



# *Annual Report*

**2023–2024**



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.

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**Cover photo: A female polar bear and cub, photographed in the Hudson–James Bay Lowlands in the summer of 2023. The polar bear (*Ursus maritimus*) is at risk of extinction due to loss of its sea ice habitat. Photo credit: Adam Collingwood/Parks Canada.**

## From the Chair and Executive Director

THE NATURESERVE CANADA NETWORK exists to expand the body of knowledge regarding Canada's species and ecological communities, and to make this knowledge available to support science-based decisions. Fiscal 2023-24 proved to be a big year for NatureServe Canada, with a wide-range of projects that leveraged the biodiversity and information technology expertise of our membership and partners.

Thanks to ongoing funding from the federal government, we made major advancements on priority collaborative projects including our Ecosystem-based Automated Range (EBAR) mapping project, NatureServe Explorer 2.0 (the NatureServe Network's public facing biodiversity information platform), Key Biodiversity Areas Canada, the Canadian National Vegetation Classification, and many others (some of which are featured in this report). Our growing store of biodiversity data, information, knowledge, and expertise is integrated into our projects and made publicly available through data requests, NatureServe Explorer, and the public-facing data platforms of our members. A big "thank you" to our members, partners, and funders for their ongoing work and support towards these shared goals.

On page four we pay tribute to the impressive and impactful contributions of our recently retired Chair of the Board, Bruce Bennett. Thank you, Bruce, and happy retirement (and a big thank you and welcome to Chris from the Board of Directors)! In the past several months we also welcomed several new and very dedicated Conservation Data Centre coordinators. We are happy to report that the future is bright for the NatureServe Canada Network. Onwards!



**Chris Friesen,  
Chair of the Board**



**Patrick Henry,  
Executive Director**

CANADA IS HOME to about 80,000 known species, with thousands more species to be scientifically identified or first discovered. These organisms belong to a vast tapestry—the diversity of life at genetic, species, and ecosystem levels, vital for environmental, economic, and social health.

At NatureServe Canada, our vision is for the natural heritage of Canada to be thoroughly documented, for that information to be readily available to the public, and where conservation of biodiversity and resource decision-making 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.

NatureServe Canada and its network of provincial and territorial Conservation Data Centres (CDCs) work together and with other government and non-government organizations to develop, manage, and distribute authoritative knowledge regarding Canada’s plants, animals, and ecosystems. NatureServe Canada and the Canadian CDCs are

members of the international NatureServe Network, spanning over 60 government and non-government organizations in Canada and the United States.<sup>1</sup> NatureServe Canada is the Canadian affiliate of NatureServe, based in Arlington, Virginia that provides scientific and technical support to the international network.

NatureServe Canada is based in Ottawa, Ontario and is governed by a Board of Directors comprised of representatives of its member provincial and territorial CDCs. NatureServe Canada’s membership includes Associate members: Environment and Climate Change Canada, Fisheries and Oceans Canada, Nature Conservancy of Canada, and Parks Canada. Our membership structure and our national projects promote coordination of biodiversity data and information development, and distribution, to inform research, resources development, and conservation decision-making.

Each CDC adheres to NatureServe’s rigorous scientific methods and standards developed since the 1970s. Together, NatureServe Canada and the Canadian CDCs strive to answer questions such as: What species and ecosystems exist in each province or territory? What is

the condition and conservation status of their populations? Which species or ecosystems are at risk of extinction (global) or extirpation (from Canada or a province or territory)? Where precisely are species at risk and rare ecosystems found?

We presently maintain information on 65,893 species and 4883 ecological communities. Our Network steadily adds new knowledge about biodiversity, including about species newly documented for Canada or species newly described to science. The Network also helps document the most important places for biodiversity in Canada, to aid in management decisions concerning them. ■



Graduate student Johanna Stewart, working in 2023 for the Northwest Territories Conservation Data Centre. Photo credit: Peter Lin

<sup>1</sup> See: <https://www.natureserve.org/natureserve-network>



## In Gratitude to Bruce Bennett!

NATURESERVE CANADA extends the heartiest congratulation to Bruce Bennett on his recent retirement after 11 years as the Coordinator of the Yukon Conservation Data Centre (YTCDC)!

