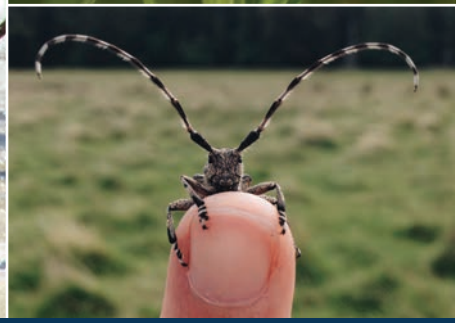
NatureServe Canada

A Network Connecting Science With Conservation
Un Réseau pour la Science et la Conservation

OUR MISSION To be the authoritative, primary source of accessible, current and reliable information on the distribution and abundance of Canada's natural diversity—especially species and ecosystems of conservation concern



ANNUAL REPORT 2015/16

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Front cover photo credits: left (Parks Canada); top right (Sarah L. Robinson); centre right (Jim Fowler); bottom right (Emanuel Smedbol)

From the Chair and Executive Director


Jeff Keith


Patrick Henry

Our 2015/16 Annual Report highlights various accomplishments of NatureServe Canada and its membership. We are proud of our collaborative approach that ensures we function effectively as a network, with all members benefitting from pooled investment of resources and expertise. These efforts are central to network success in serving as the authoritative source for taxonomic, status and location data for Canadian species and ecological communities of conservation concern.

The establishment of the Nunavut Conservation Data Centre over 2015/16 serves as an excellent example of this "network approach." With coordination and administrative leadership from NatureServe Canada, our membership contributed financial and in-kind support for data management services and training for our newest Constituent Member.

We invite the reader to also review our Strategic Plan 2014–18 (available at www.natureserve.ca) in order to better understand NatureServe Canada and how work profiled in this annual report has been undertaken to achieve priority results and outcomes identified by our membership.

We thank our members and supporters, both organizations and individuals, for helping us ensure that "the whole is greater than the sum of its parts." And we look forward to hearing from prospective new members and supporters about how you or your organization can help play a role in working with NatureServe Canada to promote the development and distribution of scientific knowledge regarding Canada's biodiversity.

Jeff Keith, Chair
Patrick Henry, Executive Director

DON'T MISS BIODIVERSITY WITHOUT BOUNDARIES 2017 (APRIL 10–13 IN OTTAWA)!

Please join us for *Biodiversity Without Boundaries 2017*—taking place during Canada's 150th year! This annual conference of the NatureServe Network spotlights some of the most important breakthroughs in conservation science to an audience that includes scientists from more than 80 Conservation Data Centres in the Americas, plus scores of government agencies, leading academic institutions and fellow conservation groups. Dozens of interactive workshops, symposia and panels make up the heart of the agenda, sessions that tackle the most pressing topics facing conservation science today—as well as those approaching fast over the horizon. Check NatureServe's website (www.natureserve.ca) for periodic event updates!

News

NUNAVUT EXPANDS THE NATURESERVE NETWORK

The international NatureServe Network's geographic coverage expanded significantly in January 2016, thanks to the founding of the Nunavut Conservation Data Centre (CDC). Every Canadian province and territory now has a CDC, complementing coverage of the NatureServe Network throughout the United States, and over much of Central and South America, and the Caribbean (see map at right).

The establishment of the Nunavut CDC and its active membership within the NatureServe and NatureServe Canada networks will enable Nunavut to adopt and benefit from standardized NatureServe approaches and tools for biodiversity data collection, processing and management.

Funding to assist in the development of the Nunavut CDC has been provided through network projects supported by NatureServe Canada's Associate Members: Environment Canada, Nature Conservancy of Canada, and Parks Canada Agency.

Inaugural Nunavut CDC activities have included the following:

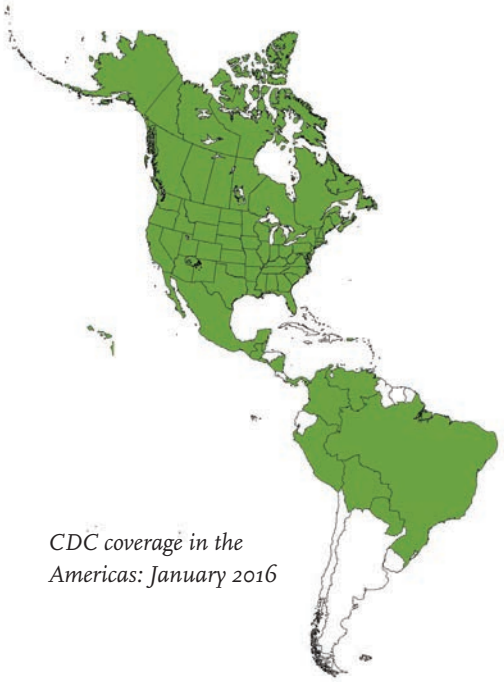
- Field inventories (Peary caribou surveys)
- Formatting of Nunavut data to NatureServe's methodology and standards, and entering the data into Central Biotics so that it can be shared broadly through NatureServe Explorer (online public data portal)
- Travel support for the Nunavut CDC coordinator to attend NatureServe Natural Heritage Methodology Training in Arlington, Virginia

Such pooling of resources and contributions of effort are a defining characteristic of the "network approach" adopted by NatureServe Canada and its member organizations, and plays an important role in building the capacity and effectiveness of all member CDCs.

A bowhead whale amidst Arctic ice: the bowhead is a globally "Vulnerable" (G3) species, one of at least 362 species in Canada of global conservation concern. (Photo: Vicki Beaver, NOAA)

The development of a CDC for Nunavut greatly advances our biodiversity data management abilities and effectiveness. Moreover, the Nunavut CDC will allow us to collaborate with a broader group of stakeholders, helping to ensure that our data meets its full potential for informing conservation decision-making.

