

September 2020

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HabitatMatters

2020 Canadian NAWMP Report



"Come Spring – Northern Pintail" from the 2020 Canadian Wildlife Habitat Conservation Stamp series.

Artist: DJ Cleland-Hura



North American Waterfowl
Management Plan

Plan nord-américain de
gestion de la sauvagine

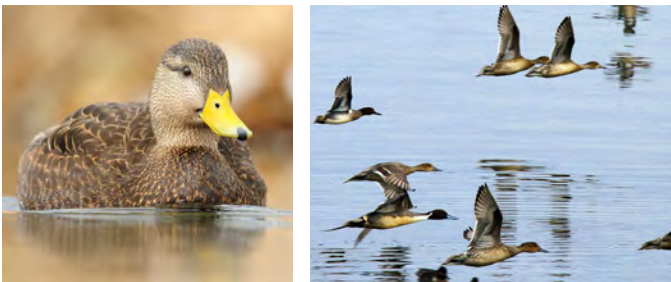
Plan de Manejo de Aves
Acuáticas Norteamérica

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About the NAWMP

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 partnership agreement, laying the foundation for international cooperation in the recovery of declining waterfowl populations.

Northern Pintails.
Ducks Unlimited Canada

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. Strategic and Implementation 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



Blue-winged teal pair.
Ducks Unlimited Canada

Accomplishments by Habitat Joint Ventures (1986–2020)

23.0

Million acres of habitat secured

(9.3 Million hectares)

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

176.1

Million acres of habitat influenced

(71.3 Million hectares)

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

3.8

Million acres of habitat enhanced

(1.6 Million hectares)

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

Accomplishments by Habitat Joint Ventures (2019–2020)

137.3

Thousand acres of habitat secured

(55.6) Thousand hectares

8.9

Million acres of habitat influenced

(3.6 Million hectares)

371.0

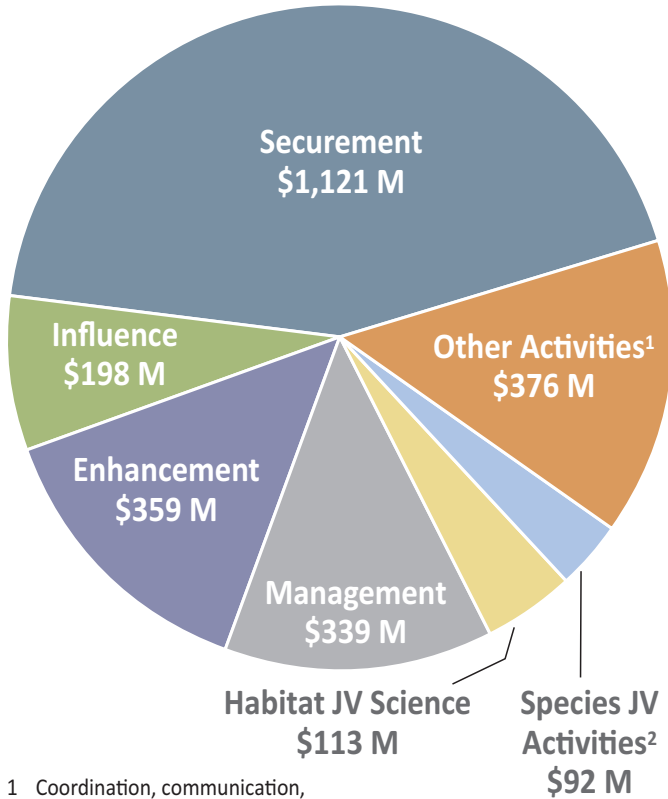
Thousand acres of habitat enhanced

(150.1 Thousand hectares)

Note: Managed acres are no longer reported in *Habitat Matters* to prevent redundant data, as all managed acres occur on secured land.

Expenditures

By activity 1986 to 2020
(\$2,598 M CAD)



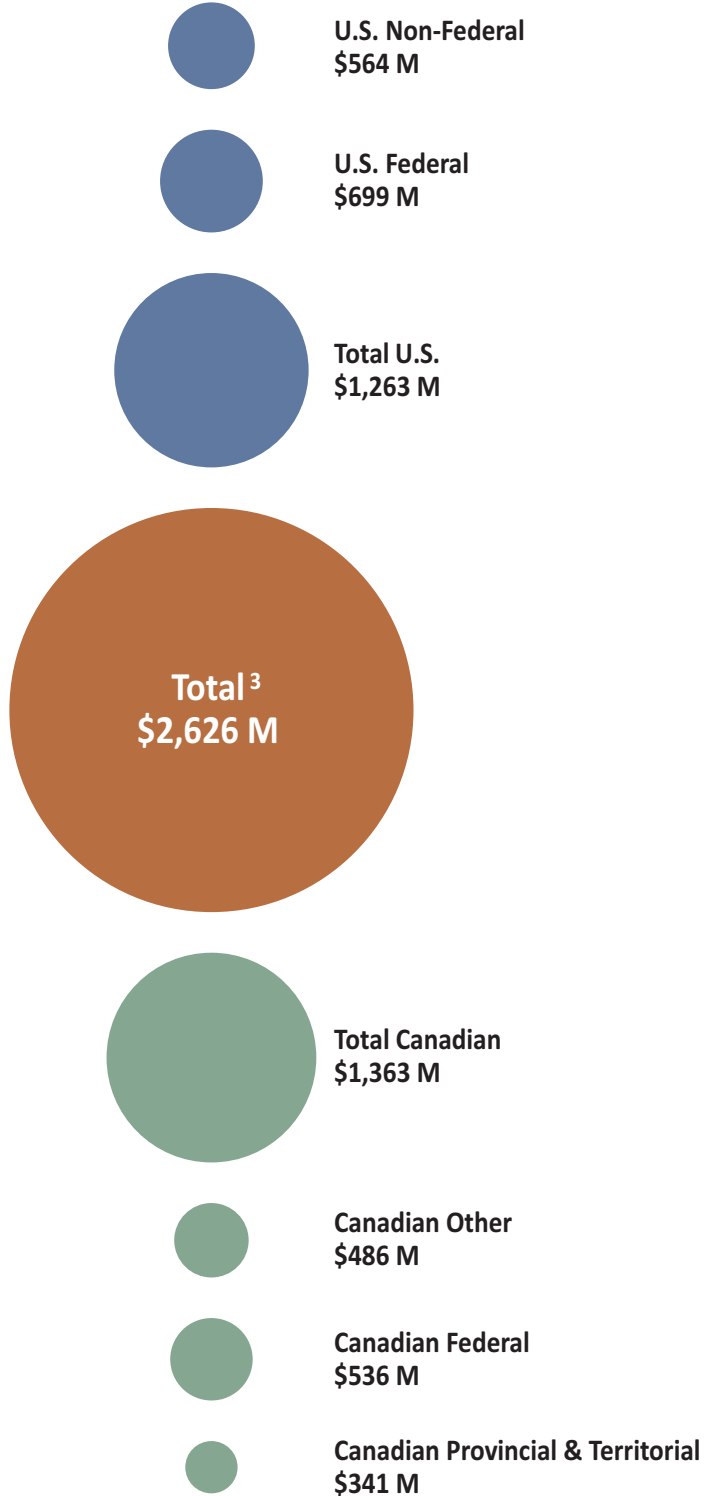
- 1 Coordination, communication, policy and crop damage
- 2 Banding, survey and research

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.

