September 2018

nawmp.wetlandnetwork.ca

HabitatMatters

2018 Canadian NAWMP Report

"Autumn Colours – Wood Duck" from the 2018 Canadian Wildlife Habitat Conservation Stamp series.

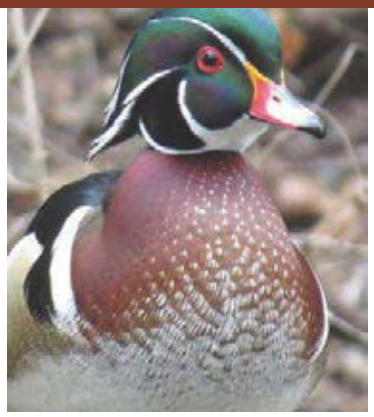
Artist: Pierre Girard

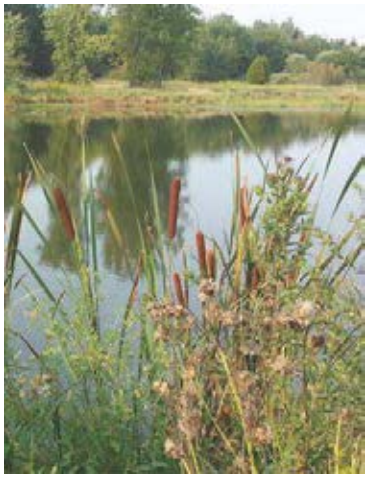
North American Waterfowl Management Plan

Plan nord-américain de gestion de la sauvagine

Plan de Manejo de Aves Acuáticas Norteamérica

Table of Contents





About the NAWMP

Hooded Merganser duckling.
Laura Kaye

The North American Waterfowl Management Plan (NAWMP) is an international partnership to restore, conserve and protect waterfowl populations and associated habitats through management decisions based on strong biological foundations. The ultimate goal is to achieve abundant and resilient waterfowl populations and sustainable landscapes. The NAWMP engages the community of users and supporters committed to conserving and valuing waterfowl and wetlands.

In 1986, the Canadian and American governments signed this international partnership agreement, laying the foundation for international cooperation in the recovery of declining waterfowl populations. Mexico became a signatory to the NAWMP with its update in 1994. As a result, the NAWMP partnership extends across North America, working at national and regional levels on a variety of waterfowl and habitat management issues.

Since its creation, the NAWMP's partners have worked to conserve and restore wetlands, associated uplands and other key habitats for waterfowl across Canada, the United States and Mexico. The partners have had wide-ranging influence: shaping land-use, agricultural and public policies; integrating science and monitoring systems into planning; and delivering habitat programs. The results of these efforts are notable. Many waterfowl populations are substantially larger now than they were in 1986, and NAWMP partners have reached out to collaborate with other bird conservation initiatives.

In Canada, NAWMP partner activities are directed by public–private Joint Venture partnerships, which focus on areas or species of concern identified in the NAWMP. Each Joint Venture includes a range of partners from federal, provincial and local governments to conservation organizations. Implementation and Strategic Plans, developed based on the NAWMP's goals as well as on pressures specific to the Joint Ventures, form the basis of each Joint Venture's programs and individual projects.

Terminology used in this report

Securement
The protection of wetland and/or upland habitat through land title transfer or binding long-term (minimum 10-year) legal agreements with a landowner.

Influence
Direct actions taken by landowners, land managers or conservation agencies that protect or enhance wetland or associated upland habitats without legal or binding agreements. These direct actions result in applied land-use changes.

Enhancement
Actions carried out on wetland and/or upland habitats to increase their carrying capacity for wetland-associated migratory birds and other wildlife.

Management
Activities conducted on secured wetland and/or upland habitats to manage and maintain their carrying capacity for wetland-associated migratory birds and other wildlife.

National Overview

Wood Duck.
Jeff Costa

Accomplishments by Habitat Joint Ventures (1986–2018)

22.3

Million acres of habitat secured

(9.0 M Hectares)

Involves the protection of habitat through land title transfer or binding legal agreements with landowners (10-year minimum).

166.8

Million acres of habitat influenced

(67.5 M Hectares)

Involves direct actions that protect or enhance habitat without legal or binding agreements. These actions result in applied land-use change.

3.7

Million acres of habitat enhanced

(1.5 M Hectares)

Involves actions that increase habitat carrying capacity for waterfowl and other wildlife.

13.4

Million acres of habitat managed

(5.4 M Hectares)

Involves activities that manage and maintain habitat carrying capacity for waterfowl and other wildlife.

Accomplishments by Habitat Joint Ventures (2017–2018)

1,431.5

Thousand acres of habitat secured

(579.3 K Hectares)

3,528.8

Thousand acres of habitat influenced

(1,428.0 K Hectares)

434.7

Thousand acres of habitat enhanced

(175.9 K Hectares)

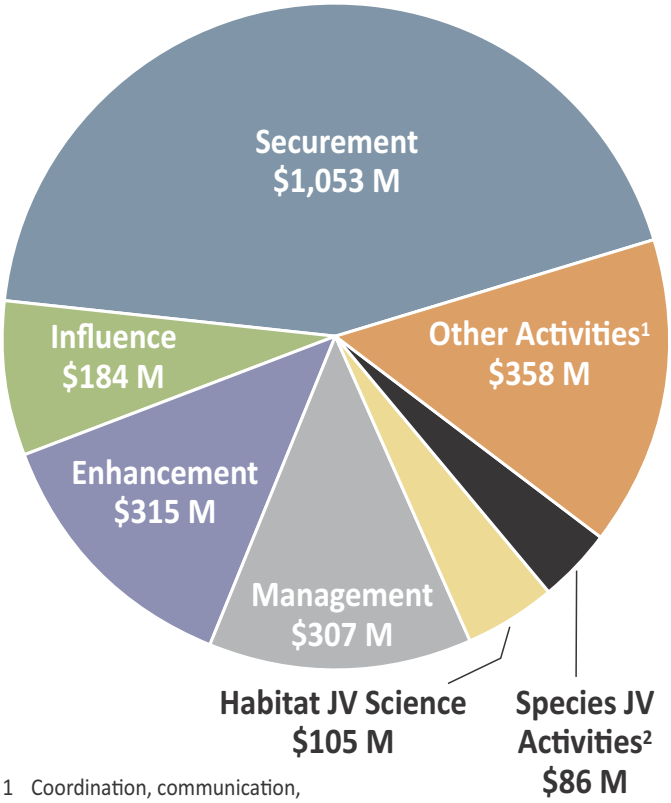
826.0

Thousand acres of habitat managed

(334.3 K Hectares)

Expenditures

By activity 1986 to 2018 ($2,408 M CAD)



1 Coordination, communication, policy and crop damage

2 Banding, survey and research

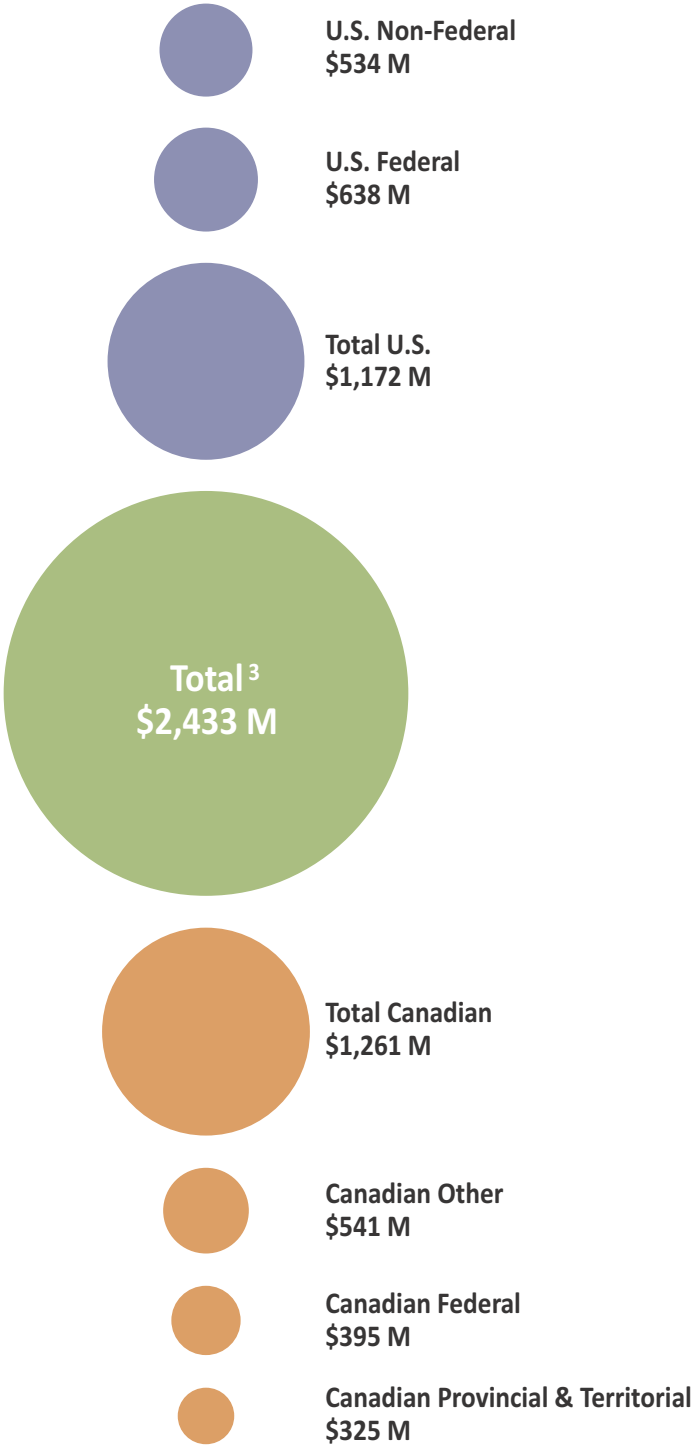
The successful implementation of Canada's NAWMP program has been enabled by the continuous support of partners in both Canada and the United States, including federal, provincial/territorial and state governments, non-governmental organizations and individuals. In particular, funding received under the United States' 1989 *North American Wetlands Conservation Act* has been integral to the success and longevity of the Canadian program.

1986-2018 consists of the January 1, 1986 to March 31, 2018 time frame.

2017-2018 consists of the April 1, 2017 to March 31, 2018 time frame.

Contributions

In support of the NAWMP in Canada 1986 to 2018 ($2,433 M CAD)



3 Includes $0.24 M in international contributions

Canadian Waterfowl Habitat Benefits All North Americans

A waterfowl hunter near Oromocto, New Brunswick.
Leanne Elson

> Conservation works when we work together.

Migratory birds know no geospatial boundaries, only those of their instincts and biology. Therefore, international commitment to working together throughout the length and breadth of migratory birds' annual routes is the only way to conserve their populations globally. On August 16, 1916, Great Britain (acting on behalf of Canada) and the United States signed the Convention for the Protection of Migratory Birds, commonly referred to as the Migratory Birds Convention. A year later, Canada passed into law the Migratory Birds Convention Act (MBCA), and in 1918 the United States enacted the Migratory Bird Treaty Act (MBTA) to implement the Convention. Over the years, the MBTA's scope has broadened to include Mexico. For over one hundred years, these three nations have worked together in protecting hundreds of thousands of waterfowl throughout North America. In Canada, the MBTA's importance has been in protecting the waterfowl that migrate great distances between their summer grounds in Canada and their winter grounds in the United States and Mexico.

This year, dozens of organizations have come together to celebrate 2018 as the Year of the Bird. Led by National Geographic, the National Audubon Society, the Cornell Lab of Ornithology and BirdLife International, the Year of the Bird aims to celebrate and raise awareness of these creatures that provide countless benefits ecologically, economically and recreationally, and have cultural and spiritual significance. Another celebration is World Migratory Bird Day. Organized jointly by Environment for the Americas, the Convention on Migratory Species and the Agreement on the Conservation of African-Eurasian Migratory Waterbirds, the celebration focuses on the extraordinary journeys that birds take between their summer and winter grounds. The 2018 events marked the day with the theme "Unifying Our Voices for Bird Conservation." These annual celebrations and achievements are owed to the countless biologists, conservationists, citizen scientists and other people whose desire is to see nature flourish.