Drikus Gissing,
Director of Wildlife Management,
Department of the Environment,
Government of Nunavut



CDC coverage in the Americas: January 2016

Connecting Science With Conservation

In Canada, important scientific information on the status of species and ecosystems is gathered by many different agencies and organizations. NatureServe Canada acts as an essential repository and interpreter of this information, thus immeasurably improving its value to conservation—especially for imperilled species.

George Finney, PhD,
President Emeritus,
Bird Studies Canada

Canada—after Russia the largest nation on Earth—is home to an estimated 140,000 species, only about half of which have been identified. They belong to a vast organic tapestry—the diversity of life at genetic, species and ecosystem levels. This biodiversity is vital for environmental, economic and social health.

Extinction is part of nature—99% of all species that have ever lived on Earth are extinct. However, in the past 200 years the rate of extinction has accelerated dramatically due to human activity. We are approaching a tipping point, losing species at 1,000 to 10,000 times the natural rate. They include at least 32 species once known in Canada that are now presumed or possibly extinct. Included (and famous) among them is the passenger pigeon, which, in its bountiful flocks, once graced Canadian skies from Saskatchewan to Prince Edward Island.

For biodiversity to endure, it is imperative that sound knowledge about it be maintained and made widely available. At NatureServe Canada, our vision is a future where the natural heritage of Canada is documented, where that information is readily available and where the conservation of biodiversity and resource decision-making in Canada are guided by high quality scientific data and information. Our mission is to be the authoritative, primary source of accessible, current and reliable information on the distribution and abundance of Canada's natural diversity—especially species and ecosystems of conservation concern.

*Eastern sand darter (*Ammocrypta pellucida*): Found in nine American states and in two Canadian provinces (ON and QC), this fish requires sandy bottoms and very clean water. Though "Apparently Secure" (G4) at its global level, it is nonetheless rare and listed as "Threatened" under Canada's* Species at Risk Act. *(Photo: Alan Dextrase)*

Though a globally "Secure" (G5) species found in 18 American states and in two Canadian provinces (AB and SK), Ord's kangaroo rat is nonetheless listed as "Endangered" under Canada's Species at Risk Act. *(Photo: anonymous)*

Who We Are

Member representatives at NatureServe Canada's Annual General Meeting in Victoria, BC in June 2015.

A registered Canadian charity, NatureServe Canada is a collaboration of Canadian Conservation Data Centres (CDCs) that work in partnership to develop, manage and distribute authoritative knowledge regarding Canada's plants, animals and ecosystems. NatureServe Canada and the Canadian CDCs are members of the NatureServe Network, spanning over 80 CDCs in the Americas. NatureServe Canada is the Canadian affiliate of NatureServe, based in Arlington, Virginia and which provides scientific and technical support to the international network.

A CDC is an organization with responsibility for biodiversity knowledge for the jurisdiction(s) it serves. CDCs are located in British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Québec, Atlantic Canada, Yukon, Northwest Territories and Nunavut. Each CDC adheres to rigorous scientific methods and standards developed since the 1970s. This is known as NatureServe's "core natural heritage methodology."

Reliable information on the status of Canada's species and habitats is the foundation for making effective conservation decisions. NatureServe Canada and Conservation Data Centres provide crucial information to the Nature Conservancy of Canada so that we can identify and invest in the right places for conservation.

Dan Kraus, Weston Conservation Scientist and Senior Director of Conservation Program Development, Nature Conservancy of Canada

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Nunavut Conservation Data Centre, Igloolik, Nunavut

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NatureServe Canada, Ottawa, Ontario

What We Do

Ontario Nature has benefited greatly from our partnership with the Ontario Natural Heritage Information Centre. This has included their expertise and knowledge of species, collection of data of tracked species and vegetation community mapping. Through the expertise, quality data management and overall integrity of the Centre's staff, not only have we benefited in direct management and knowledge, but the species of Ontario have also benefited.

Tanya Pulfer, MSc, Conservation Science Manager, Ontario Nature

NatureServe Canada and the Canadian CDCs strive to answer four key questions: What species and ecosystems exist in a province, territory or sub-region? What is their condition and status? Which species are at risk of extinction (global) or extirpation (from Canada or a province or territory)? Where are species at risk and rare ecosystems found?

To answer these questions, we use NatureServe's core natural heritage methodology to:

- List the species and ecosystems (biodiversity "elements") present in given jurisdictions
- Determine the rarity of these elements
- Gather information from all available sources on occurrences (locations) of rare elements
- Process, map and manage the collected data
- Conduct fieldwork to improve the occurrence information
- In response to information requests, distribute knowledge in aid of education, research and decision-making concerning development, natural resources management and biodiversity conservation

We currently maintain information on over 38,000 species and 2,200 ecosystems in Canada. We steadily add new knowledge about biodiversity—including about species never before documented for Canada or species never before known to science. We also help document the most important places for biodiversity in Canada, to aid in management decisions concerning them.

Staff from the BC Conservation Data Centre undertaking fieldwork at the Nature Conservancy of Canada's Sparrow Grasslands Conservation Area, British Columbia. (Photo: Eric Lofroth)

Benefits to Conservation

Government, corporate and conservation organizations, and consultants, researchers and private citizens all use knowledge provided by NatureServe Canada and the Canadian CDCs. In 2015/16 NatureServe Canada and the network of CDCs managed 5,766 custom data requests. Tens of thousands of non-sensitive information requests were also fielded via online services.

