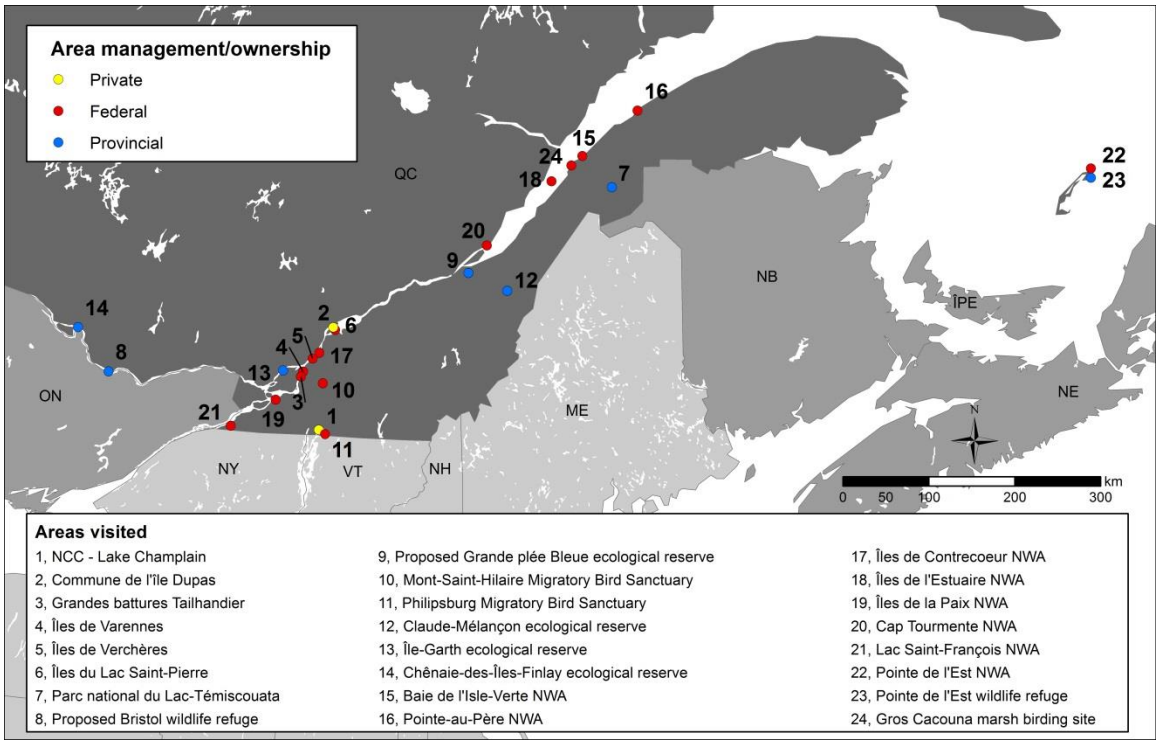

Figure 1. Areas surveyed under the southern Quebec protected areas inventory program

The areas fall into the following categories.

2.2.1 Federal management or ownership

1. Environment Canada's eight National Wildlife Areas (NWAs) in Quebec
Lac Saint-François NWA, Îles de la Paix NWA, Îles de Contrecoeur NWA, Cap Tourmente NWA, Baie de l'Isle-Verte NWA, Pointe-au-Père NWA, Îles de l'Estuaire NWA and Pointe de l'Est NWA

National Wildlife Areas are created and managed for the purposes of wildlife conservation, research and interpretation. Under the *Canada Wildlife Act*, Environment Canada's Canadian Wildlife Service is the manager of these areas.[3]

3. Environment and Climate Change Canada

2. Five areas without legal status that are owned or managed by Environment Canada

Gros Cacouna marsh birding site, îles du lac Saint-Pierre (îles de la Girodeau, île aux Raisins, pointe des îlets, îlets Percés, île des Barques, île Ronde and île aux Foins), îles de Verchères (île aux Bœufs and île aux Prunes), îles de Varennes (île Bellegarde, île Deslauriers and île de Varennes) and Grandes battures Tailhandier

The above-mentioned locations are the property of either Environment Canada, Transport Canada or the Montreal Port Authority. They are managed by Environment Canada and the federal government's *Species at Risk Act* applies to them as it does to all federal property.