Bruce started his journey with the NatureServe Network in 1995, with a contract with the BCCDC before moving later that year to Yukon. In 1996, he started work with then BCCDC botanist, the late Dr. George Douglas, to revise the existing list of rare vascular plants in Yukon. In 2003, the YTCDC was established, with a total of eight staff. Bruce was the botanist in 2004-2005, only to be sent back to his substantive role with the Yukon Government's Wildlife Viewing Program, where he continued to work on botany behind the scenes! Then, in 2012, Bruce took on the role of YTCDC Coordinator.

Bruce proved to be an invaluable member of the NatureServe Network and served as Chair of the Board of Directors of NatureServe Canada for seven years. In recognition of his significant contribution to the Network, Bruce, along with his wife, Randi Mulder (Data Manager of the YTCDC), were in 2024 awarded the Robert E. Jenkins Lifetime Achievement Award, given annually

by NatureServe for exceptional accomplishments in careers devoted to using biodiversity data to inform conservation action.<sup>2</sup>

Bruce has pursued many conservation roles outside of his work with the YTCDC and the NatureServe Network. He has, since 2005, been on the Committee on the Status of Endangered Wildlife in Canada as a member and Co-Chair of the Vascular Plant Specialist Subcommittee, and previously as a jurisdictional member from Yukon. He has been a member of the Yukon Invasive Species Council since its inception and has been involved with invasive species in Yukon since 1998. His passion for botany has taken him throughout the North, working and volunteering with organizations such as the Canadian Wildlife Service, Parks Canada, Government of Northwest Territories, Canadian High Arctic Research Station, Geological Survey of Canada, University of Alaska, Alaska Bureau of Land Management, and the US Parks Service. Bruce is also an associate researcher with the University



of Alaska, Fairbanks. And, he has a world-famous herbarium in the basement of his home in Whitehorse!

Bruce's infectious energy, large personality, and enduring willingness to participate in NatureServe Network projects will be greatly missed. Best of luck in your future endeavours, Bruce! ■

<sup>2</sup> Bob Jenkins was the founding architect of the NatureServe Network, and one of the most effective champions for the protection of biological diversity.



# NatureServe Canada: Data Support for Hudson-James Bay Lowlands Biodiversity Conservation and Sequestration

NATURESERVE CANADA (NSC) and Parks Canada Agency (PCA) have a longstanding relationship through which NSC and Canadian Conservation Data Centres (CDCs) provide data and information support relating to national parks and other sites managed by PCA, or to sites in which PCA has a significant interest. One such area features the largest extent of wetlands in Canada (and one of the largest in the world): the Hudson-James Bay Lowlands, spread across northern Ontario, northeastern Manitoba, and central-west Québec.

Entirely ice-covered during the last glaciation, this immense watery domain includes major rivers such as the Churchill, Nelson, and Hayes rivers in Manitoba, the Severn, Winisk, Attawapiskat, and Albany in Ontario, and the Rupert and Eastmain in Québec. Peatland (a form of wetland) predominates throughout the region, with salt marshes occurring along the vast coastline of Hudson and James bays. Polar bear, wolverine, caribou, and snow geese are among the species characteristic of this

globally significant wilderness.

The Lowlands have also been home to Indigenous peoples for thousands of years. To Omushkego Cree Elders, these are the “Breathing Lands” for the role they play in global climate regulation and air and water provision.

In 2021, PCA received funding, through the federal government’s Enhanced Nature Legacy initiative (“the largest investment in nature conservation in Canada’s history”<sup>3</sup>), to assess the biodiversity and carbon sequestration values of the Lowlands, and to weave Western science and Indigenous knowledge to inform conservation efforts in the region. As one of many project partners, including Mushkegowuk Nations, Canadian Museum of Nature, Wapusk National Park, several universities, and others, NatureServe Canada is providing much of the biodiversity data to help inform understanding of the region’s rich natural heritage. Data is being drawn from the NatureServe Canada Network, including the Ontario Natural Heritage Information Centre and the Manitoba Conservation Data



Centre, and from public facing platforms such as the Global Biodiversity Information Facility, iNaturalist, and eBird. Data coverage is for all terrestrial and marine species in the Hudson Bay-James Bay Lowland Ecozone.