1986-2020 consists of the January 1, 1986 to March 31, 2020 time frame.
2019-2020 consists of the April 1, 2019 to March 31, 2020 time frame.

Contributions

In support of the NAWMP in Canada 1986 to 2020
(\$2,626 M CAD)



³ Includes \$0.24 M in international contributions



Celebrating Ecological Restoration Successes

American Wigeon.
Jaden Barney

Since European arrival, about 70% of wetlands in settled areas of Canada are estimated to have been lost, and as much as 84% of these have been attributed to drainage for agricultural lands.

“Build wetlands, and waterfowl will come” is a take on the *Field of Dreams* hypothesis—“if you build it, they will come”—coined by three ecologists in 1997 when the North American Waterfowl Management Plan (NAWMP) was little more than a decade old. Since then, NAWMP partners across Canada have been putting this hypothesis to the test and reaping successes.

While protecting wetlands and other ecosystems is the ideal situation, in reality, many ecosystems have already been negatively impacted. Like in many parts of the world, Canada has lost a significant number of its wetlands and associated upland habitats. For example, since European arrival, about 70% of wetlands in settled areas of Canada are estimated to have been lost, and as much as 84% of these have been attributed to drainage for agricultural lands. As well, other activities such as urban and industrial development have contributed to additional wetland losses. It is in these situations, where wetlands are already lost, that ecological restoration can be a valuable conservation solution.

Ecological restoration involves improving a degraded, damaged or destroyed ecosystem to recover its inherent values for nature and for the natural benefits to people. For NAWMP partners, restoration means recovering the health of wetlands and upland habitats that waterfowl and other wildlife need to thrive.

A restored wetland can provide habitat essential for waterfowl and other wildlife during many life stages, including nesting, feeding and migrating. However, wetland restoration also addresses other aspects of ecosystem function: flood and drought mitigation, erosion control, improved water quality, pollination of crops and natural vegetation, and maintenance and renewal of soil and soil fertility. These functions contribute as natural benefits to people as well as to waterfowl and other wildlife.

Therefore, restoring wetlands provides benefits not just to the specific ecosystem but also to communities and society in general.

There is no one-size-fits-all ecosystem that meets the enormously varied needs of North America's waterfowl populations, but several principles can be applied to restoration projects:

- Understanding the needs of the target species. For example, not all waterfowl require the same habitat. Some prefer shallow waters for waddling while others prefer deeper waters.
- Identifying what is wrong in the ecosystem, including physical aspects (e.g., hydrology), chemical aspects (e.g., nutrients), and biological aspects (e.g., missing species and/or the presence of invasive species).
- Designing a project that works with the natural processes already occurring in the ecosystem.
- Defining a realistic and achievable project scope, both for the initial restoration and for ongoing work and maintenance.
- Engaging with and involving the community: local residents and Indigenous Peoples, land owners, citizen scientists and community organizations. The community should be involved in goal setting and decision-making.

Ecological restoration principles and theories are essential to effective restoration, but the importance of having landowners, local councils, scientific researchers and government working together to implement them cannot be understated. NAWMP has been a guiding star for these stakeholders, with successful restoration of sites being possible through funding support from numerous organizations and programs in both the United States and Canada.

Over the past 30-plus years, NAWMP projects have restored 1.1 million acres (430,131 hectares) of wetland and 2.8 million acres (1.1 million hectares) of upland habitat across Canada. The organizations supporting NAWMP in Canada are varied and broad, and these leaders in Canadian conservation have helped hundreds of landowners become involved in conservation through projects that protect and restore essential habitat.

One of the many funding partners benefiting from American migratory game bird hunters is Wildlife Habitat Canada (WHC). WHC has been putting its stamp—literally—on Canadian conservation for over 35 years. The stamp image, which is featured every year on the cover of *Habitat Matters*, is affixed to the migratory game bird hunting permit in Canada. An estimated 18,900 Americans purchase a permit annually, directly helping conservation efforts in Canada.



Installing a duck box.

Sunshine Coast Wildlife Project

WHC receives the funds generated from the sale of the stamp, both affixed to the permit and sold separately as a collector's item, and distributes money to Canadian organizations through a conservation grant program. WHC funds projects that meet the goals of NAWMP and the priorities of the Habitat Joint Ventures, requiring funded projects to have linkages to wetlands, associated uplands, waterfowl and migratory game birds.

In 2019–2020, WHC supported projects that restored thousands of acres of natural habitat across Canada, within all of the Canadian Habitat Joint Ventures. For example:

- A project in the Pacific Birds Habitat Joint Venture successfully restored over 130 acres (53 hectares) of wetland habitat at two sites that had been previously destroyed by wildfire.
- Restoration work in the Prairie Habitat Joint Venture maintained 1,600 artificial nesting structures and protected 580 acres (235 hectares) of wetland and upland habitats by engaging more than 2,700 participants.
- In the Eastern Habitat Joint Venture, a project spearheaded the restoration of over 800 acres (325 hectares) of nesting habitat for Common Eiders, shorebirds and other bird species in Newfoundland and Labrador. This project also provided educational opportunities for more than 800 youth to cultivate future conservation stewards.

These are just a few examples of how individual American, Canadian and other migratory game bird hunters support on-the-ground conservation efforts.

We need to work with partners large and small to restore, rehabilitate and enhance important wetland and associated upland habitats to meet the goals of NAWMP for the conservation of waterfowl and other wildlife. Therefore, this year's report highlights restoration projects being undertaken across Canada in four Habitat Joint Ventures and three Species Joint Ventures.