An American Wigeon resting at the George C. Reifel Migratory Bird Sanctuary in Delta, British Columbia.
Britney MacLeod

The North American Waterfowl Management Plan (NAWMP) is a perfect example of the ongoing collaboration and commitment to protecting North America's waterfowl populations. It has promoted partnerships among all levels of government and non-governmental organizations, fostered research to increase understanding of waterfowl populations and habitat needs and created formal joint ventures. From 1986 to the present, the NAWMP has made significant strides in waterfowl and wetland conservation across North America, and it has also evolved over the years of its existence, most notably with the major 2012 Revision.

In September of this year, the NAWMP is planning to release a 2018 Update to highlight the waterfowl management community's achievements and to assess where the focus should lie for the upcoming years of conservation actions for waterfowl. The 2018 Update is drawing on several sources, including an assessment of waterfowl management institutions (measuring progress on each of the seven 2012 Recommendations); a survey of waterfowl and wetland professionals; input from the Future of Waterfowl II Workshop held in September 2017; and surveys of hunters, birdwatchers and the general public. Achieving the NAWMP goals requires different strategies in different landscapes, so one of the keys, as noted in the report of the Future of Waterfowl II Workshop, is to "think continentally, and implement locally."[1]

Since the 1970s, many waterfowl populations in Canada have increased, reflecting the achievements gained through international collaboration to manage waterfowl hunting in a sustainable way and to conserve and restore wetlands and other critical habitats for waterfowl. For example, populations of Mallard, Hooded Merganser and Wood Duck increased by more than 50% from 1970 to 2011 in the Lower Great Lakes-St. Lawrence region.[2]

The NAWMP's work and successes are in large part due to international cooperation among governments and conservation organizations working collaboratively toward the ultimate goal of waterfowl and wetland conservation. Efforts to date are noteworthy, yet they cannot cease. Waterfowl still face numerous threats, particularly to the critical wetland habitats they rely upon. For example, wetlands continue to be drained for agricultural, industrial and urban developments, polluted from point and non-point sources, invaded by non-native plant species and affected by droughts due to climate change.

There is no question that conservation efforts work: healthy wetlands allow for healthy waterfowl populations, both of which are achieved when data and ideas are shared by strong partnerships across the continent. Conservation works when we work together.

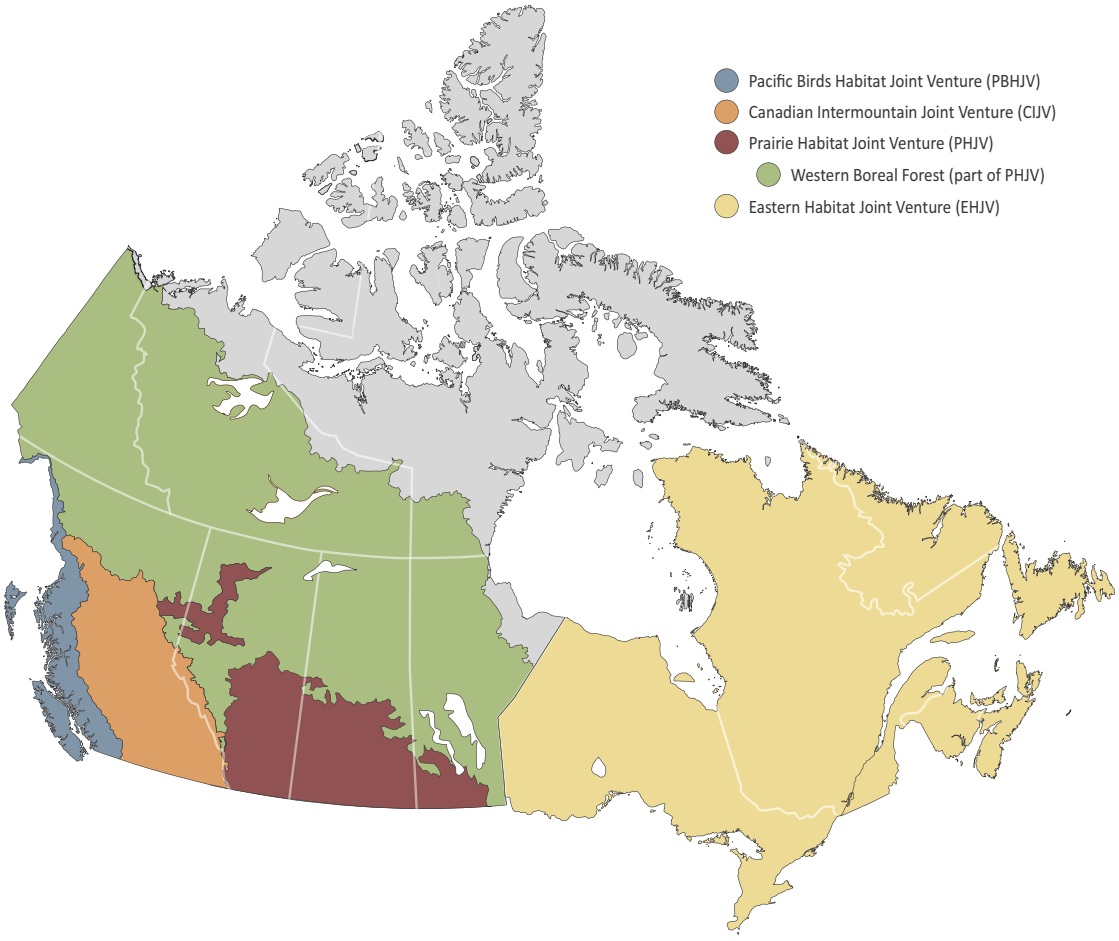
1 NAWMP. "The Future of Waterfowl II Workshop." Summary Workshop Report, September 2017. Available at nawmp.org.
2 North American Bird Conservation Initiative Canada. "The State of Canada's Birds, 2012." Environment Canada, Ottawa, Canada.

Habitat Joint Ventures

A Prairie Pothole wetland in the Matador Community Pasture, Saskatchewan.

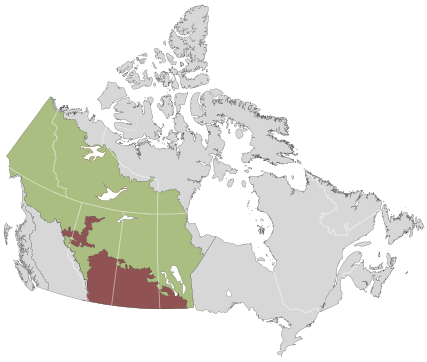
Peter Davidson, Bird Studies Canada

The Canadian portions of the Habitat Joint Ventures integrate planning, science, governance, partnerships and management to achieve NAWMP goals in Canada through a programmatic approach. A science-based Implementation Plan is created to address local, regional and continental goals. Joint Venture partners actively research, monitor and evaluate waterfowl populations and deliver habitat conservation programs at a regional level.



Prairie Habitat Joint Venture

Mallard ducklings.
Delta Waterfowl



www.phjv.ca

The PHJV encompasses 158.4 million acres (64.1 million hectares) of prairie and aspen parklands in Alberta, Saskatchewan, Manitoba and the Peace Parklands Region of British Columbia (BC). The PHJV also supports conservation in the western boreal forest (WBF), which covers parts of BC, Alberta, Saskatchewan, Manitoba, the Yukon and the Northwest Territories. The PHJV contains a range of wetland types from small potholes to marshes and bog systems.

Together, the Prairie Parklands and WBF regions of Canada provide habitat for most North American duck species. They also provide habitat for hundreds of priority species identified during the Bird Conservation Region planning process. For example, the WBF has 57 priority species of non-game birds and 30 boreal specialists. Linkages among habitats and species are highlighted in the Prairie Parklands and WBF Implementation Plans.

The large and diverse area within the Prairie Habitat Joint Venture (PHJV) provides highly productive habitats for waterfowl as well as other bird species. The projects highlighted this year demonstrate the dedication of partners to enhancing waterfowl populations and habitats, as well as investing in long-term initiatives that will reap benefits for decades to come.

Prairie Parklands

Manitoba: The making of Mallards

An estimated 8,000 made-in-Manitoba Mallards hatched this spring because of the installation of artificial nesting structures. This Mallard production tool is but one of a range of tools that the PHJV partners are implementing in Manitoba, and is supported by funds from the North American Wetlands Conservation Act (NAWCA), Wildlife

Inspecting artificial nesting structures, which greatly increase Mallard nest success.

Delta Waterfowl

Habitat Canada, Delta Waterfowl and private donors. These "Hen Houses" are a cost-effective way to enhance Mallard populations in areas with limited nesting cover and stimulate long-term conservation projects.

Research conducted 30 years ago pointed to poor nesting success as one element affecting North America's waterfowl, particularly ground nesters. Matt Chouinard, Delta's senior waterfowl programs manager, explained the relative lack of success for Mallard hens. "The parkland area is very biologically productive and that has resulted in a robust predator base. Most nests are lost to predators such as raccoons, skunks and foxes. Exacerbating this, the loss of natural habitat around the prairie wetlands has reduced the base of nesting habitat, making the nests easier to find. The Hen Houses provide a more secure site for Mallard hens to incubate their eggs."

> DUC purchases land, restores the wetlands and upland habitat and lists the land with a condition: the buyer agrees to allow a conservation easement on the land title.

A less-expected outcome was the amount of long-term habitat protection that has resulted after Hen House installations. Tim Sopuck, CEO of the Manitoba Habitat Heritage Corporation (MHHC) explained that "enrollment in the Hen House program is completely voluntary and no incentive payments are made. But it gives our staff a chance to sit at the kitchen table with landowners and build relationships. The results have included new wetland restoration projects and perpetual easements." The MHHC has found that, over time, about 20% of the voluntary Hen House agreements are converted to perpetual conservation easements.

Given the immediate waterfowl benefits and potential for new projects down the road, Chouinard and Sopuck agree that Hen Houses are a cost-effective way to produce ducks, engage landowners and conserve waterfowl breeding habitat.

Saskatchewan: Cattle producers and waterfowl both gaining ground

When commodity and livestock prices are high, ranchers usually look to expand their operations, but accessing affordable land can be difficult. Darren Keown was in exactly this position as a cow-calf producer in east-central Saskatchewan. "Land prices have really gone up," he said. "The downside for the cattle guy is that we can't afford to walk cattle on this expensive land." In addition, a lot of pasture and hay land used in the last five or ten years has been converted to grain land, so competition for grassland increases all the time.

Cattle grazing on the Keown Ranch.
Ducks Unlimited Canada

The Keown family.
Ducks Unlimited Canada

Enter the Revolving Land Conservation Program (RLCP) administered by Ducks Unlimited Canada (DUC). Under this program, DUC purchases land, restores the wetlands and upland habitat and lists the land for sale with a condition: the buyer agrees to allow a conservation easement on the land title.

"I started my involvement with DUC when I purchased one of their ranches at Stornoway, Saskatchewan," said Keown. This first ranch was 14 quarter sections, and Keown then acquired an additional four quarters through the RLCP. With about 1,000 head of cattle and a feedlot, Keown's land acquired through RLCP is highly productive for cattle, and also a high-priority target area for waterfowl.

Kevin Rozdeba, conservation program specialist with DUC, noted that the program makes the land more affordable. "[Ranchers] can acquire lands at a reduced value. The easement restrictions are simply that they can't drain any wetlands or fill them in, and the land must remain as pasture or hay land."

Keown explained that the advantages of working with DUC don't stop with the land sale. "It's not just about the cow," he said. "[The program] works for the ducks and the wildlife and the cattle producer to keep that land in grass and in its natural state. It's definitely a symbiotic relationship for sure."

Alberta: Tamara Ranch—"Nature knows best" philosophy leads to success for waterfowl and cattle

The Tamara Ranch, located in the heart of an important NAWMP target area, is home to an abundance of waterfowl and wildlife. For more than 70 years, the Towers Family has successfully farmed this land while striving to maintain a natural state for conservation.