The results of this project will help inform the future establishment of marine and terrestrial protected places, such as the Western and Eastern James Bay national marine conservation areas.<sup>4</sup> The project will also help inform other potential protected areas and Indigenous-led conservation initiatives, for example the proposed Omushkego Wahkohtowin conservation area.<sup>5</sup> ■

Within the Hudson-James Bay Lowlands. Photo credit: Adam Collingwood/Parks Canada

3 See: <https://www.canada.ca/en/services/environment/conservation/nature-legacy.html>

4 See: <https://parks.canada.ca/amnc-nmca/cnamnc-cnnmca>

5 See: <https://thenarwhal.ca/mushkegowuk-james-bay-indigenous-conservation/>



## British Columbia: Identifying Wetlands for the Win!



An example of wetlands found at Bunchgrass Hills Conservation Area in 2023: a wetland complex with beaked sedge-water sedge, and awned sedge Fen-Marsh, transitioning to hard-stemmed bulrush Deep Marsh and shallow open water. Photo credit: Jason Straka, BCCDC

**W**HEN IS WET LAND not a wetland? Can an ecosystem be a wetland if it is not on wet land? As part of the B.C. Provincial Wetland Project (supported by Environment and Climate Change Canada’s Nature Smart Climate Solutions Fund), the Ecology team at the B.C. Conservation Data Centre (BCCDC) has been working with the Canadian National Wetland Inventory and Nature Conservancy of Canada (NCC) to answer riddles like these.

The definition, delineation, and classification of wetlands can be ambiguous, particularly when it comes to some of the most at-risk ecosystems in B.C., such as alkaline or saline grasslands. Yet, deciding whether to call something a wetland is important. Correctly identifying wetlands is critical to the process of completing NatureServe status assessments and mapping of element occurrences, which affects how areas and threats are perceived and managed.

BCCDC ecologists are completing inventory of wetlands on high-priority NCC sites such as their recently acquired Bunchgrass Hills Conservation Area, located within the traditional territories of the Secwepemc, Nlaka’pamux and Syilx Nations.<sup>6</sup> Located south of Kamloops, BC, Bunchgrass Hills is a mosaic of marshes, alkaline meadows, riparian forests, dry forests, and

rock outcrops which have not been mapped or identified.

By completing site inventories with regional experts in ecosystem classification, from the provincial Biogeoclimatic Ecosystem Classification (BEC) program<sup>7</sup>, BCCDC ecologists are learning to better understand threats to wetlands to help inform status assessment and management of wetlands. Their work includes documenting wetlands that are at risk of being lost, and candidate sites for targeted removal of invasive species before they become more widespread.

In two years, the BCCDC has mapped hundreds of new element occurrences for wetland ecosystems, with more on the way. The new element occurrences can be used to update publicly available maps of wetlands in B.C.<sup>8</sup>, and contribute data to the Canadian National Wetland Inventory.<sup>9</sup> By combining observations with those from experts at the BCCDC Zoology Unit, the data necessary to link species at risk with their habitat is being generated. ■

6 See: <https://www.natureconservancy.ca/en/where-we-work/british-columbia/featured-projects/heritage-grasslands/bunchgrass-hills.html>

7 See: <https://www.for.gov.bc.ca/hre/becweb/resources/classificationreports/regional/index.html>

8 See: <https://www2.gov.bc.ca/gov/content/data/geographic-data-services/topographic-data/freshwater>

9 See: <https://www.canada.ca/en/environment-climate-change/services/wildlife-habitat/canadian-national-wetland-inventory.html>



## Saskatchewan: Building Knowledge of the Canadian Population of Ord's Kangaroo Rat

ORD'S KANGAROO RAT (*Dipodomys ordii* Woodhouse 1853) is a small nocturnal rodent with orange-brown fur and several white patches that can be around its belly, feet, ears and eyes. It can be seen hopping on its long back feet, balanced by its long, tufted tail. It typically lives in open sand dunes and can be found in Canada on 12 to 14 dune areas in southeastern Alberta and southwestern Saskatchewan, at the northern edge of its North American range. The nearest U.S. population is about 270 km away.

Ord's kangaroo rat is endangered in Canada, with a population of fewer than 1000 individuals in most years. Very little is known about the structure of the Canadian population of this species. Such knowledge is vital given that the kangaroo rat's population is scattered, likely due to human and natural barriers.

Since 2017, Environment and Climate Change Canada (ECCC) has been working with the Saskatchewan Conservation Data Centre (SKCDC) and the Government of Alberta to collect and analyze genetic samples in southwest Saskatchewan and

southeast Alberta. In addition, the SKCDC, the University of Regina, and the Royal Saskatchewan Museum have partnered to fill in knowledge gaps for dune complexes in Saskatchewan where kangaroo rats are known to be but where genetic material has not been acquired. Gathering additional information on the distribution and habitat in Saskatchewan is an important step towards aiding the conservation of this species.