3. Two migratory bird sanctuaries on private property

Philipsburg MBS and Mont-Saint-Hilaire MBS

Currently, Canada has 92 migratory bird sanctuaries (MBSs), including 28 in Quebec. Established under the *Migratory Birds Convention Act*, MBSs protect nesting birds. "The Regulations prescribe rules and prohibitions regarding the taking, injuring destruction or molestation of migratory birds or their nests or eggs in the sanctuaries."[4] Environment Canada's Canadian Wildlife Service is responsible for migratory bird sanctuaries regardless of whether they are located on federal, provincial or private land.

2.2.2 Provincial management or ownership

4. Three Government of Quebec ecological reserves and a proposed reserve

Île-Garth ecological reserve, Claude-Mélançon ecological reserve, Chênaie-des-Îles-Finlay ecological reserve and the proposed Grande plée Bleue ecological reserve

Currently, Quebec has 58 ecological reserves and the primary objective of these protected areas is the full and permanent conservation of examples of aquatic and terrestrial environments representing the diversity of the ecological and genetic richness of our natural heritage.[5]

[4] Environment and Climate Change Canada, 2016

[5] Ministère du Développement durable, de l'Environment et de la Lutte contre les changements climatiques du Québec, 2015

5. A Quebec provincial park
Parc national du Lac-Témiscouata

Quebec currently has 29 provincial parks. Sépaq's mandate is to manage activities in provincial parks, [Translation] "whose mission is the protection and enhancement of natural environments representative of one of the 43 natural regions of Quebec or places that have unique natural features."[6]

6. A wildlife refuge and a proposed wildlife refuge
Pointe de l'Est wildlife refuge in the Îles de la Madeleine and the proposed Bristol wildlife refuge

Quebec has eight wildlife refuges managed by Faune Québec. [Translation] "The wildlife refuge serves as a means of preserving the integrity of a significant wildlife habitat recognized regionally or provincially for its wildlife productivity and the density and wildlife diversity it contains or which it represents for a rare, threatened or vulnerable species."[7]

2.2.3 Private management or ownership

7. Two private areas intended for wildlife conservation or management
Nature Conservancy of Canada (NCC) at Lake Champlain and Commune de l'Île-Dupas

A number of different protection statuses may be granted on private land (nature reserve, easement). Moreover, private areas may be managed for wildlife conservation purposes, e.g., the Commune de l'Île-Dupas. "As part of the St. Lawrence Action Plan (SLAP) 2011–2026, Environment and Climate Change Canada's Canadian Wildlife Service (CWS-ECCC) and Quebec's Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques (MDDELCC) have launched an initiative aimed at improving the existing inventory of complementary conservation measures on private land in southern Quebec."[8]

2.3 Huge undertaking made possible through the contribution of many partners

A huge amount of work was carried out to conduct an inventory of the 24 areas, totalling nearly 18,500 hectares, between 2004 and 2009, through the contribution of the CWS, Faune Québec, the ministère de l'Environnement du Québec and many non-governmental organizations, which worked on the project from time to time: Agence régionale de mise en valeur des forêts privées du Bas-St. Laurent, Attention FragÎles, Biodôme de Montréal, Nature Conservancy of Canada, Société Duvetnor, Forêt modèle du Bas-St. Lawrence, Éco-Nature, Salicorne, Association des amis du cap Tourmente, Amis de la réserve

[6] Société des établissements de plein air du Québec,2016

[7] Ministère des Forêts, de la Faune et des Parcs du Québec, 2015

[8] St. Lawrence Global Observatory

nationale de faune du Lac-Saint-François, Corporation PARC Bas-Saint-Laurent, the University of Montreal, the Saguenay–Saint-Laurent marine park, Société d'aménagement de la rivière Madawaska et du lac Témiscouata, Société de conservation de l'eider à duvet de l'estuaire, Société d'aménagement de la baie Lavallière, the St. Laurent Valley Natural History Society and Société Provancher d'histoire naturelle du Canada.