Margaret and Tom Towers on Tamara Ranch, Alberta.
Ducks Unlimited Canada

During the first 25 years of their married life, Tom and Margaret Towers laboured hard, practising traditional farming methods. They had a feedlot and cattle herds; produced hay, grain and silage; and raised pigs. "It was frenetic," said Margaret. "We never took a vacation."

Then, an epiphany: in the early 1990s, searching to lead a more balanced life, the Towers learned about the practise of holistic management. "I've always been an out-of-the-box thinker," said Margaret, "so this idea of 'Nature knows best' appealed to me."

Tom and Margaret took courses in holistic management. They installed electric fencing. They eliminated the feedlot in favour of managed intensive grazing. They changed their cattle to smaller breeds. They reduced their inputs, and saved money. Their land and their grass-fed cattle have never been healthier. For waterfowl and other wildlife, this land is a natural oasis amidst a sea of drainage.

It's been a long but successful journey and the Towers consider their role as land stewards as a small part of the bigger picture. In order to protect their efforts and precious land for future generations, Tom and Margaret found DUC and NAWMP to be the perfect fit with their philosophy. DUC conservation program specialist Darwin Chambers asked them to consider a partial donation and paid conservation easement with DUC. The Towers' conservation easement protects a 640-acre (260-hectare) section of land in Alberta's Pine Lake Moraine, an important NAWMP target area for waterfowl.

Western Boreal Forest

DUC and Akaitcho First Nations mapping the landscape

DUC and the Akaitcho Treaty 8 Tribal Council have undertaken one of the largest, most innovative projects of its kind in Canadian history. Together, they're mapping 77 million acres (31 million hectares) of boreal wetlands in Akaitcho Néné, Northwest Territories (NWT). Located on the eastern half of Great Slave Lake and extending beyond the Nunavut border, Akaitcho Néné is home to four Dene First Nations communities. They share this landscape with waterfowl, like Lesser Scaup, and wildlife, like the Woodland Caribou, listed as threatened

Aerial view of a boreal wetland in Akaitcho Néné in the Northwest Territories.
Ducks Unlimited Canada

> The Akaitcho region provides habitat for about 30% of the total duck pairs in the NWT, making it a prime NAWMP conservation opportunity in the western boreal forest.

Northern Shoveler.
Ducks Unlimited Canada

in Canada under the *Species at Risk Act* (SARA). The Akaitcho region provides habitat for about 30% of the total duck pairs in the NWT, making it a prime NAWMP conservation opportunity in the western boreal forest.

Maps are being created using satellite-generated images, reconnaissance flights, traditional knowledge of the landscape and cutting-edge mapping software. "By combining our collective knowledge, we'll be able to show where important caribou and waterfowl habitats are," said Kevin Smith, DUC's national manager of boreal programs. When complete, these maps will inform DUC conservation efforts and help Akaitcho First Nations make decisions around how to manage their territory for protected areas initiatives, recreation and sustainable land use for industry.

DUC has set an ambitious goal to conserve 660 million acres (267 million hectares) of the best waterfowl habitat in Canada's boreal forest. This habitat supports over 500 bird, fish and mammal species. The Akaitcho mapping project is also supported by the U.S. Fish and Wildlife Service, The Pew Charitable Trusts, Ducks Unlimited, Inc., the Hewlett Foundation and Environment and Climate Change Canada.

For more information, contact Deanna Dixon, Prairie Habitat Joint Venture Coordinator, (780) 951-8652, deanna.dixon@canada.ca.

Prairie Habitat Joint Venture – Prairie Parklands
Contributions ($CAD)

	2017-2018	*Total (1986-2018)*
Total	53,398,542	1,290,898,655

Accomplishments (Acres)

	2017-2018	*Total (1986-2018)*
Secured	825,005	7,664,173
Enhanced	386,282	2,618,176
Managed	655,119	10,118,355
Influenced	15,921	6,267,088

Secured, enhanced and managed acres are not additive.

2017-2018 consists of the April 1, 2017 to March 31, 2018 time frame.

1986-2018 consists of the January 1, 1986 to March 31, 2018 time frame.

Prairie Habitat Joint Venture – the Western Boreal Forest
Contributions ($CAD)

	2017-2018	*Total (1986-2018)*
Total	4,362,598	146,256,493

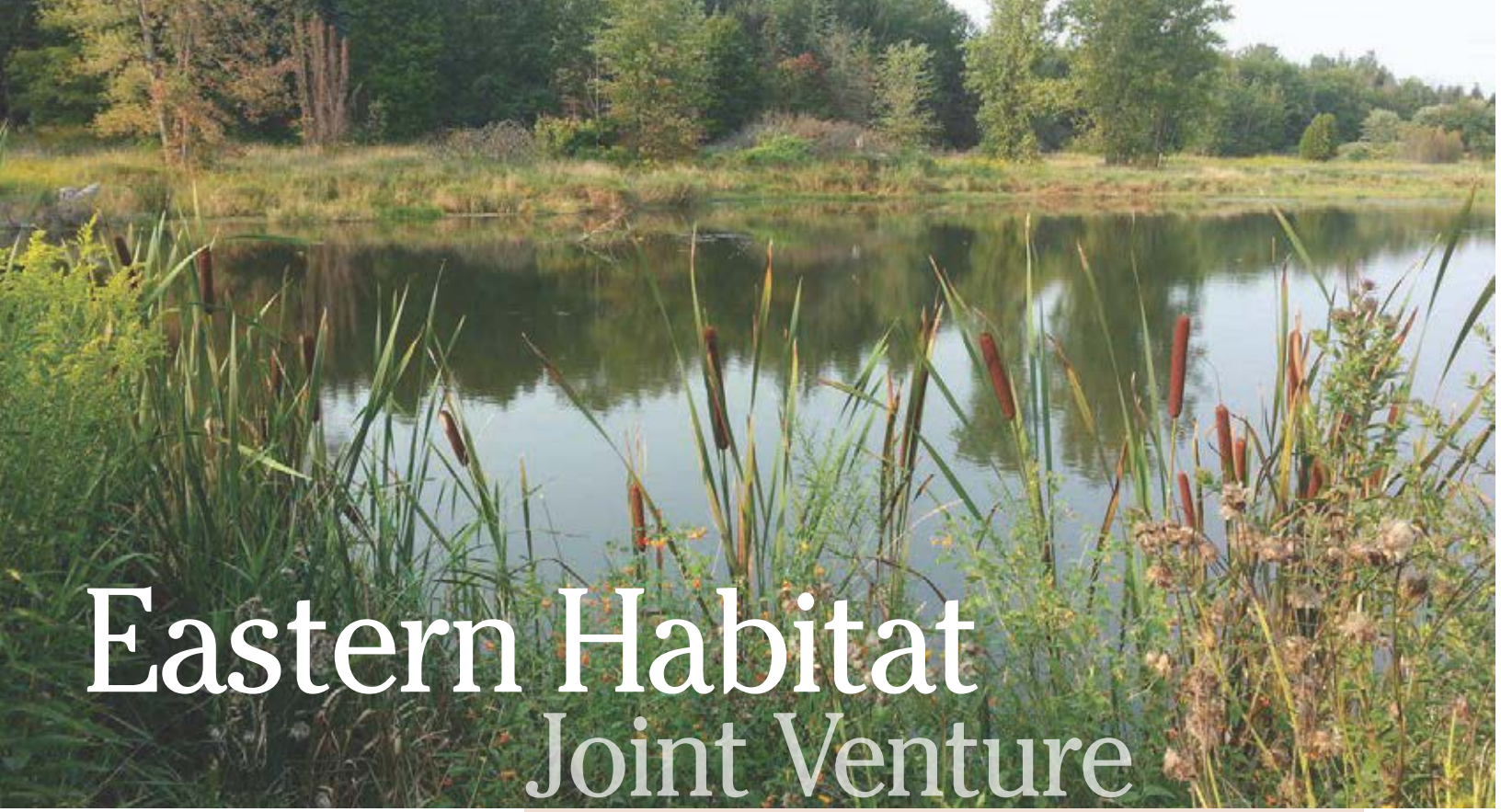
Accomplishments (Acres)

	2017-2018	*Total (1986-2018)*
Secured		12,091,184
Enhanced		107
Managed		107
Influenced	106,407	76,216,853

Secured, enhanced and managed acres are not additive.

2017-2018 consists of the April 1, 2017 to March 31, 2018 time frame.

1986-2018 consists of the January 1, 1986 to March 31, 2018 time frame.



Eastern Habitat Joint Venture

A small wetland restored in the Lake Erie basin.
Ducks Unlimited Canada

www.ehjv.ca
www.ehjv.ca/fr

The EHJV contains 780 million acres (315 million hectares) spanning Ontario, Quebec, New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland and Labrador. The EHJV supports 30% of Canada's wetlands, including more than 120.8 million acres (48 million hectares) of fresh and tidal wetlands. Important habitats include coastal bays and salt marshes, lakeshore marshes, floodplain wetlands and boreal forest wetlands. The JV has 13 priority waterfowl species: American Black Duck, Mallard, Ring-necked Duck, Common Goldeneye, Common Eider (three races), Green-winged Teal and Canada Goose (five populations). The habitat within the EHJV supports 95% of the continental population of American Black Duck and 80% of the southern race of Common Eider. The Atlantic and North Atlantic populations of Canada Goose breed exclusively within the EHJV.

The Eastern Habitat Joint Venture (EHJV), the eastern Canada delivery arm of the NAWMP, is North America's largest joint venture, encompassing one-third of Canada's land mass and two-thirds of Canada's population. Since its inception in 1989, over $500 million CAD has been invested into EHJV habitat projects to secure more than 2 million acres (838,000 hectares) and influence 77 million acres (31 million hectares) of wetlands and associated upland habitat for the benefit of migratory birds and other wildlife. This corresponds to an area larger than all of the Great Lakes combined. The habitat conservation projects and related initiatives undertaken by the EHJV partnership have contributed to the conservation of eastern Canada's rich biological diversity as well as North America's overall biodiversity.

While there are many significant achievements across the EHJV, this year's report highlights three projects: one showcasing how international conservation efforts can secure shoreline habitat and two working to address problems with harmful blooms of algae that affect habitat for numerous wildlife, including many species of waterfowl.

Conserving Big Trout Bay—"the best of the best" on Lake Superior

Hundreds of millions of migrating waterfowl and other birds use the largest freshwater system in the world—the Great Lakes—and their surrounding landscapes. A collaboration of conservation partners, led by the Nature Conservancy of Canada (NCC), recently completed a 15-year international effort to keep pristine coastal habitats intact and in their natural state, for the benefit of wildlife, people and the economy.

Big Trout Bay, Lake Superior, Ontario.

Costal Productions, courtesy of Nature Conservancy of Canada

Located just minutes from the international border, Big Trout Bay was the last undeveloped, privately owned bay on Lake Superior between Duluth, Minnesota, and Thunder Bay, Ontario, and the owner had planned to convert the property into 300 cottage lots. Now, after being purchased by NCC, it has become part of a chain of protected areas along Lake Superior's north shore stretching from Quetico Provincial Park and the Boundary Waters to Pukaskwa National Park. This spectacular acquisition conserves more than 2,500 acres (1,000 hectares) of undisturbed coastal boreal habitat, including 13 miles (21 km) of undeveloped shoreline. EHJV partners have the global responsibility to protect the Great Lakes and this is a prime example of private action that does that.

> The Big Trout Bay acquisition conserves more than 2,500 acres (1,000 hectares) of undisturbed coastal boreal habitat, including 13 miles (21 km) of undeveloped shoreline.

Although the property lies entirely in Canada, donations from individuals and groups on both sides of the border made the purchase possible. Project funds were contributed by the Government of Canada through the Natural Areas Conservation Program, and with the generous partnership of the J.A. Woollam Foundation, the Margaret A. Cargill Foundation, the Bobolink Foundation, the Nature Conservancy's Wisconsin and Minnesota programs, U.S. Fish and Wildlife Service, the Conservation Fund, Green Leaf Advisors, the Rogers Foundation and many individual donors in both Canada and the United States.