This summer, the three partner organizations surveyed kangaroo rats and trapped kangaroo rats on three dune complexes in southwestern Saskatchewan. They captured 16 kangaroo rats, pulled a small bit of their fur as a genetic sample, and confirmed the occurrence of kangaroo rats in a dune complex where they were previously only suspected to occur. Jessie Bainbridge, an MSc student at the University of Regina, will analyze the species' genetic population structure over the next two years as part of her degree. Jessie's work will help in the understanding of how landscape features affect movement, dispersal, and connectivity

between kangaroo rat subpopulations. Her work will help inform conservation planning.

This project was made possible with the funding and partnerships of the governments of Saskatchewan and Alberta, ECCC, SKCDC, Alberta Conservation Association, Saskatchewan Fish and Wildlife Development Fund, Royal Saskatchewan Museum, and the University of Regina. ■



Ord's kangaroo rat (*Dipodomys ordii* Woodhouse 1853). Photo credit: Sandi Robertson



## Manitoba: Surveying At-Risk Skippers for Population Recovery



Dakota skipper female reared at the Assiniboine Park Zoo. Photo credit: Kirstyn Eckhardt

Winnipeg and Lake Manitoba, in southwestern Manitoba around Oaklake, and in a few additional locations in the Dakotas and Minnesota.

Extreme fragmentation of native tall grass and mixed grass prairie, climate change, pesticide use, overgrazing, uncontrolled wildfire, and invasive species are the major threats to both species. In Canada, Poweshiek skipperling is listed federally and provincially as Endangered; Dakota skipper is listed federally as Endangered and in Manitoba as Threatened.

The Manitoba Conservation Data Centre (MBCDC) collaborates with the Westwood Lab, at the University of Winnipeg, and with Nature Conservancy of Canada (NCC) to monitor Poweshiek and Dakota populations at known locations, and to search for new occurrences. Thanks to this work, Poweshiek and Dakota species distribution models (SDMs) have been developed. These models help to guide further survey efforts to find quality prairie habitat and help to introduce new occurrences of the skippers.

The NCC works with partners to develop and implement beneficial land management practices for important prairie habitat. As well, the Assiniboine Park Conservancy, in partnership with Environment and Climate Change Canada, NCC, MBCDC, The City of Winnipeg's Living Prairie Museum, and US-based partners of the Poweshiek Skipperling International Partnership, has developed a successful captive rearing program for these at-risk skippers. These 'head-start' programs rear Poweshiek and Dakota through their most vulnerable life stages (eggs and larvae) on native grasses at the Assiniboine Park Zoo. Once the skippers have reached adulthood, they are released into native prairie habitat to bolster existing populations or introduced into formerly occupied habitat to establish new populations and increase redundancy. ■



Poweshiek skipperling females reared at the Assiniboine Park Zoo prior to release at the Manitoba Tall Grass Prairie Preserve. Photo credit: Assiniboine Park Conservancy

**P**OWESHIEK SKIPPERLING (*Oarisma poweshiek*) and Dakota skipper (*Hesperia dakotae*) are species within the Hesperidae family of butterflies (known as skippers due to their quick, darting flight habits). The historic range of Poweshiek skipperling was restricted to southeastern Manitoba and eight midwestern states. Today, Poweshiek resides principally only in the Tall Grass Prairie Preserve located near the Manitoba town of Tolstoi and one site in Michigan.

The Dakota skipper's historic range covered southern Manitoba, southeastern Saskatchewan, the Dakotas and Minnesota. Following extirpations from local sites, the Dakota skipper today has populations only in the southeastern corner of Saskatchewan, in southcentral Manitoba between Lake





## Ontario: Rediscovering a Rare Land Snail—the Big-tooth Whitelip

**T**HE BIG-TOOTH WHITELIP (*Neohelix dentifera*) is a rare, large (2-3 cm diameter) land snail of eastern North America. Found mainly in the Appalachian and Adirondack mountains, its northern range extends into southern Ontario and Québec. The species had not been documented in Canada since 1997, despite recent searches of historic sites. It is scheduled to be assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in 2025.

In 2023, the COSEWIC status report author, Dr. Annegret Nicolai, contacted the Ministry of Natural Resources for assistance in accessing an historic site on private land. While Big-tooth Whitelip was not found during site searches in the fall of 2023, searchers from Ontario's Natural Heritage Information Centre (NHIC) realized that there was a lot of similar habitat throughout central Ontario, suggesting that the snail might occur elsewhere.