2.4 Well-organized work

The majority of the inventories were carried out according to methodologies already established by recognized organizations which carry out these types of inventories on a regular basis. The use of such methodologies offers a number of advantages: they have been designed by specialists, the results obtained can be compared with existing results, and they also benefit the organizations that developed them. However, in some cases, adjustments were made to better adapt the methodologies to the nature of the area visited or to intensify the efforts made to protect species at risk.

2.5 Enormous efforts

The southern Quebec protected area inventory program required a significant investment in financial and human resources of approximately 350 person-days per year for six years at a cost of approximately $40,000. These figures take into account project planning, management and data entry.

The most intense sampling efforts were focused on the eight NWAs, the Île-Garth ecological reserve, the Gros Cacouna marsh birding site, the Pointe de l'Est wildlife refuge, the proposed Bristol wildlife refuge, the proposed Grande plée Bleue ecological reserve and the Nature Conservancy of Canada's areas at Lake Champlain.

Observer
Photo: Benoît Jobin, ECCC

The other areas were the subject of a much more specific inventory based on particular needs related to the acquisition of knowledge about certain taxonomic groups or species at risk. For example, the team focused on small mammals at the Claude-Mélançon ecological reserve and on salamanders at the Mont-Saint-Hilaire MBS. With regard to the islands without protection status, which are managed by Environment Canada, the work mainly consisted of research on butternut—an endangered species and migratory birds surveys.

2.6 Hundreds of species—astonishing biodiversity

The inventory conducted identified hundreds of species representing very diverse taxonomic groups:

- 231 birds
- 34 plants
- 30 fishes
- 26 mammals (small mammals, bats and pinnipeds)
- 14 amphibians
- 198 insects
- 11 reptiles
- 9 freshwater mussels

A total of 553 species were identified, including 85 at risk or likely to be at risk.

2.7 Highlights

The inventory program yielded some noteworthy results.

- The Hoary Bat, likely to be designated as threatened or vulnerable in Quebec, was found in almost all the inventoried areas, which indicates that it could be more common than previously thought.
- 23 species of rare plants were identified at the Lac-Saint-François NWA.
- One of the largest populations of the Eastern Sand Darter, a small endangered fish, was found on the edge of the Lac Saint-François NWA.
- The first population of Stinkpot Turtles was confirmed in Quebec at the site of the proposed Bristol wildlife refuge. The Eastern Ribbonsnake was also reported there.
- We also confirmed the first nesting of Boreal Owls in the Pointe de l'Est NWA.
- These inventories have broadened our knowledge of species that were rarely observed previously at the Pointe de l'Est NWA, including the Pine Grosbeak, Cape May Warbler and Bay-Breasted Warbler.

2.8 Safeguarding of invaluable information

- From 2004 to 2009, nearly 24,000 pieces of information were collected. Our observations are recorded in databases, and we are currently working on creating a user-friendly interface that will link the various databases and allow easy, centralized data queries, together with a geographic information system. It is a large-scale project that, once completed, will be a veritable gold mine for the managers of inventoried areas. Observations of species at risk were also included in the Centre de données sur le patrimoine naturel du Quebec (CDPNQ) databases, which records significant observations for the conservation of biodiversity in Quebec.

- Detailed inventory reports were issued with respect to a number of areas, including the eight NWAs, and other reports were drafted on specific inventories (e.g., endangered flora on île de la Girodeau and the Îles de Contrecœur NWA). A report describing the methodologies used in the inventory program is also under preparation.

3. Conclusion

Future prospects

Dragon's Mouth (*Arethusa bulbosa*)
Photo: Benoît Jobin, ECCC

The Quebec protected area inventory program has made huge progress in our understanding of the biodiversity of southern Quebec's protected areas.

The information gathered will serve as a baseline for setting up an ecological monitoring program for protected areas, since the distribution and occurrence of many taxonomic groups, including many species at risk, are now known. It is a treasure trove of information that will be useful for improving the management of our protected areas