Examples of knowledge application and areas of expertise include the following:

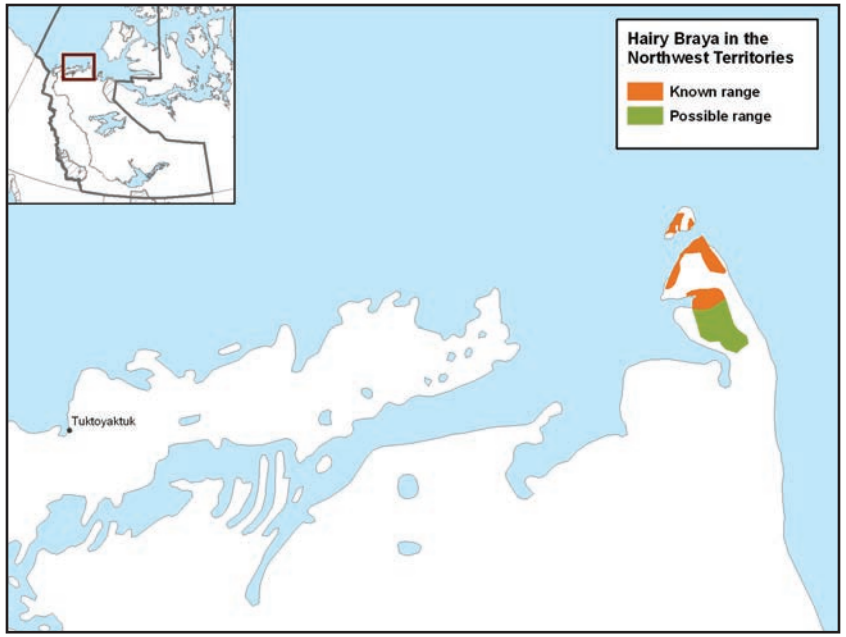
- The Committee on the Status of Endangered Wildlife in Canada requires its report authors to consult CDC data for writing the documents by which a species' status is determined under the federal *Species at Risk Act*.
- Information from species status assessments, drawing on the core natural heritage methodology, is incorporated within the *General Status of Species in Canada* report, issued every five years by the Canadian Endangered Species Conservation Council.
- Parks Canada Agency uses NatureServe's core natural heritage methodology to assess and monitor rare species in national parks and other lands managed by the agency.
- Nature Conservancy of Canada works with Canadian CDCs on species and habitat inventories of properties of interest to the Conservancy.

Diabase Cliffs, Lake Superior, with Arctic-alpine and western Prairie species that occur in Ontario. (Photo: Sam Brinker)

NatureServe Canada has a unique and critical role in understanding Canadian biodiversity, serving as the central node in the remarkable national network of Conservation Data Centres (CDCs) across the country. NatureServe Canada's compilation of data at a national level and facilitation of CDC activities makes a positive difference for Canadian species and ecosystems.

Sean Blaney, Executive Director and Senior Scientist,
Atlantic Canada Conservation Data Centre

Northwest Territories Conservation Data Centre



The NatureServe Canada network allows us to share our knowledge, including Aboriginal Traditional Knowledge, in a way that is respectful and with a common goal—to help in the conservation of biodiversity in Canada and elsewhere.

Suzanne Carrière, Coordinator, Northwest Territories Conservation Data Centre, Yellowknife, Northwest Territories

SAVING A GLOBALLY IMPERILLED PLANT: CONSERVATION DATA IN ACTION IN CANADA'S FAR NORTH

Hairy braya (*Braya pilosa*) is a species of mustard that survived the last ice age, and is the only *Braya* species with fragrance. It is found nowhere in the world except for five known locations (bearing an estimated 15,000–20,000 plants, in approximately 13 sub-populations) on Cape Bathurst Peninsula and the Baillie Islands, along the coast of the Beaufort Sea in the Northwest Territories (NWT).

A plant with specialized habitat requirements, hairy braya appears to lack ability to expand its range. Moreover, it is threatened by rapid coastal erosion and storm surges enhanced by rising sea levels, declining sea ice, and changing fall weather patterns due to climate change. Consequently, hairy braya is a globally "Imperilled" species (G2), and classified as "Endangered" by the Committee on the Status of Endangered Wildlife in Canada.

Information from field surveys conducted by staff of both the NWT and Yukon Conservation Data Centres, along with a *Braya* expert from Utah Valley University, were central to assessing the status of hairy braya and to drafting the NWT hairy braya recovery strategy—released in March 2016 and the first recovery strategy developed and approved under the *Species at Risk (NWT) Act*. The goal of this strategy is to ensure survival of hairy braya in the wild for at least the next 100 years. Seed collection, plant propagation, and population and habitat monitoring are among the key means by which this rare plant can yet persist in the Far North.

The ultimate threat to hairy braya is climate change. Reducing global emissions of greenhouse gases may well help this glacial survivor remain part of Earth's natural heritage.

*Hairy braya (*Braya pilosa*)*
(Photo: James Harris)

Yukon Conservation Data Centre and Parks Canada Agency

DEVELOPING AN ONLINE SPECIES GUIDE TO IVVAVIK NATIONAL PARK

Canada's 46 national parks constitute a country-wide system of representative natural areas of Canadian significance. The Parks Canada Agency—an Associate Member of NatureServe Canada—works to help park visitors understand and appreciate this significance, in turn to support conservation.

At 9,750 square kilometres, Ivvavik National Park helps to represent the Northern Yukon natural region of Canada. A superlative wilderness and an Indigenous cultural landscape with a long history of human presence, Ivvavik also protects a landscape that escaped the last glaciations and thus contains a number of species found nowhere else in Canada—and in some cases the world.

To help park visitors better appreciate, enjoy and protect Ivvavik and its biodiversity, the Yukon Conservation Data Centre (YTCDC) in collaboration with Parks Canada developed an online species guide that people can download prior to visiting this remote park. Published on the iNaturalist platform[1], the guide features information not readily available elsewhere. From birches and bumble bees to bears and much more, the guide showcases 371 species of rare and common plants and animals found in the park, using pictures, distribution maps and park-specific information.

Using iNaturalist and the species guide, visitors to Ivvavik National Park are able to contribute to conservation by reporting locations where they have observed rare species. The YTCDC receives and then manages that information, which assists park planning as well as assessing the status and distribution of many of the park's unique species.

iNaturalist (inaturalist.ca) is a place where people can record and share what they observe in nature, meet other nature watchers and learn about Canada's wildlife. By participating as citizen scientists, individuals can contribute to a growing wealth of knowledge of Canadian species— and help conserve the natural world.