Within forest ecosystems, gastropods, including snails and slugs, play an important role in litter decomposition and nutrient cycling. They are also important food for various birds, small mammals, reptiles, and amphibians. However, land

snails are a relatively under-surveyed group in Ontario, and it is easy for an uncommon and inconspicuous snail to go unnoticed.

In the spring of 2024, an NHIC team began searching suitable habitat in central Ontario, hoping to rediscover the Big-tooth Whitelip. Early in May, old shells were found at three different sites. Then on June 3rd, while exploring a rich hardwood forest at the southern edge of Algonquin Park, searchers found the first live Canadian specimen of the Big-tooth Whitelip in over three decades! After weeks of looking under countless logs and rocks, the team found a snail climbing a rotting stump near a small forest stream. The very next day the same team found another live snail over 100km away, in northern Frontenac County near the village of Plevna.

NHIC's recent discoveries of new sites and live individuals will contribute data to the provincial species record. This, in turn, will inform future COSEWIC assessments and natural resource management decisions in Ontario.

Efforts have also increased our understanding of habitat requirements specific to Ontario and the northern range-edge population. Sites where Big-tooth

Whitelip have been found tend to be rich upland hardwood forests with calcareous substrates. Within these habitats, Big-tooth Whitelip has typically been found on steep, often rocky, slopes near small streams. Additionally, the surveys conducted during the search for the Big-tooth Whitelip have expanded our knowledge of terrestrial snail species in central Ontario, yielding over 50 observations of other tracked gastropods. ■



A Big-tooth Whitelip. Photo credit: Alison Smith



## Atlantic Canada: Documenting New Brunswick's Most Threatened Plants

**O**LDER RECORDS OF RARE PLANT occurrences represent valuable information on past conditions of the natural habitats where the occurrences were found. They can also provide insight into the current biological significance of a location. However, in general such records have limitations when used to inform present-day land use decisions. It is often unclear, after 20 or more years, whether a rare species is still present because conditions may have been altered by factors such as forestry, land development, natural succession, beaver activity, sea level rise, or fire.

Updating old occurrence records via field surveys can clarify a site's biological significance, determining whether a rare species is still present or is extirpated. For rare plant species that have few or no recent records known, relocation of older records also provides valuable information for assessing their status, potentially confirming that they are not lost from the province or identifying significant declines.

Continuing a project that had begun in 2022, in 2023 the Atlantic Canada Conservation Data Centre (ACCDC) undertook further work to relocate some of New Brunswick's rarest, most threatened, and least known plant

species. Drawing on the ACCDC's rare species occurrence database, occurrences of Critically Imperiled and Imperiled species that had not been seen since 2002 or earlier were identified. Rare species records that had the highest chance of relocation based on likelihood of persistence and precisely located original records were then selected. Clusters of relatively geographically close records were chosen so the ACCDC's field team could most efficiently search for multiple species in a single trip.

Ultimately, 68 historic occurrences of 48 rare plant species throughout New Brunswick were visited during the 2023 field season. The project relocated 32 of 68 historic occurrences and documented at least one occurrence of 24 of the 48 targeted species. In addition to the targeted species, many new locations of other rare species were found. The most notable of those finds included: Round-headed Bush-clover (*Lespedeza capitata*), Canada Cinquefoil (*Potentilla canadensis*), and Long-leaved Pondweed (*Potamogeton nodosus*). In total, 640 occurrences of 96 rare vascular plant species were recorded!

ACCDC data collection extended beyond the rare species to include all observed vascular plant and bird species and other species found incidentally. The project documented a total of



Hanging Bulrush (*Scirpus pendulus*), a very rare, Critically Imperiled vascular plant in New Brunswick. Photo credit: CC BY-NC

5259 species occurrence records.

These were mostly vascular plants (4645 records of 844 species, representing 688 native and 156 exotic species). Another 613 records of species other than vascular plants were also documented, including 509 records of 114 species of birds and 104 records of 67 species in other taxonomic groups. These records will contribute to provincial range mapping and status assessment, providing a baseline against which future changes can be measured.