Addressing a threat to the Lake Erie watershed

Eerie doesn't begin to describe the toxic takeover that threatens Lake Erie. Increasingly, summers in its western basin are marred by outbreaks of toxic blue-green algae (cyanobacteria). These algae produce toxins that threaten drinking water sources, recreational activities and habitat for wildlife including migratory waterfowl (e.g., Tundra Swan, American Black Duck, Canvasback, Redhead, Greater Scaup, Lesser Scaup, Red-breasted Merganser and Ruddy Duck).

There's broad consensus within the scientific community that the main culprit promoting the excessive growth of these naturally occurring algae is phosphorus, a nutrient that enters the lake from a variety of sources, particularly agricultural fields where fertilizer is used to promote plant root development. In much of Lake Erie's watershed, more than 90% of historic wetlands have been lost, crippling the capacity of the landscape to absorb excess nutrients before they enter the lake. Fortunately,

A toxic algal bloom in Lake Erie.
NASA

Green-winged Teal pair.
Ducks Unlimited Canada

this iconic lake has hope for a cleaner, healthier future thanks to a shared commitment by Canada and the United States to reduce nutrient loads reaching Lake Erie by 40% by 2025.

One of the efforts helping to achieve this bilateral commitment is the Lake Erie Watershed Wetlands Initiative (LEWWI), an ongoing project led by Ducks Unlimited Canada (DUC) and with the partnership of the Ontario Ministry of Natural Resources and Forestry. Through the efforts of DUC staff, conservation-minded landowners and local partners, LEWWI exceeded expectations in the first year, 2017, with the construction of 68 new wetlands and rebuilds of 17 existing wetlands totalling 360 acres (146 hectares) of restored wetland habitat within the Lake Erie basin.

These wetlands will provide important habitat for breeding and migrating waterfowl, thus linking LEWWI's work directly with the EHJV's objectives under the NAWMP. In addition, by capturing runoff from fields and surrounding areas, the wetlands will improve water quality, reduce nutrient loads, mitigate flood surges and contribute to climate resiliency.

Most of the new projects are small wetlands on private lands. Partnering with landowners is critical because most of the landscape is under private ownership, and the costs associated with habitat securement in this region are prohibitive. Thus, this collaborative effort is an affirmation of the importance of protecting ecosystems at regional and local levels to address critical issues at larger, landscape scales, and is an outstanding example of the value of involving people in habitat conservation.

Green-winged Teal hen with brood.
Ducks Unlimited Canada

In February 2018, DUC hosted a workshop with partners from multiple jurisdictions in the Lake Erie watershed to convey knowledge and experiences around watershed conservation. With his remarks, Paul General, wildlife manager for the Six Nations of the Grand River Territory, reminded participants of the fundamental importance of the work on Lake Erie. "Water is a giver of life," General said. "Without water, all things cease to exist. You would think that it would be a no-brainer to everyone, how important water is."

Making a difference for Lac à la Truite

A rural municipality nestled at the foot of the Appalachian Mountains in southeastern Quebec, Irlande seemed the ideal spot for Réjean Vézina to enjoy a quiet retirement. Shortly after he moved there in 2011, Vézina instead found a new "job" and passion: working to improve the health of a local wetland and lake. Years of asbestos mining, runoff and wastewater flowing past an eroded dam at a wetland called Étang Stater had polluted Irlande's local lake, Lac à la Truite.

Like in Lake Erie, the pollution had spurred the growth of blue-green algae in Lac à la Truite, significantly diminishing water quality and habitat suitability for waterfowl and other wildlife. The lake was also both unsightly and unusable for residents and visitors. Vézina noted that the water was unsuitable for swimming and questionable for fishing. "Locals don't benefit from the lake anymore," he said.

The pollution had spurred the growth of blue-green algae in Lac à la Truite, significantly diminishing water quality and habitat suitability for waterfowl and other wildlife.

An aerial view of the dam that DUC conservation staff and engineers repaired at the Étang Stater wetland , Quebec.

©APLTI

For many of Irlande's residents, "the thought of doing nothing was really sad," said Vézina. So he and others formed a group called, L'Association de protection du Lac à la Truite d'Irlande (APLTI). One of their first ideas was to have the dam at Étang Stater repaired so the wetland could resume its role as a filter, removing and trapping sediments instead of letting them flow into the lake.

Restoring a dam is a big job, and the members of APLTI needed help. They approached DUC, which worked with APLTI to repair the derelict dam and add a fishway. Now, the 257-acre (104-hectare) Étang Stater not only filters water, thus reducing pollution levels, before it continues into Lac à la Truite and other lakes downstream, but it also provides habitat for breeding and pairing waterfowl including American Black Duck, Ring-necked Duck, Wood Duck, Bufflehead, Blue-winged teal, Greater Scaup, Redhead and Ruddy Duck.

Of his unexpected retirement project, Vézina said, "this has been one of the most beautiful accomplishments of my life."

For more information, contact Tania Morais, Eastern Habitat Joint Venture Coordinator, (506) 364-5085, tania.morais@canada.ca.

Eastern Habitat Joint Venture

Contributions ($CAD)

	2017-2018	*Total (1989-2018)*
Total	24,335,276	585,552,676

Accomplishments (Acres)

	2017-2018	*Total (1989-2018)*
Secured	587,868	2,070,784
Enhanced	12,266	661,202
Managed	120,642	2,240,211
Influenced	3,406,461	77,409,160

Secured, enhanced and managed acres are not additive.

2017-2018 consists of the April 1, 2017 to March 31, 2018 time frame.

1989-2018 consists of the January 1, 1989 to March 31, 2018 time frame.

Pacific Birds Habitat Joint Venture

Northern Pintail.
Britney MacLeod

www.pacificbirds.org

The PBHJV is an international joint venture that includes portions of British Columbia (BC), Alaska, Washington, Oregon, California and Hawaii. The BC coastline has over 440 estuaries, which are a focus of many PBHJV programs due to their food-rich combination of tidal wetlands and adjacent floodplains. Frequently close to urban areas, floodplains have often been highly modified and converted to intensive, non-forage agricultural crops, resulting in the loss of considerable natural habitat and food supply. Throughout the PBHJV, 40 species of ducks, swans and geese occur regularly at various stages of their life cycles, and an estimated one million waterfowl winter along the BC coast. The Fraser River estuary and its associated delta in southern BC support the highest density of wintering waterfowl in Canada. Key species in the BC portion of the Joint Venture include the Wrangel Island Snow Goose (nearly half of the global population), Trumpeter Swan (half of the Pacific Coast population), American Wigeon, Cackling Goose and Western High Arctic Brant.

Partners of the international Pacific Birds Habitat Joint Venture (PBHJV or "Pacific Birds") have had an active year of restoration and enhancement work in British Columbia's estuaries and wetlands. These habitats offer critical breeding, foraging and stop-over areas for numerous species of ducks, swans and geese. This year's report describes activities underway in two places with particularly high pressure from human land uses: the Fraser River estuary and delta in the Lower Mainland and the Englishman River estuary on Vancouver Island.

Focusing on the Fraser River estuary, now an Important Bird and Biodiversity Area in Danger

Historically, one of the great wetlands of western North America was the Fraser River estuary. Stretching over 173,000 acres (70,000 hectares), the estuary supported waterfowl and other birds in the millions. Yet, like many estuaries across North America, the Fraser attracted human settlement and development on a scale that

Community Recognition of Birds

City of Delta

With assistance from Bird Studies Canada and joint funding from Canadian and U.S. Joint Venture partners, the City of Delta put up posters in June 2018 on several of its bus shelters to tout the world-class bird habitat provided by the Fraser River estuary and its associated delta. The posters illustrate the many ways residents and visitors can connect with nature through birds, and they're intended to bring the community together in recognition of how birds enrich our lives. The poster is also on display two days a week at the Vancouver Aquarium as part of an information kiosk reaching up to 300 people per day. These posters are one small example of collaboration to engage and build public support for maintaining the health of the Fraser River estuary and delta.

A flock of Dunlin, estimated to contain 55,000 birds, at Brunswick Point in Delta, British Columbia.

David Bradley, Bird Studies Canada

has significantly reduced the available bird habitat. Still, the Fraser River estuary supports globally significant populations of 15 different bird species and is a particularly rich and important ecosystem for both migrating and overwintering waterfowl. As a result, the estuary triggered Birdlife International's Important Bird and Biodiversity Area (IBA) designation. The Fraser River Estuary IBA is recognized internationally as a Ramsar site and encompasses three areas: Roberts Bank, Sturgeon Bank and Boundary Bay.

For decades now, the Fraser River estuary has experienced significant population and economic growth as well as a shifting agricultural landscape and climate-driven threats such as sea-level rise. Given the limited protection and numerous threats, the Fraser River estuary was designated an IBA in Danger in 2016. With the support of the IBA Local Action Fund, stakeholders have begun using the Open Standards for the Practice of Conservation (developed by the Conservation Measures Partnership, a joint venture of conservation organizations and collaborators around the globe) to assess the relevant threats, opportunities and management actions taking place across the estuary. For example, the Friends of Semiahmoo Bay (established in 2001) have started using the Open Standards to track progress with implementing the 1993 draft management plan for Boundary Bay.

Bird Studies Canada and Nature Canada are the implementing partners of the IBA Program in Canada, and BC Nature has maintained an IBA Caretaker Network in BC since 2007. Volunteer caretakers are the eyes, ears and hands on the ground at IBAs, monitoring birds, assessing habitats and conducting outreach and conservation activities. With leadership from three caretakers, the Fraser Estuary IBA has benefited from a number of innovative conservation actions, including mapping the subtidal eelgrass in Boundary Bay and pioneering the development of the Boundary Bay Atlas. In addition, the caretakers recently played a significant role in the City of Delta's development and implementation of a Bird and Biodiversity Strategy, passed in 2018.

In time, it is expected that a conservation strategy will be developed and implemented for the entire estuary, but until then, the IBA caretakers, Bird Studies Canada and Nature Canada will demonstrate active support for the conservation of this important waterfowl habitat by working with other willing collaborators to enhance public awareness and implement local conservation actions.

Enhancing forage for both dairy cattle and waterfowl

The productive habitats of the Fraser River estuary and its associated delta attract not only birds but also agricultural operations, inevitably leading to resource conflicts, specifically with waterfowl grazing on forage crops. Therefore, in 2017, Delta Farmland and Wildlife Trust (DFWT) with support from Environment and Climate Change Canada (ECCC), initiated a two-year Forage Enhancement Pilot Program.

Over winter, waterfowl graze on perennial forage crops like orchardgrass, fescue, ryegrass and timothy that are meant to produce feed the following year for dairy cattle. The crop loss and damage caused by grazing waterfowl represents a considerable cost to many farmers in Delta, BC; the resultant lower forage yields, reduced harvest quality, fewer cuts and sometimes destroyed plantings that require re-seeding can have sizeable financial impacts. Impacts from waterfowl may also result in soil problems such as compaction and ponding. Some waterfowl populations such as Trumpeter Swans and Snow Geese have also been increasing in number, which is compounding the extent and intensity of grazing on forage fields. Some farmers and forage producers must now re-seed forage fields annually (as opposed to every 5+ years) at a cost upward of CAD$350 per acre. This situation has brought farmers and producers to a point where many are reconsidering their current management practices and introducing significant changes that are less beneficial to waterfowl.

A forage field in the spring after intensive grazing by waterfowl.
Delta Farmland and Wildlife Trust

A flock of Snow Geese on a farmer's field in Delta, British Columbia.
Delta Farmland and Wildlife Trust

One change already occurring is the conversion of forage fields from perennial to annual crops, with the fields often left bare over the winter to permit earlier access and planting in the spring. However, this practice is removing once-significant foraging habitats for waterfowl during the winter migratory season. With these fields no longer available, pressure from waterfowl increases on fields that remain planted with forage and winter cover crops, thus exacerbating the issue elsewhere.

Past research conducted by DFWT has identified perennial forage fields as providing some of the highest quality foraging habitat for migratory waterfowl. Therefore, it's particularly concerning that the availability of this important habitat is decreasing not only through human population growth, industrialization and encroachment on farm lands, but also by existing farm lands choosing to reduce the extent of this high-quality habitat. As a result, the Forage Enhancement Pilot Program is now in place to assist forage producers with the increasing intensity of grazing that their forage fields are experiencing over the winter season. Through this pilot program, DFWT is sharing in the costs associated with over- and reseeding forage fields due to waterfowl grazing in order to support the enhancement and continued provision of these high-value fields for both dairy cattle feed and critical waterfowl foraging habitat. DFWT is currently developing metrics to assess the program's success.