Habitat Joint Ventures

Redhead flock landing in marsh vegetation.
Ducks Unlimited Canada

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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.





Pacific Birds Habitat Joint Venture

Flock of Northern Pintail and Green-winged Teal in Boundary Bay, British Columbia.

Tim Fitzgerald, Ducks Unlimited Canada



www.pacificbirds.org

The Pacific Birds Habitat Joint Venture (PBHJV) is an international Joint Venture that includes portions of British Columbia (B.C.), Alaska, Washington, Oregon, California and Hawaii. The B.C. 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. Near urbanized 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 for wildlife. 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 B.C. coast. The Fraser River Delta in southern British Columbia is the only Canadian Important Bird & Biodiversity Area designated as “in danger” by BirdLife International. This delta supports the highest density of wintering waterfowl in Canada. Key species in the B.C. portion of the Joint Venture include the Wrangel Island Snow Goose (nearly half the population), the Pacific Coast’s Trumpeter Swan (half the global population), American Wigeon, Cackling Goose and Western High Arctic Brant.

The international PBHJV (or “Pacific Birds”) includes 16,000 miles (25,700 km) of coastline in British Columbia, which has hundreds of estuaries and wetlands used by both resident and migratory waterfowl and other birds. While the Joint Venture’s partners work to conserve and protect as many estuaries and wetlands as possible, there is a role for ecosystem restoration to address damage or destruction to some of the region’s critical habitats. This year, the report highlights two significant restoration projects and a successful acquisition of key estuarine habitat.

Removing invasive plants from intertidal marshes and mudflats

Many of the gently sloping mudflats along the Fraser River Delta and on the east coast of Vancouver Island are threatened by *Spartina*, which includes several species of invasive aquatic grasses. *Spartina* spreads quickly and outcompetes other plants



Pink flags mark invasive *Spartina* plants for removal.
Tim Fitzgerald, Ducks Unlimited Canada

like eelgrass that wintering waterfowl, such as Brant, American Wigeon, Mallard and Northern Pintail, rely on for food. Eelgrass beds are sensitive saltwater ecosystems that benefit not only waterfowl but also shorebirds and other wildlife, such as salmon. Growing in dense stands, *Spartina* prevents birds from accessing protein-rich invertebrates in the substrate of the mudflats.

In collaboration with the Washington State Department of Agriculture, which has led much of the work to eradicate *Spartina* in the Puget Sound area, Ducks Unlimited Canada (DUC) has been planting a sea of small pink flags to mark clumps of the tall, grey-green *Spartina* for work crews to remove. This community-based project involves many different agencies, volunteers and contractors who traverse the marshes and mudflats doing the backbreaking work of removing *Spartina*. Drifting seeds spread and take hold easily, so mature plants are targeted for control to limit seed production and dispersal. Control can include seed-head clipping, herbicide treatment before seed development and digging or treating small plants before they reach maturity.

Herbicide application, which is a part of the integrated pest management approach in the Fraser Delta, has been instrumental in controlling *Spartina* and protecting these ecologically rich intertidal areas. Since 2016, treatments have resulted in a 65% decrease in the area impacted by one *Spartina* species (*S. anglica*) in the Lower Mainland. Similar approaches in Washington, Oregon and California have resulted in *Spartina* reductions of up to 85%. The 2019 program year saw 2,125 acres (860 hectares) of shoreline impacted by *Spartina* across British Columbia, a 19% decline from 2018. The learned experiences with herbicide application for the *Spartina* program may inform future invasive aquatic plant management strategies.

Along with the physical removal work, DUC and collaborators are developing public awareness campaigns and regularly posting on social media channels (Facebook, Twitter, and Instagram: @DUCinBC) about this important invasive species removal work. The B.C. Spartina Working Group (SWG) is also creating a new website with resources for the public and member and non-member agencies: www.spartina.ca.

Mapping and tracking infestations across the province is important in the effort to stay ahead of the invasive *Spartina*. The B.C. SWG tracks *Spartina* species using smartphones and apps that allow conservation staff and volunteers to document and report the size and location of plants. “The app and emerging technologies allow us to track the population dynamics of *Spartina* more effectively,” said Matt Christensen, Head of Conservation Programs for DUC in British Columbia. This monitoring also allows field crews to more effectively plan and deploy resources.

The B.C. SWG’s efforts are led by DUC and the Province of British Columbia with support from the Port of Vancouver, Fisheries and Oceans Canada and Environment and Climate Change Canada.

Restoring the Nanaimo River Estuary

Since the early 20th century, the Nanaimo River Estuary on the east coast of Vancouver Island has been altered and degraded by dikes, roads, residential developments and industrial and agricultural activities. Today, portions of the estuary are almost completely cut off from natural tidal and river processes, and the estuary has become less accessible to waterfowl, shorebirds and other wildlife.

Estuary restoration began in the winter of 2018, led by The Nature Trust of British Columbia (NTBC) in collaboration with its partners in the West Coast Conservation Land Management Program (WCLMP), including Environment and Climate Change Canada, B.C. Ministry of Forests, Lands, Natural Resource Operations and Rural Development, Ducks Unlimited Canada and Habitat Conservation Trust Foundation. Snuneymuxw First Nation has provided valuable local knowledge, archaeological monitoring and biological support throughout the project.

The overall aim of the project is to help the estuary become more resilient to the impacts of climate change and future sea-level rise. While the outer dike system was breached in 1986–1989, the remaining dikes and berms continued to restrict natural tidal processes, negatively impacting important bird and fish habitat. Dike removal

Snuneymuxw First Nation has provided valuable local knowledge, archaeological monitoring and biological support throughout the project.

Restoration underway at the Nanaimo River estuary.
Curtis Rispin, NTBC/WCLMP



allows sediments from the river and ocean to enter the whole estuary and build up the marshes over time, as the tides are able to flow back and forth more freely. As sea levels rise, this tidal flow will help prevent the marsh from drowning and turning into a mudflat or open water.

During the summer of 2019, project crews removed 1.6 miles (2.5 km) of berms and dikes, reconnecting a large area of marsh habitat to tidal and freshwater inputs. More than 5,200 cubic yards (4,000 cubic metres) of fill were removed from the estuary, allowing tides to flow freely for the first time in over a century. Additional berms were removed and tidal channels dug to help water continue to move through the estuary.

With the dikes gone, this area will undergo a lot of natural change. Estuary plants and animals, including fish and invertebrates, will colonize the area. NTBC is closely monitoring how the dike removal impacts the marsh, mud flats and tidal channels, as well as the waterfowl—including Surf Scoter, Bufflehead, Wood Duck and Cinnamon Teal, among others—and wildlife that make their home there.