The information gathered in 2022 and 2023 will enable better status assessment of and protection for New Brunswick's rarest species and will help inform future planning and land-use decisions in the areas in which they are found. For species which were relocated, the ACCDC's work provides valuable new information, documenting species which are otherwise barely known for New Brunswick, such as Hanging Bulrush (*Scirpus pendulus*), not documented since 1998, and Greenish Sedge (*Carex viridula* var. *elatior*), not documented since 1999. ■



## Yukon: Documenting Forest Biodiversity in Ivvavik National Park

THE FIRTH RIVER within Ivvavik National Park contains forests that are among the northernmost in Canada. Soil and forest characteristics suggest that these forests are long established, possibly into the Pleistocene epoch.

To help determine the age of the forest communities, the Yukon Conservation Data Centre (YTCDC) in 2023 led a project to collect and study arboreal lichens (lichens living on trees) and invertebrates to compare species diversity with other northern areas where glacial history is better established. Very few lichen collections had been made previously in the park and none were known to have targeted arboreal lichens. Likewise, little was known about forest insects and arachnids. The project included representation from some of North America's preeminent lichenologists, and invertebrate experts from the Centre for Biodiversity Genomics at the University of Guelph. Experts with the Canadian Museum of Nature and New York Botanical Gardens were also involved.

Ivvavik National Park has never been glaciated, and as such is known to be home to plants and animals not found elsewhere in Canada. The project provided

experts with a rare opportunity to visit the park and improve knowledge on the distribution and status of rare plant and invertebrate species that are restricted in the world to the unglaciated tundra above Ivvavik's forests.

As of March, 2024, and from 1538 collections made from the study, the YTCDC had documented 451 species of lichens, arachnids, and insects, as well as algae, vascular plants, birds, and mammals (identification of specimens is ongoing). Only one of the species is considered exotic (the beetle *Nitidula rufipes*). Ten new species were found for Yukon, including one beetle and nine lichens. One new spider was discovered for Canada, and possibly one new vascular plant was also discovered for Canada. In addition, five vascular plants were newly reported for Ivvavik National Park. As more specimens are processed these numbers may change.



Ivvavik National Park. Photo credit: Denny Bohmer

It is impossible to maintain the ecological integrity of a place without having a baseline understanding of the area's biodiversity. The 2023-24 Ivvavik inventory will help in identifying species that may be at the edge of their range or that may not be found anywhere else in Canada. Study findings will also help in the assessment of rapidly changing northern ecosystems in the wake of climate change. In a warming world, it is expected that Ivvavik's forests will expand. ■



## Northwest Territories: Assessing Climate Threats to the Red-sided Garter Snake



A female red-sided garter snake (CC BY-SA 3.0)

**M**ASSIVE, PROLONGED wildfires in the Northwest Territories (NWT) in the summer of 2023 caused thousands of citizens, in places such as Fort Smith, Hay River, Enterprise, and Yellowknife, to flee their homes. The conflagrations made international news, however largely unseen were countless wild animals who were also on the run as their habitats went up in smoke.

Staff at the NWT Conservation Data Centre (NTCDC) knew that the blazes would impact

wildlife but were unsure how to monitor and assess this. In response, the NTCDC, Government of the Northwest Territories, Parks Canada, and Thompson Rivers University collaborated to investigate the impact on the northernmost subspecies of the red-sided garter snake (*Thamnophis sirtalis parietalis*, also the northernmost of any reptile in Canada). Although it is a Globally Secure (G5) species, in the NWT the *parietalis* subspecies is at risk of extirpation due to its small range and population size.

Like most other snakes, the red-sided garter snake survives winters by hibernating in large groups of dozens to hundreds or even thousands of animals. To do so, it seeks out and occupies deep crevices and caves which, in the southern NWT, are prominent features of the widespread karst topography.

When, in April 2024, the red-sided garter

snake was being assessed for listing as a species at risk, it was noted that it had not been intensively studied in the NWT since the 1980s, and it was unclear if the current population was stable. The NWT Species at Risk Committee recommended that the subspecies be listed as of “Special Concern”. The Committee stressed the need for more information on the snake’s biology and habitat, and on threats to its existence particularly from drought and wildfire—the occurrences of which are increasing with global heating.

A current NTCDC project, led by graduate student Johanna Stewart, aims to address these information gaps. Fieldwork in the summer of 2024 will involve weighing, measuring, and tagging snakes to help estimate their number and condition. A second field season in 2025 will include radio-tracking snakes through their summer habitat as well as assessing the snakes’ prey populations, and predation on the snakes themselves. This research will improve knowledge on the impacts of wildfire on the red-sided garter snake, and on what can be done to support the species so that populations may recover from climate and weather extremes. ■



# Improving Online Searching for Information on Canada's Wild Species

**A**N INVALUABLE SOURCE OF information about Canada's biodiversity is the federal-provincial-territorial website, Wild Species: The General Status of Species in Canada, and the associated reports of the same title.<sup>10</sup> The fifth and latest report, released in the fall of 2022, addresses over 50,000 species in 46 taxonomic groups—reflecting steadily increasing knowledge about Canada's biodiversity (totalling at least 80,000 species).