Clockwise from above left: Ivvavik was the first national park in Canada to be created out of an Aboriginal land claim agreement. In the language of Inuvialuktun, the language of the Inuvialuit who co-manage the park with Parks Canada, "Ivvavik" means "a place for giving birth, a nursery."; Dianthus repens*—the only carnation native to North America. Though globally "Secure" (G5), this species only occurs in Canada, in Ivvavik National Park. (Photo: S. Wolfe); cryptic bumble bee (*Bombus cryptarum*)—a "track and watch" species in Yukon as it is rare, threatened or both. The habitat of this species is on tundra/taiga: the species nests underground. (Photo: anonymous)*

[1] *See http://www.inaturalist.org/guides/2457*

British Columbia Conservation Data Centre

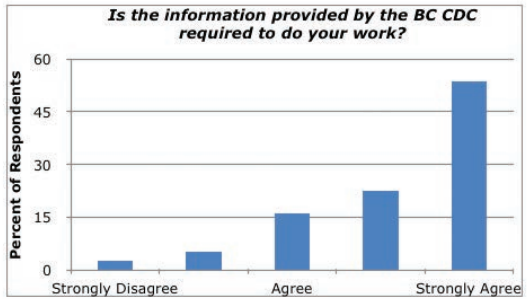
Understanding client needs and reliance on the information that the CDC produces and disseminates is key to ensuring that our information is organized and delivered in a manner to best inform decisions. Continuing to connect with our clients and striving to serve their needs will help the BC CDC continue to deliver high quality data and information relevant to today's natural resource sector.

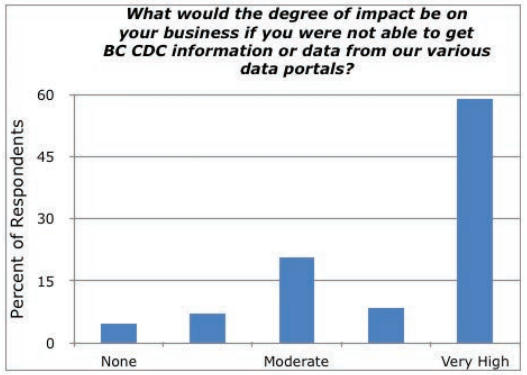
Eric Lofroth, Manager,
BC Conservation Data Centre

*Oregon spotted frog: This amphibian, whose Latin name (*Rana pretiosa*) means "precious frog," is a globally "Imperilled" (G2) species endemic to the Pacific Northwest, where it is relatively rare within its range. In Canada it is found only in extreme southwest British Columbia. (Photo: Kelly McAllister)*

CONNECTING WITH CLIENTS

The British Columbia Conservation Data Centre (BC CDC) is the authoritative provincial source for conservation information. Transparent NatureServe methodologies that meet rigorous quality standards, coupled with powerful online tools, enable the CDC to provide easily accessible, high quality and objective information applicable to natural resource decisions in such areas as forestry, residential and urban development, mining, oil and gas, and energy development. Information is used for a wide range of purposes including environmental assessments, planning, permitting, legal compliance, development of species status or recovery planning reports, and academic research. Information is shared with clients through the CDC's website and BC Species and Ecosystems Explorer (BCSEE) application, and through other portals such as iMap, the BC Geographic Warehouse and the BC Data Distribution Service.





Clients of the BC CDC—all levels of governments, Crown, public and private corporations, non-government organizations, academia, consultants and the general public—run tens of thousands of searches per month using the BCSEE application. The CDC also typically responds to over 50 custom client requests monthly. These are often related to access to secure data but also concern questions about specific species or ecosystems, source information underlying mapped locations of species or ecosystems, and input for species assessment reports and recovery strategies.

The BC CDC recently surveyed its clients to better understand their needs, the importance of CDC data to client business and how the CDC can improve service. The results are as follows: (1) over 84% of respondents agreed or strongly agreed that information provided by the CDC is required to do their work, and (2) over 87% of respondents indicated that, if they were not able to obtain CDC data or information, the degree of impact on their business would be moderate to very high (over 50% indicated the impact would be very high). The results of the BC survey reflect the value that clients tend to ascribe to the knowledge and services provided across the NatureServe Network.

Alberta Conservation Information Management System

BIODIVERSITY INFORMATION IN SUPPORT OF A NEW PROVINCIAL PARK

Thanks to a generous land donation from Mr. Gottlob Schmidt (pictured), Alberta has a recent addition to its provincial parks system— Antelope Hill Provincial Park—that is making a substantial contribution to the conservation of fescue grasslands in the province. And thanks to the Alberta Conservation Information Management System (ACIMS), biodiversity information is being generated for this park in aid of its management.

Native grassland communities have diminished greatly across the Great Plains of North America, due to agriculture and other human activities. Where pockets of these grasslands endure, they are that much more significant for conservation of associated plant and animal species.

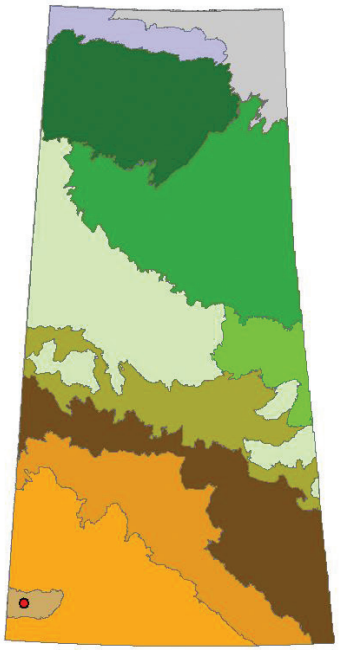
The new park, located approximately 100 kilometres northwest of Calgary in the Fescue Grassland ecoregion of Alberta, is composed of hummocky terrain dominated by native grasslands, with localized depressions and wetlands. Though relatively small (377 hectares), the park supports two fescue grassland communities that are at risk in Alberta: the plains rough fescue (*Festuca hallii*) community, ranked S1 (provincially "Critically Imperilled"), and the western porcupine grass-plains rough fescue (*Stipa curtiseta-Festuca hallii*) community, ranked S2S3 (provincially "Imperilled" to "Vulnerable").