“By implementing this project, we are not only restoring valuable fish and wildlife habitat, but are also working with Snuneymuxw First Nation and other partners to improve

the resilience of the estuary in the face of sea-level rise and climate change,” said Tom Reid, WCCLMP Manager.

Funding for the estuary restoration has come from Fisheries and Oceans Canada’s Coastal Restoration Fund, Western Forest Products Inc. and Coastland Wood Industries Ltd. In-kind support comes from Snuneymuxw First Nation, the Port of Nanaimo and Fisheries and Oceans Canada’s Resource Restoration Unit.

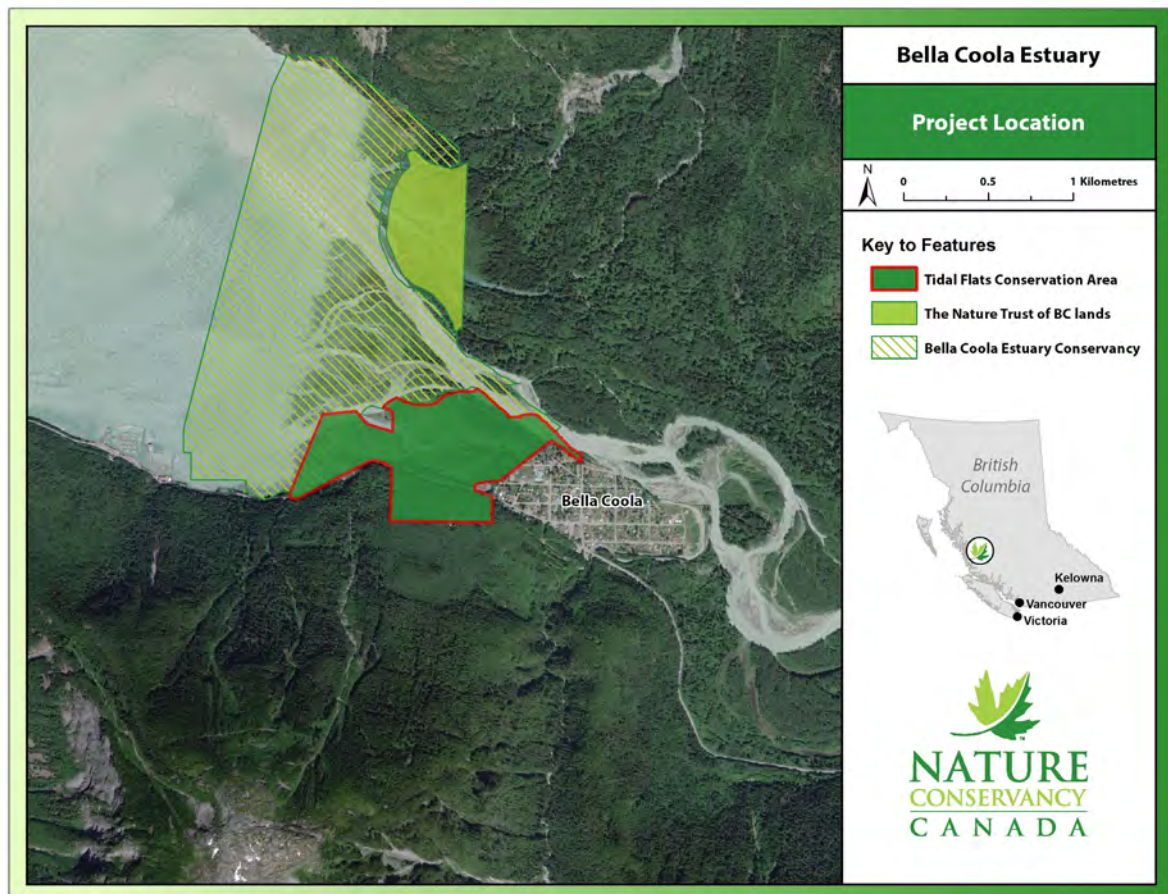
Conserving the Bella Coola Estuary

While restoration is an important aspect of the work carried out in the PBHJV, the NAWMP partners strive to keep ecosystems from reaching the stage of needing restoration whenever possible. On B.C.’s central coast, in the heart of the Great Bear Rainforest, the Bella Coola Estuary remains a naturally productive area that provides essential habitat for numerous migratory bird species such as Trumpeter Swan, Barrow’s Goldeneye and American Wigeon.

In 2019, the Nature Conservancy of Canada (NCC) acquired a 174-acre (70-hectare) property on the estuary. Known as the Tidal Flats Conservation Area, this parcel was the last unprotected private property at the mouth of the Bella Coola

Aerial view of the Bella Coola estuary showing the network of conservation lands that protect the entire estuary complex. The Tidal Flats Conservation Area (red outline) builds on the conservation initiatives of the Province of British Columbia and The Nature Trust of British Columbia.

Nature Conservancy of Canada





Tidal Flats Conservation Area at the mouth of the Bella Coola River, British Columbia.

Michael Wigle

River. It encompasses intertidal marshes, mudflats and tidal channels, while the property’s upland areas are forested with Western Redcedar and Sitka Spruce. The Bella Coola Valley is irreplaceable in terms of its contribution to the overall biodiversity of the Great Bear Rainforest. The coastal wetlands in this area are also important carbon sinks and will increase resilience to rising sea levels.

The Nuxalk Nation, whose homeland and territory are located in and around Bella Coola, has voiced their support for this project, along with other residents of the Bella Coola Valley. “Given the high ecological and cultural values on the estuary, the Nuxalk Nation supports the Nature Conservancy of Canada’s interest in conserving Tidal Flats,” said Chief Wally Webber. “With their success, we look forward to working [together] to care for this significant area for generations to come.”

Nancy Newhouse, B.C. Regional Vice-president of NCC noted, “We are grateful for the support of the community and look forward to building long-lasting relationships as we work together to care for the unique nature that makes the Great Bear Rainforest not just world famous, but globally irreplaceable.”

Funding for the acquisition was provided by the Government of Canada’s Canada Nature Fund, including the Natural Heritage Conservation Program and implementation funds for the NAWMP, as well as the U.S. Fish and Wildlife Service, through the *North American Wetlands Conservation Act*, and many other generous donors.

For more information, contact Andrew Huang, Pacific Birds Habitat Joint Venture Coordinator, (604) 350-1913, andrew.huang@canada.ca.