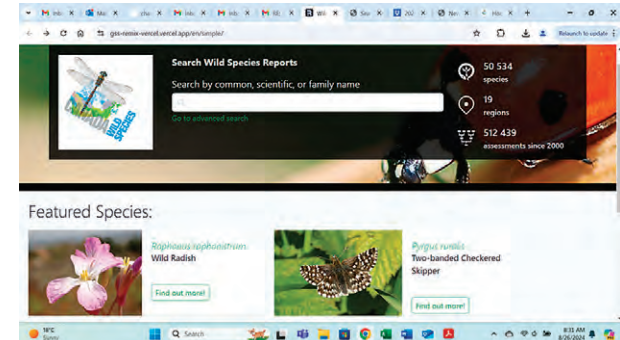
The Wild Species report, coordinated by Environment and Climate Change Canada's Canadian Wildlife Service (ECCC-CWS) and with engagement of federal, provincial, and territorial governments, NatureServe Canada (NSC), and Canada's Conservation Data Centres, is published every five years. In addition to informing the public, the report helps identify species that should undergo a comprehensive assessment by the Committee on the Status of Endangered Wildlife in Canada.

In 2021, NSC developed a public-facing search tool for the Wild Species website. This tool allows users, working in English or French, to access and compare

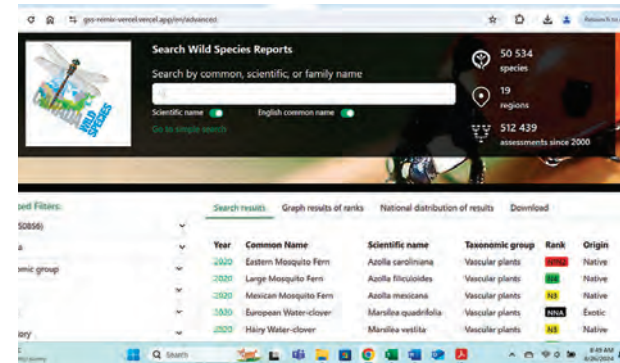
species-specific data from all Wild Species reports, and to compare species conservation status at national and regional levels.

In 2023-24, ECCC-CWS and NSC made significant improvements in the search tool, notably in providing “simple” and “advanced” search options and, in collaboration with iNaturalist, integrating photos of species. Via the “simple search” option (illustrated at top right), users can search for information on individual species and obtain information on a given species' “General Status in Canada”, whether the species is native or exotic, the number of regions in Canada in which the species is present (also illustrated with a map), and the trend(s) in conservation status at national, provincial, and territorial levels, going back to 2000 when the first General Status assessments were undertaken. Via the “advanced search” option (illustrated at bottom right), users can also deploy various filters and can obtain advanced graphical analyses of custom search results for groups of species, by introducing comparison with other regions in Canada.

All told, via the Wild Species website today there is a volume and level of digital



Screenshot of part of the Wild Species "simple search" page



Screenshot of part of the Wild Species "advanced search" page

information on Canada's native biodiversity that would have been inconceivable a quarter of a century ago—with steadily more information yet to come! ■

<sup>10</sup> <https://www.wildspecies.ca/>



# NatureServe Canada: Updating Canada's Terrestrial Ecological Framework

**T**HE CANADIAN TERRESTRIAL ECOLOGICAL FRAMEWORK (CTEF) is a nested hierarchical classification that ranges from broad units shaped by climate and landforms, which govern ecosystems across large regions, to localized units defined by microclimates and landforms influencing site-specific vegetation, soils, and ecological processes. First published in 1996, the CTEF serves as a foundational system for classifying Canada's land into ecological units.

The framework was updated in 2014 with the addition of 12 marine ecozones and one freshwater ecozone, and ecoregions were revised in 2019. This resulted in a seamless national map of ecozones and ecoregions, designed to ensure consistency in conservation reporting across provinces and territories.