As well, the park and surrounding landscape, including nearby Dowling Lake (a nationally Important Bird Area), provide habitat for a large diversity of birds including the striking white-faced ibis (*Plegadis chihi*), the distinctive American white pelican (*Pelecanus erythrorhynchos*), and the elusive, hard-to-spot Sprague's pipit (*Anthus spragueii*), a sparrow-sized, ground-feeding bird that, though "Apparently Secure" (G4) in its global range, is nonetheless listed as "Threatened" in Canada under the federal *Species at Risk Act*.

During the 2015 field season, staff from ACIMS, with help from other experts, collected information on species and ecological communities within the park that are of global, national or provincial conservation concern. The information, besides being incorporated into ACIMS's database, will guide development of the Interim Management Guidelines for the park. The park is intended to be managed to "preserve the land in its natural state for future generations to enjoy," per Mr. Schmidt's intentions. Any recreation, for example, will be limited to low-impact activities such as hiking.

Top: Gottlob Schmidt, who since 1933 has lived on the land he has donated for the creation of Antelope Hill Provincial Park. (Photo: Alberta Parks)
*Bottom: Sprague's pipit (*Anthus spragueii*) is one of numerous plant and animal species to be protected via Antelope Hill Provincial Park: Though "Apparently Secure" (G4) in its global range, the species is considered "Threatened" in Canada under the federal* Species at Risk Act. *(Photo: Dragomir Vujnovic)*

Saskatchewan Conservation Data Centre



*Left: Ecoregions of Saskatchewan and area (red dot) in the Cypress Upland region where daisy-leaved moonwort (*Botrychium matricariifolium*) was discovered. (Map: Saskatchewan Conservation Data Centre) Right: Daisy-leaved moonwort (*Botrychium matricariifolium*): In 2015 the Saskatchewan Conservation Data Centre documented the occurrence of this species in Saskatchewan for the first time. (Photo: © Arthur Haines, New England Wild Flower Society)*

DISCOVERING A SPECIES NEVER BEFORE DOCUMENTED IN SASKATCHEWAN

Moonworts are a group of small, fern-like plants that reproduce not with seeds but with spores, and that are so named because of leaves on some species that have a shape similar to a crescent moon. The scientific name of the group—*Botrychium*—stems from a Greek word for "grape" and refers to the clusters of spore-bearing pods that the plants produce. Hence, in their common name some *Botrychium* species bear the phrase "grape-fern."

Moonworts are able to produce a single leaf each year, bearing its separate photosynthetic and reproductive parts. However, they don't necessarily generate a leaf every year, one factor among several why many moonworts are naturally rare in occurrence—and at risk of extinction.

Indeed, in NatureServe Canada's 2005 report on species of global conservation concern in Canada, 12 moonworts occurring in Canada were found to be globally "Critically Imperilled" (G1), "Imperilled" (G2) or "Vulnerable" (G3).[2]

In 2015 the Saskatchewan Conservation Data Centre (SKCDC) set out to newly explore moonwort diversity in the Cypress Upland ecoregion. The search effort resulted in a new species record for Saskatchewan—daisy-leaved moonwort (*B. matricariifolium*). This is a globally "Secure" (G5) species also known to occur in all other provinces (except British Columbia) and in 27 American states.

Among other moonworts documented in the Cypress Upland ecoregion were two globally "Vulnerable" species (G3), (*B. ascendens* and *B. pallidum*), as well as Michigan moonwort (*B. michiganense*), a species relatively new to botanical taxonomy. Information generated from the SKCDC's fieldwork is now part of the ever-growing body of biological knowledge available through the international NatureServe Network.

[2] *http://www.natureserve.org/sites/default/files/publications/files/our_home_and_native_land_english_0.pdf*

Manitoba Conservation Data Centre

EXPERT BIOLOGICAL KNOWLEDGE AIDS CHIMNEY SWIFT PROTECTION

The small, stocky, smudge-gray chimney swift (*Chaetura pelagica*) lives primarily airborne, flying rapidly and erratically above fields, rivers and rooftops in voracious pursuit of flying insects. Wintering in the upper Amazon watershed, the chimney swift breeds primarily in eastern North America, with about a quarter of its breeding range occurring in southern Canada, from southeast Saskatchewan to possibly southwestern Newfoundland.

When not flying, chimney swifts cling to walls inside hollow trees, caves, wells or chimneys. Unfortunately, this biological reality is a major reason for the steep decline of the species in recent decades (witness a drop of 95% in the Canadian population since 1968, to an estimated 11,820 breeding individuals in 2007[3]). As the number of suitably large trees decreases throughout its range due to logging and other forms of habitat disturbance, and as older, accessible chimneys also disappear, so too dwindle the number of swifts.

Sustaining the chimney swift depends heavily on habitat protection throughout its range. As well, people can assist by creating chimney-like towers, from smaller ones suitable for breeding pairs to larger ones that can accommodate whole flocks.

Nicole Firlotte and colleagues at the Manitoba Conservation Data Centre (CDC), in concert with the Manitoba Chimney Swift Initiative, did just that in 2015. At the vacant site of the Old Grace Hospital in Winnipeg, a 30-metre, swift-sheltering smokestack was to be demolished in advance of construction of a public housing project. Upon learning of the coming demise of the smokestack, Nicole introduced herself and the Manitoba CDC to applicable provincial authorities and explained the significance of the chimney. This led to the deployment of expert biological knowledge by Nicole and her team to realize the design and building of a temporary 12-metre structure that factored in the temperature requirements of swifts at the northern end of their range. Any future new buildings on this site will also incorporate swift-friendly towers, one small but yet important part of range-wide action for a species of conservation concern.