Pacific Birds Habitat Joint Venture Contributions (CAD)

	2019-2020	Total (1991-2020)
Total	5,394,740	233,459,723

Accomplishments (Acres)

	2019-2020	Total (1991-2020)
Secured	1,013	139,368
Enhanced	2,662	201,006
Influenced	15,249	6,795,583

Secured and enhanced acres are not additive.

2019-2020 consists of the April 1, 2019 to March 31, 2020 time frame.

1991-2020 consists of the January 1, 1991 to March 31, 2020 time frame.



American Wigeon landing in water.
Tim Fitzgerald, Ducks Unlimited Canada



Lesser Scaup.

Ducks Unlimited Canada

Canadian Intermountain Joint Venture

A wetland in the 148 Mile Marshes complex.

Tim Fitzgerald



www.cijv.ca

With an area of 123.5 million acres (50 million hectares), the Canadian Intermountain Joint Venture (CIJV) covers portions of British Columbia 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 waterfowl represent 70% of British Columbia's and roughly 4% of Canada's breeding waterfowl population. The CIJV supports roughly one quarter of the world's breeding population of Barrow's Goldeneye, along with significant breeding populations of Mallard, Hooded Merganser and Ruddy Duck.

Partners of the CIJV continue to achieve meaningful habitat conservation through both restoration and protection projects. This year's project highlights include rebuilding wetland and associated upland habitats known as 148 Mile Marshes, installing fencing and a watering system on ranchlands and acquiring wetland habitat adjacent to the Columbia River Wetlands, one of British Columbia's three Ramsar Wetlands of International Importance.

Rebuilding habitat at 148 Mile Marshes

In British Columbia's semi-arid Cariboo Parklands biome is a wetland complex known as 148 Mile Marshes, consisting of 346 acres (140 hectares) of wetlands and associated upland habitats. For the ten-year period between 2005 and 2015, helicopter surveys estimated that an average of 19.6 breeding waterfowl use 148 Mile Marshes each year. More than a dozen waterfowl species use the marshes, including Mallard, Gadwall, Green-winged teal, Cinnamon Teal, Canvasback, Bufflehead and Ruddy Duck. The marshes, many of which have complex shorelines and varied upland habitat structure, provide excellent breeding habitat for these species, as well as important migratory habitat, particularly in spring. Other species, such as Sandhill Crane and numerous shorebirds, grebes, coots and rails, also use 148 Mile Marshes, as do Western Painted Turtles, moose, muskrats, beavers, black bears, coyotes and mule deer.



Culvert replacement at 148 Mile Marshes, British Columbia.

Tim Fitzgerald, Ducks Unlimited Canada

The primary ongoing threat to wetlands in this landscape is changing water supply due to climate change.

Ducks Unlimited Canada (DUC) is undertaking a multiyear project to rebuild and restore 140 acres (57 hectares) of wetlands and associated upland habitats at 148 Mile Marshes as it strives for its vision of this intermountain region as “a landscape that supports healthy populations of birds, maintains biodiversity and fosters sustainable resource use.” The project includes rebuilding or repairing dams, replacing weirs and upgrading spillways, along with cleaning out ditches and associated culverts. Materials used will have a lifespan of 40 to 50 years.

The project’s original construction began in 1976 and added valuable permanent waterfowl habitat to the area. Since then, biological inspections and casual visits have indicated that 148 Mile Marshes provides excellent nesting habitat as currently operated, so there is a need to replace and upgrade aging infrastructure to ensure those habitat values remain intact. The primary ongoing threat to wetlands in this landscape is changing water supply due to climate change. If the project’s water controls are not rebuilt, habitat quality in the marshes would be severely degraded through a reduction in water level, as current predictions for the interior of British Columbia include continually changing timing of snowmelt and more variable amounts of precipitation. By rebuilding these dams, DUC is helping to mitigate the effects of climate change on the local landscape.

Installing exclusion fencing and a watering system

Livestock exclusion fencing is a valuable tool for protecting small pockets of wetland habitat that exist on ranchlands in the interior of British Columbia. Wetlands in dry regions such as the Rocky Mountain Trench are very important for a wide variety of species and yet are extremely rare and often degraded by activities such as unrestricted cattle grazing. Installing fences around wetlands to exclude cattle decreases disturbance to plants and soil from livestock trampling and grazing. Native plant communities are able to thrive within the confines of the fence and they help wetlands function more naturally.

Cattle excluded from a wetland by fencing in Kootenay River Ranch Conservation Area.

Nature Conservancy of Canada



Sometimes an off-site watering system becomes necessary when livestock exclusion fences restrict cattle from accessing natural surface-water sources. At the same

time, off-site watering systems can benefit ranchers by reducing the amount of time and energy spent on trucking water around the property. Minimizing the amount of driving on a property decreases soil disturbance and limits the spread of invasive plants, while keeping livestock away from surface water can improve animal health and protect downstream water quality.

Just as importantly, supporting the installation of watering systems also helps to build trusting relationships by exhibiting to the community that

conservation and ranching can co-exist on the landscape. Many ranchers are supportive of conservation-minded land management, so watering system projects make it easier for all parties to work together toward a common goal.

In the summer of 2019, the Nature Conservancy of Canada (NCC) purchased an off-site watering system for use on its Kootenay River Ranch Conservation Area, where cattle are grazed in a low-impact rotation cycle. This system, co-managed by NCC and the rancher, will help provide water access for cattle now that exclusion fences have restricted their access to natural wetlands. NCC has completed five wetland exclusion fencing projects on Kootenay River Ranch in the past decade, protecting approximately 100 acres (40 hectares) of wetland habitat on the property.

The 2019 project also expanded an existing fence around Island Pond to protect an additional 3.7 acres (1.5 hectares) of wetland habitat. The expansion of the Island Pond fence will decrease disturbance caused by unimpeded access of livestock, allowing native plant communities to re-establish and thrive. Reduction of livestock access will also improve water quality by preventing excess sediment and nutrient-rich excrement from entering aquatic systems. Over time, as riparian vegetation becomes established, it will provide cover and nesting habitat for breeding and migrating waterfowl, including Green-winged Teal, Mallard, Ruddy Duck, American Coot and swans, as well as for other water birds. The improved water and soil quality will enhance the diversity of invertebrate communities, providing increased food sources for birds and other wildlife.

As follow-up to this project, NCC is monitoring the progress of new plant growth within the fence boundary. At least once a year, stewardship staff conduct wetland health assessments of fenced wetlands to quantify the effectiveness of the project, keep records of wildlife observations, and monitor for and manage invasive plants as they occur.