The result has been restoration of more natural coastal processes and the restoration and creation of wetlands and new intertidal habitats for the waterfowl and birds that use the estuary.

Restoring and enhancing a Vancouver Island estuary and wetlands

The Englishman River estuary and adjacent habitats support over 250 bird species, as well as many other wildlife species. For over 25 years, The Nature Trust of BC and partners have worked to secure land along the Englishman River on the east coast of Vancouver Island. Today, over 247 acres (100 hectares) of the Englishman River estuary and adjacent lands are protected and form part of the Parksville-Qualicum Beach Wildlife Management Area.

Dike removal at Englishman River estuary, east Vancouver Island, British Columbia.
Tom Reid

Since the 1930s, the Englishman River estuary has been impacted by dikes, roads, residential developments, industrial uses and ditching. Today portions of the estuary are almost completely cut off from natural tidal and river processes. Consequently, the estuary has become less accessible to fish and wildlife that would normally use these habitats for shelter, feeding and rearing.

In 2017, the first step of a five-year restoration project began on the west side of the estuary by removing an old, abandoned roadway that was originally constructed in the 1960s for log booming operations. The result has been restoration of more natural coastal processes, such as sediment transport, and the restoration and creation of habitats, specifically 66 acres (27 hectares) of restored wetlands and 0.8 acres (0.3 hectares) of new intertidal habitats. The waterfowl and birds that use the estuary and benefit from this restoration work include Mallards, American Wigeon, Northern Pintail, Green-winged Teal, Great Blue Heron, Western Sandpiper, Black-bellied Plover, Killdeer and Common Merganser.

Aerial view of the Englishman River estuary.
Dan Buffett, Ducks Unlimited Canada

Other activities in 2017 included enhancing tidal channels and improving flow to half an acre (0.2 hectares) of tidal marsh; increasing habitat complexity for fish and wildlife, including installing 26 large wood structures over an area of 31 square yards (26 square metres); and both removing invasive plants and planting more than 500 native trees and shrubs over a half-acre (0.2-hectare) area. Jasper Lament, CEO of The Nature Trust of BC, noted that the organization "has been working with partners for decades to acquire and manage ecologically important lands along the Englishman River. It is a key river for fish and wildlife, and this habitat restoration project will have an enormous benefit for the future."

The Englishman River estuary project is coordinated on behalf of The Nature Trust of BC by the West Coast Conservation Land Management Program (formerly known as the Vancouver Island Conservation Land Management Program and renamed to better reflect the program's expansion to include portions of the mainland coast). Several other partners are also involved, including ECCC; Fisheries and Oceans Canada; Ministry of Forests, Lands, Natural Resource Operations and Rural Development; BC Conservation Foundation; Mid-Vancouver Island Habitat Enhancement Society; Arrowsmith Naturalists; and Guardians of Mid-Island Estuaries Society.

Funding is provided by ECCC and the Habitat Conservation Trust Foundation (HCTF). The latter also contributed to purchasing the conservation lands at Englishman River.

Ross Peck, the HCTF Chair, noted that the restoration work is essential to the survival of species in the watershed. "It's death by a thousand cuts," he said. "The human impacts on these systems have severely affected the fish and wildlife that depend on them. We need to strongly invest in the habitat that's left to give [them] a fighting chance."

For more information, contact Tasha Sargent, Pacific Birds Habitat Joint Venture Coordinator, (604) 350-1903, tasha.sargent@canada.ca.

Pacific Birds Habitat Joint Venture
Contributions ($CAD)

	2017-2018	*Total (1991-2018)*
Total	2,914,238	220,858,192

Accomplishments (Acres)

	2017-2018	*Total (1991-2018)*
Secured	149	137,731
Enhanced	26,839	197,911
Managed	1,352	133,795
Influenced		6,780,334

Secured, enhanced and managed acres are not additive.

2017-2018 consists of the April 1, 2017 to March 31, 2018 time frame.

1991-2018 consists of the January 1, 1991 to March 31, 2018 time frame.

Canvasback.
Ducks Unlimited Canada

Canadian Intermountain Joint Venture

A wetland constructed on the property of Vladomir Kuzma, in the Kootenays, British Columbia.

Paige Thurston

www.cijv.ca

With an area of 123.5 million acres (50 million hectares), the CIJV covers portions of British Columbia (BC) and Alberta. The CIJV encompasses a diverse landscape of grasslands, dry and moist coniferous forests, riparian areas and wetlands, alpine tundra and even pocket desert, with 24 breeding waterfowl species. The Joint Venture's estimated 1.45 million birds represent 70% of BC's and roughly 4% of Canada's breeding waterfowl population. The CIJV supports about one quarter of the world's breeding population of Barrow's Goldeneye, along with significant breeding populations of Mallard, Hooded Merganser and Ruddy Duck.

In the summer of 2017, significant stretches of the area encompassed by the Canadian Intermountain Joint Venture (CIJV) were affected by wildfires. This year's report opens with the accomplishments of some of these fire-affected projects. Elsewhere, other wetland creation, restoration and acquisition projects also made significant contributions to increased bird habitat, and a curlew study is adding to information about this shorebird's habitat use and migration.

Overcoming wildfires to rebuild wetlands

In early July of 2017, much of British Columbia (BC) was held hostage by wildfires that ripped through the province. Communities and families were uprooted, including those of several CIJV partners, but everyone worked together to keep people, pets, livestock and structures safe. Several projects underway in the CIJV were impacted by the wildfires.

In the Cariboo region, a project to replace water control structures was at the epicentre of one of the dangerous wildfires, which broke out after a significant amount of project work had been completed. Evacuation orders meant work could not continue, and it took weeks for the fire activity to die down enough that these orders were downgraded. The construction plan was revised to minimize risk and retain as much water at the project site as possible, and in early September construction finally resumed on four remaining dams. The project was a partnership

Wetland restoration underway at the Bummers Flats–Cherry Creek Conservation Complex, in the Kootenay region of British Columbia, with hazy conditions from wildfire smoke over the hills.

Doug Newbigging, BC Wildlife Federation

of Ducks Unlimited Canada (DUC), the Blue Goose Cattle Company, Cariboo Regional District, 108 Greenbelt Commission, Habitat Conservation Trust Foundation (HCTF), Environment and Climate Change Canada (ECCC), North America Wetlands Conservation Act (NAWCA) and the U.S. Fish and Wildlife Service (USFWS).

In the Kootenay River floodplain, The Nature Trust of BC and its partners led a project to restore and enhance 4 acres (1.6 hectares) of shallow-water wetlands, wet meadows and marsh wetlands on the Bummers Flats–Cherry Creek Conservation Complex. The project was hampered by the wildfires: an exemption permit had to be secured to work during a period with risk of extremely high fire danger, and a contractor was forced to evacuate. Despite these hurdles, the project exceeded its original target and completed the restoration and enhancement of 14 acres (5.7 hectares) of wetlands.

In the Salmo River watershed, also in the Kootenay region, another wetland construction and restoration project was delayed by nearby wildfires, because the local operators of heavy equipment were pressed into firefighting activities. The Salmo Watershed Streamkeepers Society adjusted their work plan, and the activities intended for August and September were eventually completed in November with 1.6 acres (0.65 hectares) of wetland area and 2.5 acres (1 hectare) of upland area excavated. Being so late in the season, planting had to be postponed until April and May of 2018, and some additional planting is scheduled for the fall of 2018.

A new water control in place in the Cariboo region, British Columbia, with the wetland in the background.

Doug Regier

Despite the challenging conditions, these projects and others successfully completed or modified their work plans to deliver the habitat restoration so vital to waterfowl and other birds that frequent these areas of the Kootenay and Cariboo regions. In some cases, the fires were welcomed as a management tool that saw grasslands important to breeding waterfowl and grassland bird species freed from forest ingrowth. Partners are looking forward to seeing the regenerated areas when they once again provide nesting habitat for many bird species.

A Planting Party

Volunteers in Penticton, BC, came together on a Sunday in September 2017 to help plant 1,000 native shrubs in a riparian area adjacent to a wetland at Riverside Park. The project, led by Okanagan Similkameen Stewardship (OSS) in partnership with TD Friends of the Environment Foundation and the City of Penticton, aimed to enhance the park and create an effective buffer zone to protect essential wetland habitat. "We were just thrilled with the turnout and made tremendous strides in restoring this area that supports life for many species of fish, birds and amphibians," said OSS Executive Director Alyson Skinner. "It's a great way for residents to get involved and learn about improving and protecting our threatened habitats."

Alyson Skinner

Transforming abandoned hay fields for at-risk species

The Nature Conservancy of Canada (NCC) completed the first phase of a project to restore over 22 acres (9 hectares) of wetlands near the community of Ta Ta Creek in the East Kootenays. The objective is to transform abandoned hay fields in an area that was once part of a network of productive wetlands into habitat for waterfowl, including Bufflehead, Wood Duck and Ring-necked Duck. The fields are located on the Cherry Meadows Conservation Area, a 173-acre (70-hectare) property that was donated to NCC in 2014 by Carol and Walter Latter.

The objective is to transform abandoned hay fields in an area that was once part of a network of productive wetlands into habitat for waterfowl.

The Cherry Meadows hay fields were established in an area traditionally dominated by wetlands. The historical network of wetlands and ephemeral ponds was drained and filled in the early 1900s for agricultural operations that continued until the early 1990s. The hay fields were then abandoned and became dominated by dense thickets of willow and Reed Canarygrass, a non-native, invasive species. The restoration work enhances the natural landscape and replaces the Reed Canarygrass monoculture with a diversity of native plant species that provide habitat for rare and at-risk animals, including Long-billed Curlew, Short-eared Owl and Western Toad. More common but also notable visitors to the new wetlands are Bald Eagle, Sandhill Crane, Trumpeter Swan and Tundra Swan. Financial support came from ECCC and the Fish and Wildlife Compensation Program.

"What is truly exciting about habitat restoration projects like this one," said Richard Klafki, Canadian Rockies Program Director with NCC, "is that they help to reverse some of the wetland habitat loss that has happened throughout the Rocky Mountain Trench over the past several decades."

An abandoned hay field transformed into wetland habitat in eastern British Columbia.

Richard Klafki

Aerial views of untouched wetland habitat on the southeastern shore of Babine Lake, British Columbia.
André Breault

Acquiring an untouched natural wetland

Babine Lake, in BC's Omineca region, is the living picture of what natural wetland habitat should be. A generous donation of land by the Andersen family, along with funding from HCTF, NAWCA and USFWS, has given DUC and the Province of British Columbia the opportunity to conserve the natural state of 320 acres (130 hectares) of untouched wetland habitat on the southeastern shore of Babine Lake.

> The area is incredible natural wetland habitat and is perfect for the waterfowl and wildlife that use it. … Conserving the habitat long-term is the right thing to do.

Finding pristine, unaltered wetlands in the CIJV is rare. "There are few wetlands in British Columbia that have not been modified in some way," said Leslie Bogdan, Regional Director for DUC British Columbia and Boreal Region. The conservation of the Andersen property will protect habitat for migrating waterfowl and breeding birds common to the area including Trumpeter Swan, Wood Duck, American Wigeon, Mallard, Blue-Winged Teal, Cinnamon Teal and Northern Shoveler. Wetland habitat in this area also serves as important habitat for species listed in BC as being at risk, including American Bittern, Rusty Blackbird and Black Swift.

The Andersen family has owned the land for almost 20 years. Shawn Andersen and his father Sivert approached DUC about conserving the area and are pleased that the land will be kept for its "rightful purpose." When asked about the partnership with DUC, Shawn stated, "The area is incredible natural wetland habitat and is perfect for the waterfowl and wildlife that use it. A partnership with DUC just makes sense, and conserving the habitat long-term is the right thing to do."