Clockwise from top left: Chimney swift with nest and chicks (Photo: Bruno Kern); chimney swifts on the wing (Photo: Will Wilson); Nicole Firlotte of the Manitoba Conservation Data Centre alongside material for a temporary tower for chimney swifts, on the site of the Old Grace Hospital in Winnipeg. (Photo: John Woods)

[3] *http://www.registrelep-sararegistry.gc.ca/species/speciesDetails_e.cfm?sid=951*

Ontario Natural Heritage Information Centre

*Pygmy whitefish (*Prosopium coulteri*): Though globally "Secure" (G5) the status of this fish in Ontario is "Undetermined" (SU). (Photo: Gordon Court)*

LANDING A BIG ONE: INVALUABLE AQUATIC KNOWLEDGE FOR ONTARIO

The two groups of species in Canada with the highest percentages of species at risk of extinction are freshwater mussels and freshwater fishes. As NatureServe Canada reported in 2005, 18% of freshwater mussel species and 14% of freshwater fish species occurring in Canada are of global conservation concern.[4]

Success in protecting and recovering species at risk depends heavily on knowledge of where they occur, the condition of their habitat and the local to global threats to these species. Ontario recently received a big boost in such knowledge when Fisheries and Oceans Canada (DFO) shared more than 18,000 observation records, concerning 26 species of mussel and 44 species of fish native to the province, with the Ontario Natural Heritage Information Centre (NHIC).

The federal and Ontario governments have joint interest in incorporating this dataset into the provincial record that the NHIC maintains. While DFO has federal responsibilities related to protecting fish and mussel species, the Ontario Ministry of Natural Resources and Forestry (MNRF) has provincial responsibilities.

*Rayed bean (*Villosa fabalis*): This mussel is globally "Imperilled" (G2) and in Ontario "Critically Imperilled" (S1). (Photo: Shawn Staton)*

For example, under the provincial *Endangered Species Act*, the MNRF is required to conduct a review of the progress toward the protection and recovery of species at risk. Currently, the MNRF is reviewing the recovery strategies of a number of species listed five years earlier in a government response statement. One of them is the rayed bean (*Villosa fabalis*), currently listed as "Endangered" in Ontario and known only from a few river systems in the province. The new knowledge provided by DFO to MNRF aids in the updating of information on the location of and quality of habitat for this species in Ontario.

The NHIC is now also able to better reassess the provincial conservation status of native fish and mussels. For example, prior to acquiring the DFO data, the NHIC did not have occurrence records for pygmy whitefish (*Prosopium coulteri*). While it is generally known that this fish of the salmon and trout family is widely distributed in Lake Superior, an inland lake in northwestern Ontario was also documented as one of three known occurrences for the species in the province.

[4] *http://www.natureserve.org/biodiversity-science/publications/our-home-and-native-land-canadian-species-global-conservation*

Atlantic Canada Conservation Data Centre

FIELDWORK YIELDS KNOWLEDGE ABOUT A SPECIES OF CONCERN—AND HELPS PRIORITIZE CONSERVATION EFFORTS

Visitors to New Brunswick's biggest summer party spot, Parlee Beach, east of Moncton, probably don't realize it, but scattered among the Speedo and bikini-clad beachgoers is a mysterious kleptoparasitic wasp waiting to slip in and lay its eggs on spiders captured and paralyzed by other related wasp species.

Fieldwork in 2015 by the Atlantic Canada Conservation Data Centre (AC CDC), in dune and beach habitat at Parlee Beach and many other locations along New Brunswick's eastern shore, documented 21 new occurrences of a poorly understood spider wasp species, known only by its scientific name *Ceropales bipunctata*.

Prior to 2015 this species had only been seen at five Canadian locations in the past decade. *Ceropales bipunctata* was feared to be at risk of extirpation in Canada based on its apparent loss at many Ontario locations. This led the Committee on the Status of Endangered Wildlife in Canada to list the species as a high-priority candidate for assessment under the federal *Species at Risk Act*.

The wasp was known in the Maritimes from three specimens collected in 1939–1940 at seaside locations, and from two recent photographic records from dunes along New Brunswick's eastern coast. The AC CDC received funding from the New Brunswick Wildlife Trust Fund to conduct focused surveys looking for *C. bipunctata* on coastal dunes throughout the province's eastern shore. The AC CDC found the species to be rather frequent and widespread, occurring at 21 of 33 survey sites over more than 200 kilometres from the Nova Scotia border almost to the Gaspe Peninsula of Quebec. Given this abundance, there is also a strong likelihood that the wasp is widespread on dunes in adjacent areas of Nova Scotia and Prince Edward Island.

The AC CDC's fieldwork has changed the understanding of the conservation status of this species in Canada. *Ceropales bipunctata* is now unlikely to be put forward for further status assessment, allowing scarce conservation resources to be allocated to the species that truly need them. This work provides another example of how much remains to be learned about Canada's biological diversity, even in long-settled regions. Further, it demonstrates the conservation value of well-planned, focused, professional field surveys such as those conducted by CDCs across Canada.

Top: Ceropales bipunctata *(Photo: John Klymko) Bottom: John Klymko, Zoologist with the Atlantic Canada Conservation Data Centre, in the field in New Brunswick studying* Ceropales bipunctata. *(Photo: Sarah L. Robinson)*

*Top: The logo of the Program on the General Status of Species in Canada (www.wildspecies.ca). Above: The banded alder borer (*Rosalia funebris*) is a longhorn beetle that occurs in western North America and in Canada in British Columbia only. In spring and summer it may be found on the bark of alder trees. (Photo: Emanuel Smedbol)*

SUPPORTING THE GENERAL STATUS ASSESSMENT OF WILD SPECIES IN CANADA: NATURESERVE CANADA COLLABORATES WITH ENVIRONMENT CANADA

Every five years the federal government, through Environment Canada and in collaboration with provincial and territorial governments, assesses the "general status" of wild species occurring in Canada. The assessment concerns whether given species are "Secure" in terms of their national, provincial and/or territorial presence or at some level of risk, given many factors that may threaten species with extirpation (no longer occurring in an area or jurisdiction) or extinction (vanished from Earth).