These updates were part of Canada's Pathway to Target 1 initiative, which aimed to improve integration across administrative boundaries.<sup>11</sup> However, both the 2014 and 2019 updates revealed that regional ecological updates in several jurisdictions had evolved or diverged from the original 1996 framework, with some regions continuing to

refine their boundaries.

While the CTEF has evolved over time, its primary goal remains to provide a common spatial framework for evaluating and reporting on key issues such as biodiversity conservation, climate change, and natural resource management. It holds utility for federal, provincial, territorial, and Indigenous governments, as well as researchers, educators, and non-governmental organizations.

NatureServe Canada is leading a four-year initiative (2023-2027) to update and modernize the CTEF. This project is supported by \$1.8 million in funding from Environment and Climate Change Canada, along with substantial in-kind contributions and collaboration with provincial and territorial governments, particularly in staff expertise and technical resources.

The aim of the CTEF update is to resolve discrepancies in how different jurisdictions developed their frameworks, ensuring that boundaries and classifications are aligned across provincial and territorial borders. However, the update remains focused on ensuring that ecological data can be shared consistently across Canada and on continuing to support international conservation commitments, such as those under the Kunming-Montreal Global Biodiversity Framework.<sup>12</sup> The updated CTEF will also address emerging reporting and monitoring needs that have arisen since the 1996 framework. These include modelling the cumulative effects of climate change, assessing impacts on species at risk, and supporting ecosystem-based management strategies. ■



Part of the Hudson-James Bay Lowlands. Photo: Adam Collingwood/Parks Canada

<sup>11</sup> See: <https://www.conservation2020canada.ca/the-pathway>

<sup>12</sup> See: <https://www.unep.org/resources/kunming-montreal-global-biodiversity-framework>



# Summary Financial Data

From NatureServe Canada's audited financial statements for 2023-24: to access the full statements, please visit [www.natureserve.ca](http://www.natureserve.ca).

STATEMENT OF FINANCIAL POSITION		
Year ending March 31	2024	2023
<b>ASSETS</b>		
<b>Current</b>		
Cash	994,216	881,186
Accounts receivable	796,989	418,643
Prepaid expense	1,233	1,020
	1,792,438	1,300,849
<b>Capital Assets</b>	–	534
<b>Total Assets</b>	1,792,438	1,301,383
<b>LIABILITIES AND NET ASSETS</b>		
<b>Current Liabilities</b>		
Accounts payable and accrued liabilities	1,408,635	979,508
Deferred revenue	14,000	66,264
	1,422,635	1,045,772
<b>Net Assets</b>	369,803	255,611
<b>Total Liabilities and Net Assets</b>	1,792,438	1,301,383

STATEMENT OF OPERATIONS		
Year ending March 31	2024	2023
<b>REVENUE</b>		
Charitable organization/foundation funding	267,424	427,039
Dues	16,500	16,500
Government funding	2,780,432	2,292,797
Other	27,552	11,414
<b>Total Revenue</b>	3,091,508	2,747,750
<b>EXPENDITURES</b>		
Contracts	2,907,132	2,621,925
Office costs	10,635	10,278
Other	2,134	1,987
Professional fees	18,049	17,902
Sponsorship	13,309	–
Travel, annual meeting, workshops	26,057	20,743
<b>Total Expenditures</b>	2,977,316	2,672,835
<b>Excess (Deficiency) Revenue Over Expenditures</b>	114,192	74,915

Eschscholtz's Buttercup (*Ranunculus eschscholtzii*), in 2023 documented by the Yukon Conservation Data Centre to occur in Ivavik National Park. Photo credit: Denny Bohmer



## An Invitation to Contribute to Conservation Science

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 tax deductible donations in support of our business—conservation science. As well, membership in NatureServe Canada is available to organizations that support our mission, which manage data of conservation value, and/or are active in promoting science-based conservation action nationally or sub-nationally.

Online donations can be made at [www.natureserve.ca](http://www.natureserve.ca). For inquiries, please contact Patrick Henry, Executive Director, [phenry@natureserve.ca](mailto:phenry@natureserve.ca); 613-986-1535. ■



# In Gratitude to Our Members in 2023–24—Thank You!

NatureServe Canada is deeply grateful for the contribution 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  
Fisheries and Oceans Canada

Nature Conservancy of Canada  
NatureServe  
Parks Canada Agency



Environment and Climate Change Canada

Environnement et Changement climatique Canada



Fisheries and Oceans Canada

Pêches et Océans Canada



A Network Connecting Science with Conservation  
Un Réseau pour la science et la conservation

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