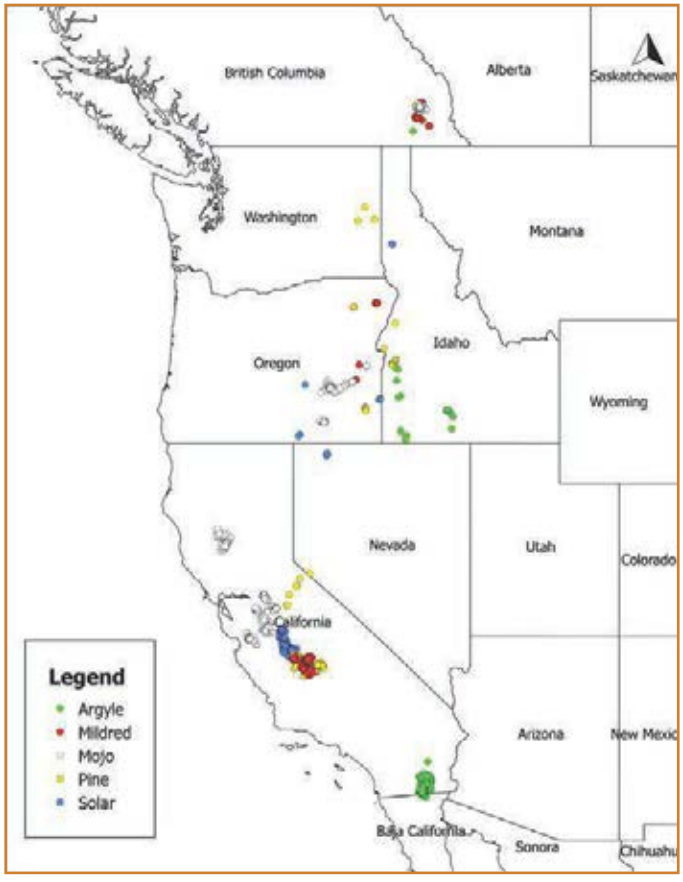
Tracking and studying the Long-billed Curlew

As North America's largest shorebird and with its gliding displays and haunting flight call, the Long-billed Curlew is a stunning emblem of the Western grasslands, and is also the species on the CIJV logo. Despite its attractiveness, the curlew is declining across virtually its entire range. However, the recently completed BC Breeding Bird

Atlas revealed a stark contrast to this trend in BC, where the species has extended its distribution over the past 20 years. This increase is likely the result of expanded ranching and farming activity on previously unavailable shrub land. However, a purported population increase can sometimes mask troubles.

Bird Studies Canada (BSC) began investigating in 2017 in the Skookumchuck Prairie Important Bird and Biodiversity Area in southwestern BC. BSC located breeding pairs, monitored nests, captured birds and applied seven satellite tracking devices to follow the birds locally and determine migration routes and non-breeding season distribution. Nesting success was moderate, and the fledglings were followed until the end of June. The females departed the nesting area by the end of June, leaving the males to attend to the young.

Tags were deployed in late May and tracked by satellite. Two females died in the first month following capture, and the remaining five birds migrated south into the United States (see map). The data showed that the migration behaviour differed among birds that had nested within a few kilometres of each other; the birds spent the non-breeding period more broadly



The movements of five Long-billed Curlews from June 1, 2017, to May 15, 2018.

David Bradley

A Long-billed Curlew with a satellite tag.

Cayla Naumann

in California. This is potentially good news for the Long-billed Curlew population that BSC studied, as the population is therefore less vulnerable to local events on the non-breeding grounds. These results have been shared with the Central Valley Joint Venture, where many of the tagged curlews went during winter.

For more information, contact Tasha Sargent, Canadian Intermountain Joint Venture Coordinator, (604) 350-1903, tasha.sargent@canada.ca.

Canadian Intermountain Joint Venture

Contributions ($CAD)

	2017-2018	*Total (2003-2018)*
Total	6,188,768	85,093,083

Accomplishments (Acres)

	2017-2018	*Total (2003-2018)*
Secured	1,285	358,785
Enhanced	9,335	200,742
Managed	48,879	862,386
Influenced		50,906

Secured, enhanced and managed acres are not additive.

2017-2018 consists of the April 1, 2017 to March 31, 2018 time frame.

2003-2018 consists of the January 1, 2003 to March 31, 2018 time frame.

Species Joint Ventures

Long-tailed Duck.
Christian Marcotte

Species Joint Ventures are international in scope, spanning North America and including circumpolar countries. These joint ventures focus on critical science needs to inform the management of over 20 species (50+ populations) and their related habitats. Additionally, research directed through the Species Joint Ventures addresses questions for other bird species that share the habitats.

Sea Duck Joint Venture

A pair of Black Scoters.

Christine Lepage, Canadian Wildlife Service

www.seaduckjv.org

The SDJV covers all of Canada and the United States and focuses on coastal waters for migrating and wintering ducks and boreal forest and tundra for nesting ducks. The Joint Venture includes all 22 recognized populations among the 15 sea duck species (tribe *Mergini*): Common Eider, King Eider, Spectacled Eider, Steller's Eider, Black Scoter, White-winged Scoter, Surf Scoter, Barrow's Goldeneye, Common Goldeneye, Bufflehead, Long-tailed Duck, Harlequin Duck, Common Merganser, Red-breasted Merganser and Hooded Merganser. Depending on the season, sea ducks use all four flyways: Pacific, Central, Mississippi and Atlantic.

Populations of North American breeding scoters—Black, White-winged and Surf—appear to be in decline at least since the early 1990s. However, estimating population size and overall trends of scoters is particularly challenging because of the distribution and biology of these sea ducks. The Sea Duck Joint Venture (SDJV) uses information from the Waterfowl Breeding Population and Habitat Survey (WBPHS; led by the U.S. Fish and Wildlife Service) to monitor trends in populations. Recent telemetry studies (2009–2015) have shown that the breeding range of all three scoter species falls largely outside the longstanding area targeted by this survey. By contrast with many other sea ducks, breeding scoters occupy habitat in the northern Boreal forest and sub-Arctic tundra of North America, where the influence of global climate change on habitat and food resources is expected to be important. As well as a mismatch in location, the timing of the WBPHS aligns with early-nesting dabbling ducks, primarily Mallards and American Black Ducks, whereas scoters are typically a later-nesting species, so pairs are usually not settled on breeding territories when the WBPHS survey occurs. As a result, few data are available on scoter populations, making it difficult to manage scoter habitat and harvest.

The SDJV identifies scoter research and monitoring among its highest priority science needs. Therefore, in 2017, a three-year project led by collaborators from the Canadian Wildlife Service and the U.S. Fish and Wildlife Service was launched to develop

A pair of Surf Scoters.

Christine Lepage, Canadian Wildlife Service

aerial survey techniques using both fixed-wing aircraft and helicopters to address and improve breeding scoter detection and identification. In addition to surveying scoters, the project includes scaup, because they share part of their geographic distribution and present similar identification challenges from the air. Other species are also being recorded, including Red-breasted Merganser, Long-tailed Duck and other waterfowl, loons, raptors, gulls and terns. The project aims to conduct surveys over various portions of all three scoter species' core breeding range to better understand which habitats are favoured by breeding scoters and determine whether species–habitat modelling could help refine survey methodology.

Fixed-wing aircraft are a cost-effective way of monitoring expansive and remote regions of North America, because they have great range and cover ground at high speeds. However, detecting and identifying sea ducks are difficult tasks from fixed-wing aircrafts. Helicopters or ground crews, on the other hand, can provide more detailed information and have a better chance of detecting and identifying species, but they are limited in potential coverage and can be very expensive. Thus the project is examining both aerial platforms to identify differences in survey results in relation to habitat and determine the best approach to efficiently monitor the three scoter species on breeding grounds. In the project's first season, 2017, only helicopter surveys took place (two study sites in the Northwest Territories and one in northern Manitoba), and in June 2018, fixed-wing surveys were added to the helicopter surveys (two study sites in the Northwest Territories; see map). The 2019 field season should bring the survey crews to the taiga in Eastern Canada.

The results of this project will also contribute to an ongoing WBPHS review and help expand the usefulness of this survey for monitoring northern nesting species. Ultimately, this work will contribute to the establishment of a continental survey of scoter breeding grounds and allow Canadian and U.S. agencies to determine the feasibility and appropriateness of expanding the WBPHS to cover core scoter areas.

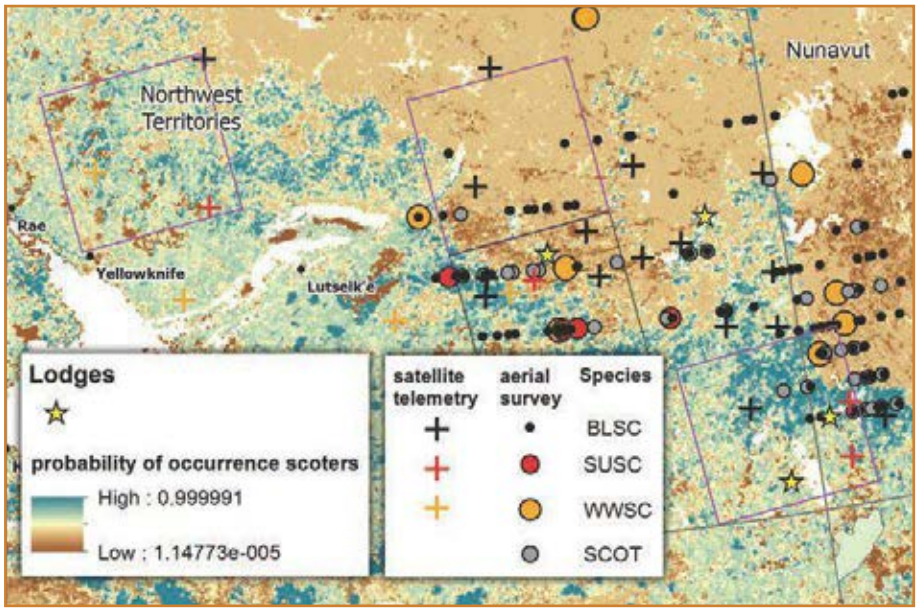
For more information, contact Margaret Campbell, Canadian Sea Duck Joint Venture Coordinator, (867) 393-6825, margaret.campbell@canada.ca.

Sea Duck Joint Venture Expenditures ($CAD)

	2017-2018	*Total (1998-2018)*
Banding		695,345
Research	45,000	9,286,803
Surveys	946,720	3,613,634
Conservation Planning	$41,828	$1,027,291
Education and Communication	28,924	83,032
Total	**$1,062,472**	**$14,706,105**