This periodic survey, required by the 1996 Accord for the Protection of Species at Risk (a federal-provincial-territorial agreement), helps characterize the breadth of biological diversity in Canada. The survey also points to species or even particular species groups requiring heightened conservation attention.

The *Wild Species* reports for 2000, 2005 and 2010 assessed the general status of 1,670 species, 7,732 species and 11,950 species, respectively. The forthcoming 2015 report (to be published in 2016) will concern about 30,000 species, e.g., lichens, mosses, flowering plants, sponges, corals, spiders, insects, fishes, birds, mammals and much more. And, for the first time, the *Wild Species* report will employ NatureServe methodology, including the status "ranks" used by the international NatureServe Network, i.e., 1 = "Critically Imperilled," 2 = "Imperilled," 3 = "Vulnerable," 4 = "Apparently Secure" and 5 = "Secure."

The assessment of so many species is a large scientific and communications undertaking. It requires a highly collaborative process involving numerous biological experts and reaching across many organizations, including NatureServe Canada and the Canadian Conservation Data Centres (CDCs).

For example, drawing from the species lists developed by experts hired by Environment Canada for the *Wild Species 2015* report, NatureServe Canada created thousands of new "element records" for species within the central database (Biotics) of NatureServe. By creating these records, NatureServe Canada added information such as the species' scientific and common name (following a specific taxonomic treatment), synonyms and the conservation status ranks developed by the federal-provincial-territorial governments (if available) at sub-national (SRANK) and national (NRANK) levels, and also developed and added the ranks at the global (GRANK) level. This work has resulted in hundreds of scientific name updates and new records following the most current taxonomic treatments. That, in turn, improves the accuracy and utility of biodiversity knowledge globally available through NatureServe Canada, the Canadian CDCs and the rest of the NatureServe Network.

National

NATURE CONSERVANCY OF CANADA'S HOTSPOT MAPPING FOCUSES CONSERVATION IN CANADA

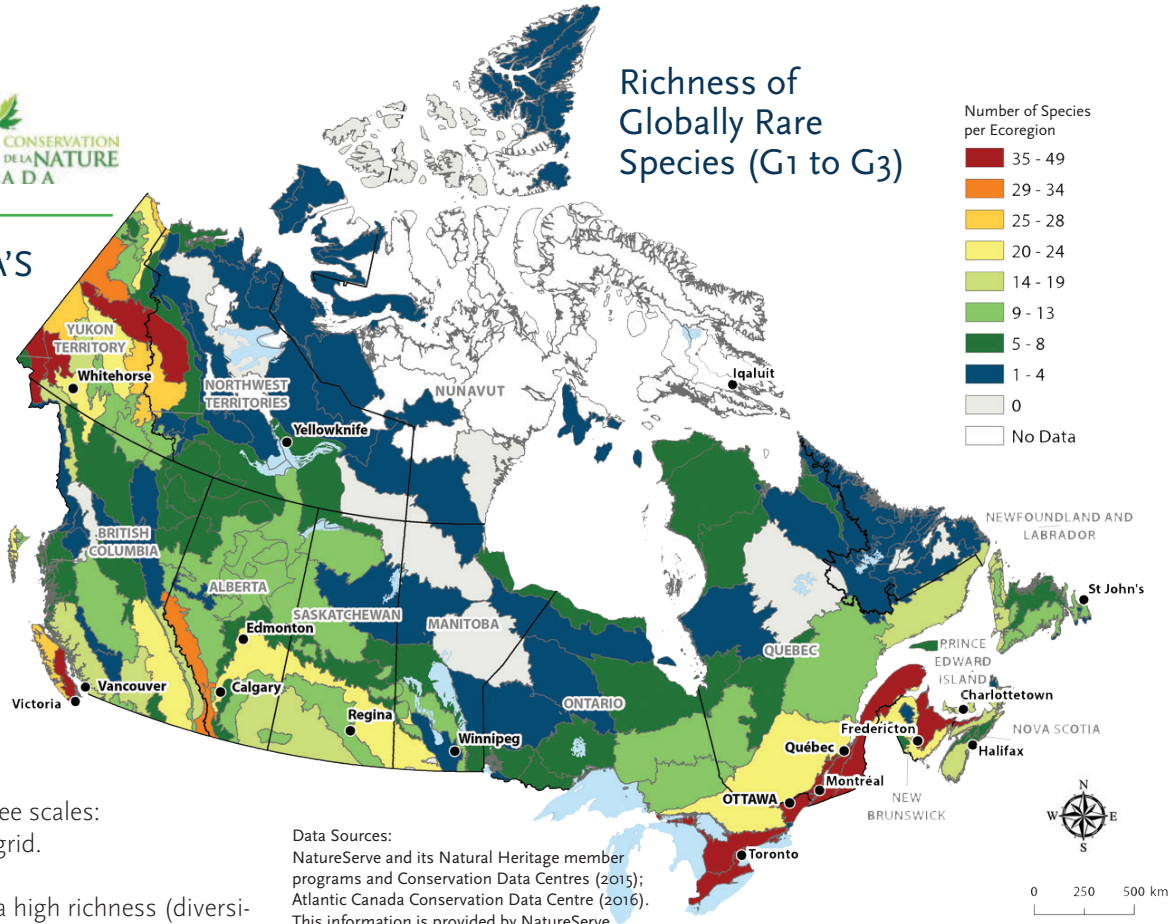
One of the biggest challenges in conservation is ensuring that actions are directed to landscapes of greatest priority. Over the last decade, the ability of conservation groups like Nature Conservancy of Canada (NCC)—an Associate Member of NatureServe Canada—to identify priority areas has been enhanced by the establishment of Conservation Data Centres (CDCs) that collect and manage information on rare species and vegetation communities, and new computing tools that allow this information to be analyzed.