Securing a property in the Columbia River Wetlands

In 2019, The Nature Trust of British Columbia (NTBC) acquired a new conservation property in the Columbia River Wetlands. Near the community of Edgewater in B.C.'s Kootenay region, this property covers 423 acres (171.5 hectares). These wetlands are contiguous with the Columbia Wetlands Wildlife Management Area, which is designated as a Wetland of International Importance (Ramsar site), one of only three such sites in the province. The Columbia River Wetlands provide significant waterfowl and other migratory bird habitat. Species include Common Loon, American White Pelican, American Bittern, American Wigeon, Trumpeter Swan, Wilson's Phalarope and various species of grebes, ducks and geese.

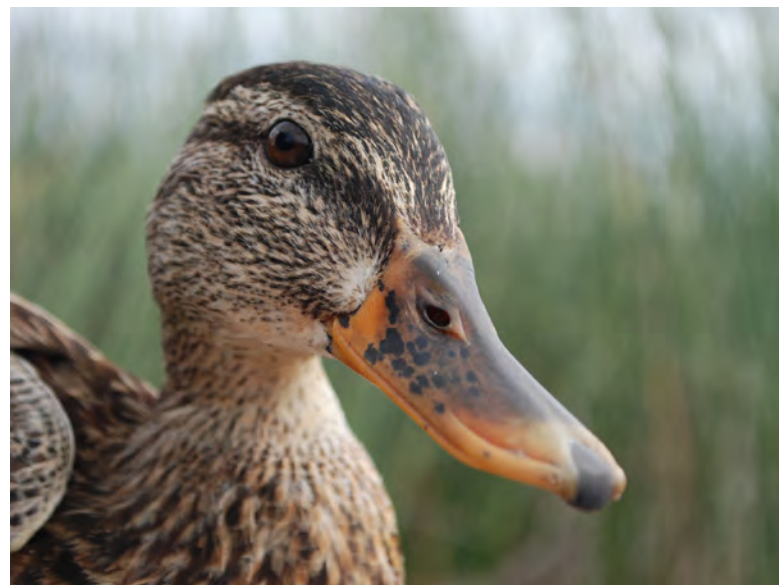
Wetland complexes of open water, sedges and cattail marsh occur on the property, which consists of approximately 138 acres (56 hectares) of forest, shrub-steppe and grassland intermixed, 25 acres (10 hectares) of steep clay bank, 52 acres (22 hectares) of wetland and 118 acres (48 hectares) of riparian floodplain, in addition to 89 acres (36 hectares) of cultivated fields. "This acquisition helps to secure critical habitat for



A solar-powered watering system for cattle that are fenced away from water sources. The system is attached to a trailer so that it can easily be moved around the property as livestock are rotated.

Nature Conservancy of Canada

Female Mallard.
Andre Breault





Looking north along a side channel of the mighty Columbia River, with Steamboat Mountain in the background.

© Graham Osborne

resident and migrating waterfowl within the internationally important Columbia River Wetlands,” said Chris Bosman, Kootenay Conservation Land Manager for NTBC. “At a time when waterfowl are facing so many challenges, we’re thrilled to be able to alleviate the threat of habitat loss through this securement project.”

The area is a vital component of the Pacific Flyway, a waterfowl migration route that stretches from nesting areas on the Arctic Ocean to wintering grounds in South America. Daily sightings during migration often exceed 15,000 individuals, with these birds depending upon wetlands to survive their journeys north and south each year. During stopovers, birds find crucial food resources, nesting grounds and safe places to rest and ride out unfavourable conditions.

Funding for the acquisition came from multiple sources: British Columbia Conservation Foundation, Regional District of East Kootenay through the Columbia Valley Local Conservation Fund, Fish and Wildlife Compensation Program, Golden District Rod and Gun Club, Habitat Conservation Trust Foundation, Kootenay Wildlife Heritage Fund, Lake Windermere Rod and Gun Club, Canal Flats Wilderness Club, the NHCP-LTCF Small Grants Program funded by the Government of Canada and administered by Wildlife Habitat Canada, and individual donors. The original landowners, Denis and Rosemary Tegart, generously donated a portion of the property to NTBC through the Government of Canada’s Ecological Gifts Program.

Barrow’s Goldeneye female in flight.

Andre Breault



For more information, contact Andrew Huang, Canadian Intermountain Joint Venture Coordinator, (604) 350-1913, andrew.huang@canada.ca.

Canadian Intermountain Joint Venture Contributions (CAD)

	2019-2020	Total (2003-2020)
Total	2,420,163	90,624,223

Accomplishments (Acres)

	2019-2020	Total (2003-2020)
Secured	474	361,112
Enhanced	610	203,326
Influenced		50,906

Secured and enhanced acres are not additive.

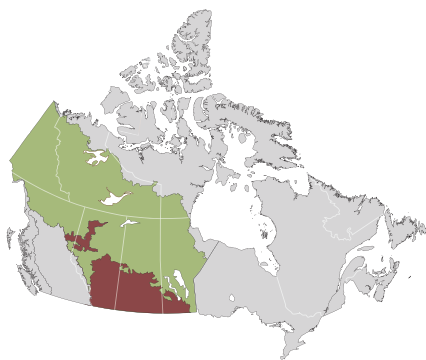
2019-2020 consists of the April 1, 2019 to March 31, 2020 time frame.

2003-2020 consists of the January 1, 2003 to March 31, 2020 time frame.



Prairie Habitat Joint Venture

Mallard brood on wetland.
Ducks Unlimited Canada



www.phjv.ca

The Prairie Habitat Joint Venture (PHJV) encompasses 158.4 million acres (64.1 million hectares) of prairie and aspen parklands in Alberta, Saskatchewan, Manitoba and the Peace Parkland Region of British Columbia. The PHJV also supports conservation in the western boreal forest (WBF), which covers parts of British Columbia, Alberta, Saskatchewan, Manitoba, Yukon and 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. Linkages among habitats and species are highlighted in the Prairie Parklands and WBF Implementation Plans.

The large, diverse area within the PHJV provides highly productive habitats for waterfowl and other birds. Restoration is an important component of the PHJV program and several examples are highlighted below.

Prairie Parklands

Alberta: The Ames Project: Wetland and grassland restoration benefit waterfowl and agriculture

Surrounded by fields of cereal crops and rolling hills near Sullivan Lake, Alberta, a piece of land with knob and kettle terrain now holds as much value for conservation as it does for agriculture, after work delivered by Ducks Unlimited Canada (DUC).