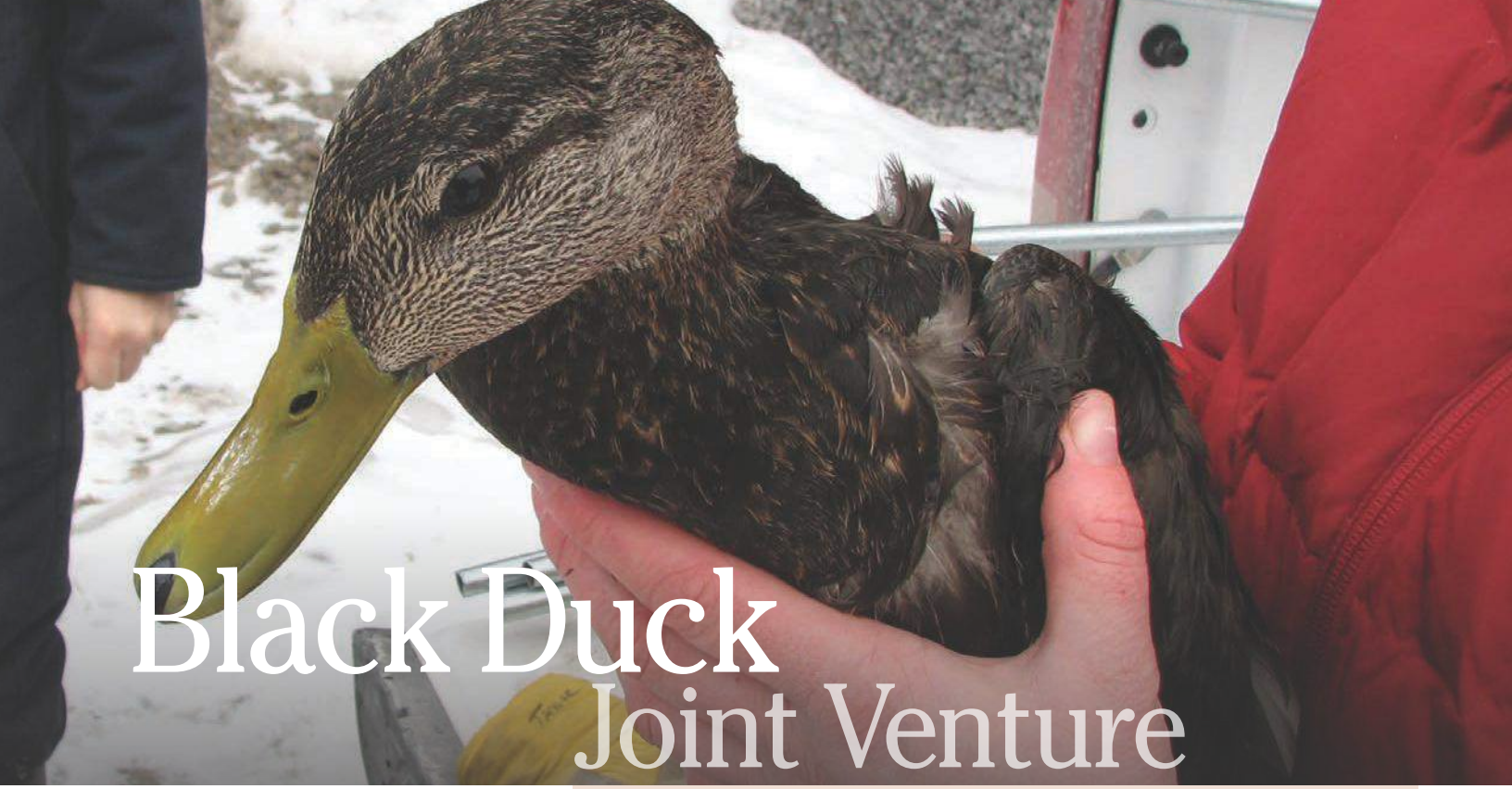
2017-2018 consists of the April 1, 2017 to March 31, 2018 time frame.

1998-2018 consists of the January 1, 1998 to March 31, 2018 time frame.



Map used for scoping potential scoter survey areas. The primary considerations were to find sites projected to contain all three scoter species and a location from which crews could operate. In 2018, two survey areas (shown by purple lines) were chosen: the left (Northwest Territories) and the middle (border of Northwest Territories and Nunavut). BLSC: Black Scoter, SUSC: Surf Scoter, WWSC: White-winged Scoter, SCOT: unidentified species of scoter.

Canadian Wildlife Service



Black Duck Joint Venture

American Black Duck.
Rod Brook

www.blackduck.cmi.vt.edu

The BDJV includes Ontario, Quebec, New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and Labrador and 14 eastern U.S. states. The American Black Duck can be found in saltwater marshes, brackish and freshwater impoundments, riverine and estuary marshes, woodland wetlands, shallow lakes and boreal bogs. Black ducks breed and overwinter primarily in the Atlantic Flyway and to a lesser extent in the Mississippi Flyway.

One of the primary goals of the Black Duck Joint Venture (BDJV) is to support research and monitoring of factors affecting populations of American Black Duck (hereafter black duck) in North America. Black ducks have been a management concern for both the Canadian and U.S. federal governments for decades due to the long-term declining trend evident in the Midwinter Waterfowl Inventory. Between the 1950s and 1990s, the population declined by more than 50%. Since the BDJV was first established in 1989, it has been undertaking research to help determine population trends and to identify the important factors responsible for the population decline.

Despite the large body of research regarding black duck population ecology and life history, the relative importance of harvest, habitat change and species interactions in explaining declines is uncertain. Even with management intervention, the black duck population remains below the long-term average population goal of 628,000 set in the NAWMP 2012 Update and is considered to be of conservation concern. Black duck productivity, measured as the number of young produced each year, has been declining since the 1970s. Yet, little is known about the effects of breeding range habitat conditions on productivity, so in 2017, a two-year research project was initiated to improve understanding in this area.

Through this project, a team of researchers from the Ontario Ministry of Natural Resources and Forestry, Environment and Climate Change Canada (Canadian Wildlife Service) and York University is compiling several long-term data sets, including

This forested wetland in central New Brunswick is an active habitat for American Black Ducks, as well as Ring-necked Ducks, Wood Ducks and Green-winged Teal.

Nic McLellan, Ducks Unlimited Canada

the Acid Rain Biomonitoring Program of Environment and Climate Change Canada, the Eastern Breeding Waterfowl Survey and waterfowl banding and recovery data. Black duck productivity is being derived from brood surveys of individual lakes in Ontario, as well as estimates of age ratios that are generated using a combination of hunter-harvested wings and banding data. Using these data sets, the team is investigating how productivity is affected by breeding range conditions, including black duck abundance, competition with other dabbling ducks, habitat, climate and human disturbance. Clarifying uncertainties in how these factors affect annual variation or trends in productivity is expected to improve adaptive management tools, including decisions about habitat management and harvest regulation for waterfowl.

The lack of detailed and spatially extensive information on breeding range habitat has limited the ability to assess how changes in wetland habitat may be affecting black duck productivity. However, advances in remote sensing technology provide an excellent opportunity to map individual wetlands across large areas. Therefore, as a second prong of its research, the team is also investigating the utility of remote sensing technology to develop indices of habitat condition, map wetland habitats and track changes through time. One aspect of the work looks at flooded vegetation, which is a useful indicator of the preferred black duck habitat associated with beaver ponds. This and other indices will be used along with long-term waterfowl data to model the contribution of habitat to population variation in black ducks. The resulting models and mapping products will have broad value for black duck wetland conservation and management.

For more information, contact Tania Morais, Black Duck Joint Venture Coordinator, (506) 364-5085, tania.morais@canada.ca.

Black Duck Joint Venture Expenditures ($CAD)

	2017-2018	*Total (1989-2018)*
Banding	202,372	8,355,315
Research	20,003	2,084,833
Surveys	389,667	8,369,819
Conservation Planning	2,071	354,051
Communication & Education		42,600
Total	**$614,113**	**$19,206,618**

2017-2018 consists of the April 1, 2017 to March 31, 2018 time frame.

1989-2018 consists of the January 1, 1989 to March 31, 2018 time frame.

Researchers band an American Black Duck at the Toronto Zoo, Ontario. Bands provide valuable information about survival, productivity and abundance of black ducks.

Rod Brook

Arctic Goose Joint Venture

Snow geese feeding in a marsh.
Chantal Lepire

www.agjv.ca
www.pcoa.ca
www.gansodelartico.com

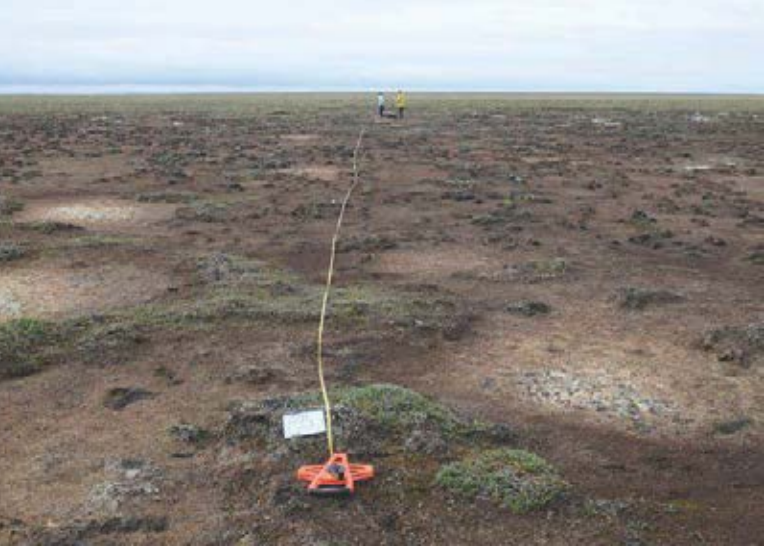
The AGJV covers 924 million acres (374 million hectares) spanning North America and including other circumpolar countries, such as Russia. It focuses on 24 populations among seven species: Greater White-fronted, Emperor, Snow, Ross's, Brant, Cackling and Canada Geese. Arctic geese use all four flyways.

The Arctic Goose Joint Venture (AGJV) facilitates research, monitoring and communications for geese that breed in the Arctic and migrate throughout the continent. To date, the AGJV has provided funding to support 88 projects. The sharing of ideas, management strategies and research findings is vital to agencies for managing these resources effectively and for maintaining goose numbers at or near population goals.

The growth in some populations of snow geese has caused concerns about negative impacts to some habitats and other wildlife found there, including shorebirds. Major actions were undertaken in 1999 by both Canada and the United States, to reduce most populations of snow geese and their potential impacts on the ecosystem. These regulatory actions enabled hunters to increase the goose harvest in hope of reducing the population. According to harvest surveys conducted in Canada and the United States, the number of geese taken by hunters has indeed increased, but the population has not declined to satisfactory levels, and concerns persist about potentially negative impacts to the sustainability and biodiversity of the ecosystem.

The AGJV has contributed to studies of the quality and availability of goose habitat in the Arctic, the outcome of goose–habitat interactions at various locations and the impacts of increasing numbers of snow geese on other wildlife.

One such project, "Status of Breeding and Brood-Rearing Habitats of Lesser Snow Geese at Southampton Island and Western Baffin Island, Nunavut," led by the Canadian Wildlife Service of Environment and Climate Change Canada, has helped



Project area on Southampton Island, Nunavut, indicating localized and patchy conversion of habitat to bare moss or exposed substrates around water bodies.

Todd Kemper

to provide important information on the habitats utilized by Lesser Snow Geese (*Anser caerulescens caerulescens*). These habitats also support Cackling Geese, Ross's Geese, and Brant.

Habitat alteration caused by overabundant midcontinent Lesser Snow Geese has been well documented at La Pérouse Bay, Manitoba, and elsewhere in coastal marshes of Hudson Bay, but little is known about the quality and availability of habitats in the areas that sustain significant numbers of breeding snow geese in the eastern Arctic of Canada. This three-year study (2015–2017) sampled habitats at 199 sites on Southampton and Baffin Islands to document the present status of habitats and to establish a baseline for future monitoring and change detection.

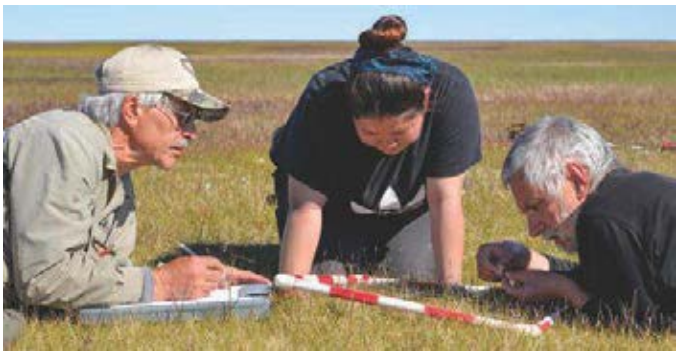
Study areas on both islands were selected to create a geographically balanced network of sites. At each site, a combination of detailed and rapid protocols was used to measure ground-cover composition (relative dominance of 13 categories of ground cover), forage height, forage biomass, proportion of stems grazed, detailed vascular plant composition, active layer depth and goose fecal pellet count. These observations constitute a spatially explicit baseline record for future change detection.

Geese appear to be using most of the available lowland grass/sedge habitats during the summer months at both of these important nesting areas, but the most serious impacts to habitat (e.g., complete loss of vegetative cover) caused by the foraging activities of large numbers of snow geese tend to occur in coastal salt marsh, which is relatively limited in extent. These Arctic salt marsh habitats are usually among the most productive foraging areas used by geese, and their loss could have negative impacts on other species, like shorebirds, that also rely on them.