In 2015, NCC, NatureServe Canada and NatureServe analyzed information on nationally and globally rare species found across Canada. The study was done at three scales: federal ecoregions, 10-kilometre grid and one-kilometre grid.

The mapping project helped to identify ecoregions with a high richness (diversity) of species of conservation concern. For example, the number of globally rare species is highest in regions along the southern Great Lakes and St. Lawrence River, the Gaspé Peninsula, southeastern Vancouver Island and the Rocky Mountain front in Alberta.

Results at the finer 10-kilometre grid help to highlight key concentrations of species of concern. These hotspots are important for the conservation and recovery of globally and national rare species. The results can also be viewed to portray areas that have species that occur in few other locations in Canada. These are generally range-limited species that require specially targeted habitat protection efforts.

The hotspot mapping is now being used by NCC to focus conservation action. It is also available to partner organizations to help guide their work.



Data Sources:
NatureServe and its Natural Heritage member programs and Conservation Data Centres (2015); Atlantic Canada Conservation Data Centre (2016). This information is provided by NatureServe (www.natureserve.org) and its Natural Heritage member programs and Conservation Data Centres, a leading source of information about rare and endangered species and threatened ecosystems.The absence of data in any particular geographic area does not necessarily mean that species or ecological communities of concern are not present.

Western prairie-fringed orchid (Platanthera praeclara)*: This tall (40-88 cm) orchid is globally "Vulnerable" (G3). It is found in tall-grass prairie habitat in eight American states and in Canada only within one small, largely protected area of Manitoba—where approximately 50 percent of all known plants of this species occur. (Photo: Jim Fowler)*

Summary Financial Data

*Common loon (*Gavia immer*): Though globally "Secure" (G5) and found in all Canadian provinces and territories, the common loon has nonetheless become extirpated (locally extinct) in three of the American states: Illinois, Indiana and Iowa. (Photo: Peter Ferguson)*

The summary financial data presented here is drawn from NatureServe Canada's audited financial statements 2015/16. To access the full statements, please visit www.natureserve.ca.

STATEMENT OF FINANCIAL POSITION

Year ending March 31

	2016	2015
ASSETS		
CURRENT ASSETS		
Cash	$184,752	$187,109
Accounts receivable	277,574	320,162
Prepaid expense	1,489	3,614
	463,815	510,885
Capital Assets	1,525	0
TOTAL ASSETS	465,340	510,885
LIABILITIES AND NET ASSETS		
CURRENT LIABILITIES		
Accounts payable and accrued liabilities	331,753	343,248
NET ASSETS	133,587	167,367
TOTAL LIABILITIES AND NET ASSETS	465,340	510,885

STATEMENT OF OPERATIONS

Year ending March 31

	2016	2015
REVENUE		
Government funding	$853,440	$833,303
Charitable organization/ foundation funding	72,300	85,000
Dues	13,500	12,000
Other	2,938	3,473
TOTAL REVENUE	942,178	933,776
EXPENDITURES		
Contracts	904,117	848,082
Travel, annual meeting, workshops	19,516	10,322
Office costs	17,716	18,510
Professional fees	16,026	13,846
Sponsorship	13,061	10,000
Other	5,792	3,008
TOTAL EXPENDITURES	976,228	903,768
EXCESS (DEFICIENCY) OF REVENUE OVER EXPENDITURES	-34,050	30,008

An Invitation to Contribute to Conservation Science

Strong conservation science is at the heart of sound environmental decision-making. In turn, the strength of conservation science depends on a sufficient number of highly qualified experts, including biologists, ecologists and information managers, who have the resources and funding they need for their work. A financial investment in conservation science is an investment in knowledge about nature, upon which depends the health of the environment, the economy and our society.

NatureServe Canada is a registered Canadian charity (#862330529RR0001). We welcome financial gifts in support of our business—conservation science. As well, "Associate" membership in NatureServe Canada is available to organizations that support our mission, that manage data of conservation value, and/or that are active in promoting science-based conservation action nationally or sub-nationally.

To learn more, to donate in support of our work or to inquire about Associate membership, please contact:

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Patrick Henry, Executive Director
(613) 986-1535
phenry@natureserve.ca
www.natureserve.ca

Public and Private Sector Support for Conservation Science

Across Canada, hospitals, schools, libraries, park systems and other public goods benefit from both public- and private-sector funding. So too does conservation science. While the NatureServe Canada Network receives public funding, resources from government are limited. Funding from foundations, corporations, other non-government organizations and individuals helps support new initiatives and major projects. That, in turn, leads to greater knowledge about Canada's biodiversity, in the service of planning and decision-making concerning land, water and natural resources.

If the Manitoba Habitat Heritage Corporation did not have access to NatureServe Canada data through the Manitoba CDC, conservation program targeting would be less precise and funders would have less confidence in our ability to deliver effective projects. Manitoba CDC data is a key driver of our conservation planning and delivery.

Tim Sopuck,
CEO, Manitoba Habitat Heritage Corporation

*Polar bear (*Ursus maritimus*): globally "Vulnerable" (G3). (Photo: Larry Master)*

In Gratitude to Our Members in 2015/16

NatureServe Canada is deeply grateful for the contributions and collaboration of our Constituent and Associate members—thank you!

CONSTITUENT MEMBERS

Alberta Conservation
Information Management System

Atlantic Canada
Conservation Data Centre

British Columbia
Conservation Data Centre

Manitoba Conservation Data Centre

Northwest Territories
Conservation Data Centre

Nunavut Conservation Data Centre

Ontario Natural Heritage
Information Centre

Saskatchewan
Conservation Data Centre

Yukon Conservation Data Centre

ASSOCIATE MEMBERS

Environment and Climate Change
Canada – Canadian Wildlife Service

Nature Conservancy of Canada

NatureServe

Parks Canada Agency

NatureServe Canada

A Network Connecting Science With Conservation
Un Réseau pour la Science et la Conservation

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