The Ames Project is a six-quarter-section parcel (960 acres; 388.5 hectares) located in a high-priority NAWMP landscape in central Alberta supporting 40 breeding waterfowl pairs per square mile. The project is located in an area of the Battle River watershed where large and expanding farm operations employ intensive agricultural practices. Over time, much of the landscape was altered to increase farming



Control structure built to restore wetlands in the Alberta project.

Ducks Unlimited Canada

productivity and unintentionally resulted in lost or degraded habitat. On the land associated with the Ames Project alone, more than 200 acres (80.9 hectares) of wetland habitat were drained.

The Ames Project expanded existing waterfowl and wildlife habitat by securing land as part of DUC's Revolving Land Conservation Program. Wetland and grassland areas were restored, and conservation easements were registered on the restored areas to protect them in perpetuity. The land is now scheduled to return to the local agricultural community through fee simple sale for such activities as haying and grazing. This project supported the local economy, as contractors were hired

to seed the grass, build a water control structure and install ditch plugs to restore the wetlands.

Bob Thomson, DUC conservation program specialist who led the project, explained that the Ames Project is an excellent example of collaboration between landowners, contractors and staff resulting in a conservation and economic success story benefiting an estimated 25 waterfowl species in Alberta. In total, approximately 200 acres (80.9 hectares) of wetland habitat, along with an additional 244 acres (98.7 hectares) of grassland habitat were restored. The project also included approximately 480 acres (194.2 hectares) of intact perennial ground cover.

Manitoba: Partners in restoration

From the famous Delta Marsh on the shores of Lake Manitoba to a half-acre basin near Minnedosa, Manitoba, conservation groups in the province are making their mark by enhancing degraded wetlands and putting water back to where it once was.

Long treasured for its hunting opportunities, the health of Delta Marsh and its waterfowl abundance has steadily declined over the last 50 years. In addition to

nutrient loading, "the invasive common carp contributed to the degradation of the marsh through their spawning and feeding habits," said Mark Francis, Manager of Provincial Operations for DUC. To address these challenges, a multi-year initiative called Restoring the Tradition was established.

"Since the exclusion of the carp, we saw a response in the vegetation and water quality that we hadn't seen in years," said Francis. "We are well on our way to restoring the marsh to a healthier ecosystem for all Manitobans."

PHJV partners have worked for decades to restore lost wetlands that were once part of the thousands of waterfowl breeding ponds dotting Manitoba's pothole landscape.

Delta Marsh, Manitoba.

Ducks Unlimited Canada



“PHJV partners have worked hard to develop and adapt wetland restoration programs for delivery on private lands,” commented Stephen Carlyle, Chief Operating Officer at Manitoba Habitat Heritage Corporation (MHHC). “MHHC and DUC began offering shorter term agreements as a way to increase restoration program uptake. The amazing thing is that most of our restorations end up getting done under perpetual agreements anyway, which is a testament to our delivery staff and the people of Manitoba.”

Nature Conservancy of Canada (NCC) is also partnering to restore wetlands on properties they own. “Our partnership with DUC not only made an immediate and tangible improvement to wetlands and waterfowl productivity,” said Cary Hamel, Director of Conservation for NCC’s Manitoba Region, “it also supported the recovery and improved management of a broader connected prairie pothole ecosystem that supports Canadian migratory bird species at risk like Bobolink and Eastern Wood-Pewee.”

Through funding from Canadian and U.S. partners, over the past eight years, NCC, DUC and MHHC have found ways to restore or enhance more than 45,000 acres (18,211 hectares) of wetlands in Manitoba. Strong programming and strong partnerships are surpassing Implementation Plan objectives.

Saskatchewan: New landowner program increases perennial cover on Saskatchewan landscape

New and emerging technologies are making it easier for Saskatchewan farmers to determine profitability on a per-acre basis. Lyle Cowell, an agricultural advisor with Nutrien Ag Solutions, put it best when he said, “Soil varies, farmers should too. If a portion of an orchard is unproductive, it is removed. If a store in a chain is losing money, it’s closed. So why, when some of our grain farms are losing money, do we try cropping it again year after year?”

Landowners are becoming increasingly aware of the significant costs associated with marginal field areas. DUC has developed a new program with financial incentives for producers to seed perennial forages in hard-to-access and poor producing areas.

“The new marginal farmland program was developed for producers who aren’t looking to convert an entire quarter to forage, but need help with small, fragmented areas in crop margins,” said Trevor Plews, DUC’s Head of Conservation Programs in Saskatchewan. DUC is paying CA\$125/acre to seed marginal areas with perennial cover.

This program fits nicely into NAWCA-funded activities converting cultivated areas into permanent cover. Grassland conversion programs benefit many avian species including upland nesting waterfowl such as Mallards and Blue-winged Teal. Landowners signing up for the marginal farmland program agree to keep the areas in grass/ nesting cover for 10 years.

Most of our restorations end up getting done under perpetual agreements ... which is a testament to our delivery staff and the people of Manitoba.”



The Marginal Area Program in Saskatchewan links existing grasslands and wetlands to create a larger block and expand the buffer around wetlands.

Ducks Unlimited Canada

Benefits to producers are significant: improved profitability, reduced persistent weed areas and wider buffer zones around wetlands.

Benefits to producers are significant: improved profitability, reduced persistent weed areas and wider buffer zones around wetlands. There are also conservation benefits, such as improvements to water quality, carbon sequestration and habitat for other wildlife and beneficial pollinators. This year, the program included a seed mixture of 11 perennial species specifically of value to pollinators.

There has been strong producer support; by early May, Saskatchewan had already surpassed its 2020 goal of 2,000 acres (809 hectares) of marginal lands referred to the program.

Western Boreal Forest

Restoration in the Saskatchewan River Delta

The Saskatchewan River Delta (SRD) is the largest inland delta in Canada's Boreal forest ecozone, and likely in North America. It is recognized as an Important Bird Area for its globally significant waterfowl concentrations, and it includes 15% of the Boreal Plains ecoregion's breeding waterfowl population according to long-term U.S. Fish and Wildlife Service data.

This area's rich history dates back to the 1930s when the Hudson's Bay Company initiated development of the Cumberland Marshes near Cumberland House, Saskatchewan. In the 1950s, the U.S. Fish and Wildlife Service established this area as a banding site, which remains in operation today.