Data analysis is ongoing, but indications to date are that:

- Evidence of goose herbivory—and associated modification of vegetation structure or composition—is evident at virtually all sites visited.
- Locally denuded areas are evident, and in some cases are extensive (particularly at the eastern Southampton Island colonies).
- With the possible exception of tidal saltmarsh communities, there does *not* appear to have been widespread conversion of habitats to an alternate or "denuded" state in the areas that sustain the majority of breeding Lesser Snow Geese in the eastern Arctic.
- At both Southampton and Baffin Islands, habitat classifications based on dated Landsat imagery overestimate the present-day extent of saltmarsh communities.

The information from this study will help inform future management actions for overabundant geese in both Canada and the United States.



Assessing sedges on Southampton Island, Nunavut.

Todd Kemper

For more information, contact Deanna Dixon, Arctic Goose Joint Venture Coordinator, (780) 951-8652, deanna.dixon@canada.ca.

Arctic Goose Joint Venture Expenditures ($CAD)

	2017-2018	*Total (1991-2018)*
Banding	902,649	16,486,714
Research	492,488	22,421,296
Surveys	469,670	10,997,883
Collar Observations		1,324,185
Management		272,992
Conservation Planning	46,987	698,243
Total	**$1,911,794**	**$52,201,313**

2017-2018 consists of the April 1, 2017 to March 31, 2018 time frame.

1991-2018 consists of the January 1, 1991 to March 31, 2018 time frame.

Nesting Cackling Goose.
Tim Moser

Partners

A flock of Black Brant in Haida Gwaii, British Columbia.

John Innes

Thank you to all our partners who contributed in 2017–2018:

Canadian Agencies

Acadia University
Agriculture and Agri-Food Canada
Alberta Environment and Parks
Alberta Sport, Recreation, Parks & Wildlife Foundation
Alberta Treasury
Alberta-Pacific Forest Industries Inc.
ArcticNet Inc.
Association for Sustainable Forestry
ATCO Electric Ltd.
BC Hydro
Bluenose Coastal Action Foundation
Bonavista Energy Trust Ltd.
British Columbia Conservation Foundation
British Columbia Ministry of Environment and Climate Change Strategy
British Columbia Ministry of Transportation and Infrastructure
British Columbia Waterfowl Society
Canadian National Railway
Canadian Natural Resources Ltd.
Canadian Nature Federation
Canadian Pacific Railway
Cenovus Energy Inc.
Clean Annapolis River Project
Collings Family Foundation
Columbia Basin Trust
Commercial Properties Limited
ConocoPhillips Canada
Crosbie Group Ltd.
Dalhousie University
Derm Doyle Limited
Dow AgroSciences
Ducks Unlimited Canada
East Kootenay (Regional District of)
Edmonton (City of)
Enbridge Inc.
EnCana Corporation
Environment and Climate Change Canada
Fisheries and Oceans Canada
Fondation de la faune du Québec
Forest Products Association of Canada
Friends of Cornwallis River Society
Habitat Conservation Trust Foundation
Hopewell Development Corporation
Imperial Oil Charitable Foundation
Imperial Oil Resources Ltd.
Crown–Indigenous Relations and Northern Affairs Canada
K+S Potash Canada
Kings County (Muncipality of)
Manitoba Finance
Manitoba Habitat Heritage Corporation
Manitoba Hydro
Manitoba Sustainable Development
Marine Capital Inc
Ministère de l'Énergie et des Ressources naturelles du Québec
Ministère du Développement durable, Environnement et Lutte contre les changements climatiques du Québec
Moncton (City of)
Mosaic Company
Natural Resources Canada – Polar Continental Shelf Project
Natural Sciences and Engineering Research Council of Canada
Nature Conservancy of Canada
Nature Trust of New Brunswick
New Brunswick Department of Energy and Resource Development
New Brunswick Environmental Trust Fund
New Brunswick Wildlife Trust Fund

Autumn sunrise over a misty Manitoba wetland.

Tim Sopuck

Mallard.

Britney MacLeod

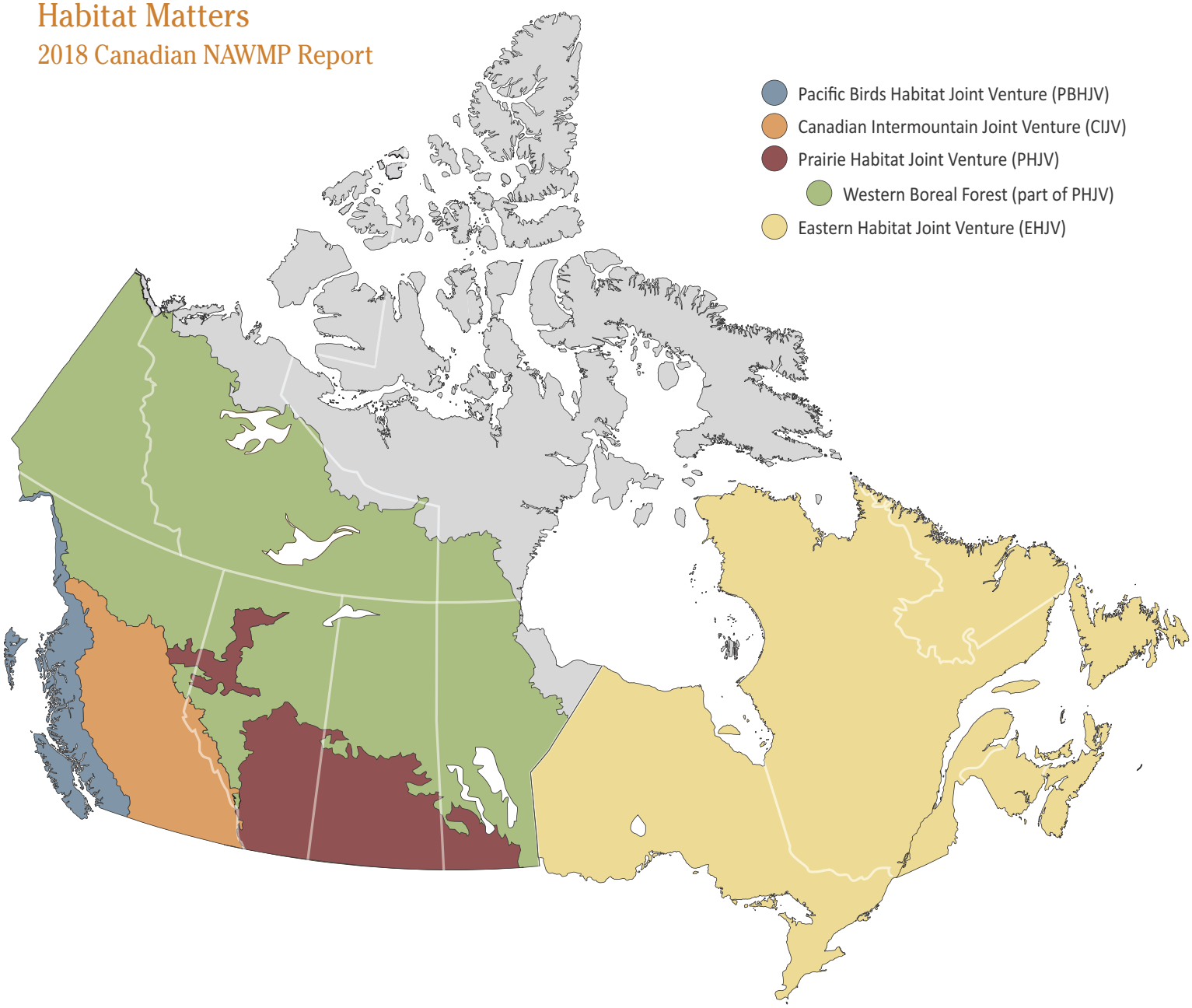
Newfoundland–Labrador Department of Municipal Affairs and Environment
Northrock Resources Ltd. (Canada)
Nova Scotia Crown Share Land Legacy Trust
Nova Scotia Department of Agriculture
Nova Scotia Environment
Nova Scotia Federation of Agriculture
Nova Scotia Federation of Anglers and Hunters
Nova Scotia Habitat Conservation Fund
Nova Scotia Natural Resources
Ontario Ministry of Natural Resources and Forestry
Ontario Trillium Foundation
Parks Canada
Pheasants Forever
PotashCorp
Prince Edward Island Department of Agriculture and Fisheries
Prince Edward Island Wildlife Conservation Fund
Progress Energy Canada Ltd.
Qualico Developments
Repsol Oil & Gas Canada Inc.
Richardson Foundation Inc.
Rocky View (Municipal District of)
Saskatchewan Crop Insurance Corporation
Saskatchewan Environment
SaskWater
Saskatchewan Water Security Agency
Saskatchewan Wildlife Federation
Saskatoon (City of)
Shaunessy, Robert & Barbara
Shell Canada Products Ltd.
Sitka Foundation
Soil Conservation Council of Canada
TD Canada Trust
TD Friends of the Environment Foundation
Telus Corporation
The Calgary Foundation
The Donner Canadian Foundation
The Gosling Foundation
The Harold Crabtree Foundation
The James A. and Donna Mae Moore Foundation
The McLean Foundation
The Nature Trust of British Columbia
TransCanada Corporation
Turtle Mountain Conservation District
Université Laval
Vancouver Foundation
Wildlife Habitat Canada
Yukon Department of Energy, Mines and Resources

U.S. Agencies

Alabama Department of Conservation & Natural Resources
American Friends of the Nature Conservancy of Canada
Arizona Game & Fish Department
Arkansas Game & Fish Commission
Arkansas Game and Fish Commission
Atlantic Flyway Council
Bayer CropScience Inc.
California Department of Fish & Wildlife
Central Flyway Council
Colorado Parks & Wildlife
Connecticut Department of Energy & Environmental Protection
Delaware Division of Fish & Wildlife
Ducks Unlimited, Inc.
Florida Fish & Wildlife Conservation Commission
Georgia Department of Natural Resources
Idaho Department of Fish & Game
Indiana Department of Natural Resources
Kansas Department of Wildlife, Parks & Tourism
Kentucky Department of Fish & Wildlife Resources
Louisiana Department of Wildlife and Fisheries
Louisiana Pacific Corporation
Maryland Department of Natural Resources
Massachusetts Division of Fisheries & Wildlife
Michigan Department of Natural Resources
Minnesota Department of Natural Resources
Mississippi Department of Wildlife, Fisheries & Parks
Mississippi Flyway Council
Missouri Department of Conservation
National Fish and Wildlife Foundation
National Science Foundation
Nebraska Games & Parks Commission
Nevada Department of Wildlife
New Hampshire Fish & Game
New Jersey Division of Fish & Wildlife
New Mexico Department of Game & Fish
North Carolina Wildlife Resources Commission
North Dakota Department of Commerce
North Dakota Game & Fish Department
Ohio Division of Wildlife
Oklahoma Department of Wildlife Conservation
Open Space Institute
Oregon Department of Fish & Wildlife
Rag and Dad, LLC
Rhode Island Department of Environmental Management
South Carolina Department of Natural Resources
South Dakota Game, Fish & Parks Department
Tennessee Wildlife Resources Agency
Texas Parks & Wildlife Department
The Nature Conservancy
U.S. Bureau of Reclamation
U.S. Fish and Wildlife Service
U.S. Geological Survey – Biological Resources Division
University of North Dakota
University of Wisconsin Stevens Point
Vermont Agency of Natural Resources
Virginia Department of Game & Inland Fisheries
West Virginia Division of Natural Resources
Winous Point Marsh Conservancy
Wisconsin Department of Natural Resources
Wyoming Game & Fish Department

Habitat Matters

2018 Canadian NAWMP Report



Contacts

For information on NAWMP and NAWCA in Canada, or for additional copies:

NAWCC (Canada) Secretariat
Canadian Wildlife Service
Environment and Climate Change Canada
351 St. Joseph Boulevard
Gatineau, Quebec K1A 0H3
(819) 938-4030
ec.pnags-nawmp.ec@canada.ca

To view this publication electronically
nawmp.wetlandnetwork.ca

North American Wetlands Conservation Act Funding in Canada
nawcc.wetlandnetwork.ca

North American Bird Conservation Initiative
nabci.net

Map of Bird Conservation Regions
nabci-us.org/resources/bird-conservation-regions/