Within the SRD lies fertile marshland known as the Carrot River valley, which was converted to agricultural use from the early 1940s into the 1980s. The Carrot River

Triangle (CRT) is a 44,621 acre (18,057 hectare) complex of marshes adjacent to the farming community that has been extensively managed due to historical drainage pressures. The Bracken Dam, built in 1940, was the CRT's first control structure. It was rebuilt in 1962 and a fishway was incorporated in 1964. Between 1962 and 1988, DUC installed 16 additional control structures and developed nine wetlands. More recent management activities, to mitigate habitat loss and degradation from hydroelectric developments, consisted of removing excess local runoff and stabilizing water levels during summer months to enhance waterfowl production and other natural benefits.

This past winter, with support from Minnesota Department of Natural Resources, DUC completed rebuilds and repairs of several deteriorating control structures within the CRT—Elm Creek, Lake 6 and Birch Lake—securing water levels and associated upland habitat on over 47,000 acres (19,020 hectares) of a wetland mosaic.

Elm Creek provides good overwater nesting habitat for diving ducks, while large wet meadows offer upland nesting opportunities for dabblers. The varying habitat types provide nesting, brood rearing, moulting and staging areas. Mallards, Blue-winged Teal, Ring-necked Ducks, Ruddy Ducks and Gadwall have been

Map of band returns for waterfowl from the Saskatchewan River Delta, 1950–2019.

Ducks Unlimited Canada





Birch Lake outlet rebuild.
Ducks Unlimited Canada

observed in this area. The recent construction secured the wetland operating level while providing continued water fluctuations important for the variety of habitats present.

Lake 6 has shallower contours than many surrounding wetlands, providing good dabbling feeding, moulting and staging habitats. In years with higher water levels, it presents good diver overwater nesting opportunities and ample escape cover.

Birch Lake consists of a large open-water area surrounded by an expansive zone with emergent vegetation. Birch Lake provides dry and shallow upland nesting opportunities and overwater nesting. The open-water area provides brooding, moulting and very good staging opportunities. White-winged Scoter ducklings have been recorded along with significant numbers of nesting Black Terns.

Each of these three waterbodies contributes significantly to the importance of this 500,000 acre (202,000 hectare) freshwater delta in the boreal region of Canada.

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

Lesser Scaup.
Ducks Unlimited Canada

Prairie Habitat Joint Venture – Prairie Parklands Contributions (CAD)

	2019-2020	Total (1986-2020)
Total	52,202,659	1,396,043,385

Accomplishments (Acres)

	2019-2020	Total (1986-2020)
Secured	110,791	8,297,635
Enhanced	361,620	2,757,633
Influenced	563,654	6,978,011

Secured and enhanced acres are not additive.

2019-2020 consists of the April 1, 2019 to March 31, 2020 time frame.

1986-2020 consists of the January 1, 1986 to March 31, 2020 time frame.

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

	2019-2020	Total (1986-2020)
Total	5,261,169	155,646,771

Accomplishments (Acres)

	2019-2020	Total (1986-2020)
Secured		12,091,184
Enhanced		107
Influenced	8,103,884	84,320,737

Secured and enhanced acres are not additive.

2019-2020 consists of the April 1, 2019 to March 31, 2020 time frame.

1986-2020 consists of the January 1, 1986 to March 31, 2020 time frame.





Eastern Habitat Joint Venture

Least Bittern.
Tim Arthur



www.ehjb.ca
www.ehjb.ca/fr

The Eastern Habitat Joint Venture (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 million acres (48 million hectares) of freshwater and tidal wetlands. Important habitats include coastal bays and salt marshes, lakeshore marshes, floodplain wetlands and boreal forest wetlands. The EHJV has 13 priority waterfowl species including American Black Duck, Mallard, Ring-necked Duck, Common Goldeneye, Common Eider (two subspecies), 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.

Like many of the other Joint Ventures in North America, the EHJV is especially focused on advancing conservation of all bird species, not just waterfowl. The value of doing so is emphasized by analyses done by Birds Canada using citizen science data from the Great Lakes Marsh Monitoring Program (GLMMP). The data show that occurrence of eight marsh-breeding species, including bitterns, rails and grebes, has declined by 2–5% per year across the southern Great Lakes region since the mid-1990s. Fortunately, EHJV's partners Birds Canada; Ducks Unlimited Canada (DUC); Environment and Climate Change Canada's Canadian Wildlife Service; Nature Conservancy of Canada; Ontario Ministry of Agriculture, Food and Rural Affairs; Ontario Ministry of Natural Resources and Forestry and others are making great headway in southern Ontario on slowing and perhaps even someday reversing these decreasing trends through on-the-ground restoration actions and GLMMP citizen science monitoring.



Marsh in southern Ontario.
Birds Canada

Black Terns.
Prism Photography

What's good for ducks is good for a lot of other bird species

Wetland restoration and other conservation actions are known to conserve waterfowl, but it's less certain how much these efforts positively influence other wetland bird species. Some of this uncertainty was recently put to rest through analyses by Birds Canada and DUC using GLMMP data from hundreds of sample points across dozens of southern Ontario marshes restored, protected and managed under NAWMP.

The results show that occurrence of 14 non-waterfowl marsh-breeding bird species is 52% higher on average within NAWMP conservation project marshes compared with nearby unmanaged marshes. Four species—Black Tern, Common Gallinule, Least Bittern and Sora, which are all at-risk or priority species of regional conservation concern—are, on average, 99% more likely to occur in NAWMP marshes than in unmanaged marshes. A conservative estimate suggests that NAWMP marshes across the region contribute an additional 1,200 to 3,800 extra individuals of each of these species when compared with unmanaged marshes. Such impressive population increases are a huge boost for struggling marsh bird species when scaled up across the tens of thousands of hectares of wetlands restored throughout southern Ontario. These data provide an excellent example of how NAWMP dollars are having a big impact regionally through the EHJV.



Controlling *Phragmites* makes conservation project wetlands even better

Growth of the non-native invasive form of the Common Reed, or *Phragmites*, is a major setback for wetland biodiversity. The plant spreads quickly and is known to reduce the abundance and diversity of many native wetland plants and animals. In response, EHJV partners, led by the Nature Conservancy of Canada and Ontario Ministry of Natural Resources and Forestry have overcome a gauntlet of challenges to initiate Canada's largest invasive *Phragmites* control program. This innovative collaboration, made possible with funding from Environment and Climate Change

The plant spreads quickly and is known to reduce the abundance and diversity of many native wetland plants and animals.



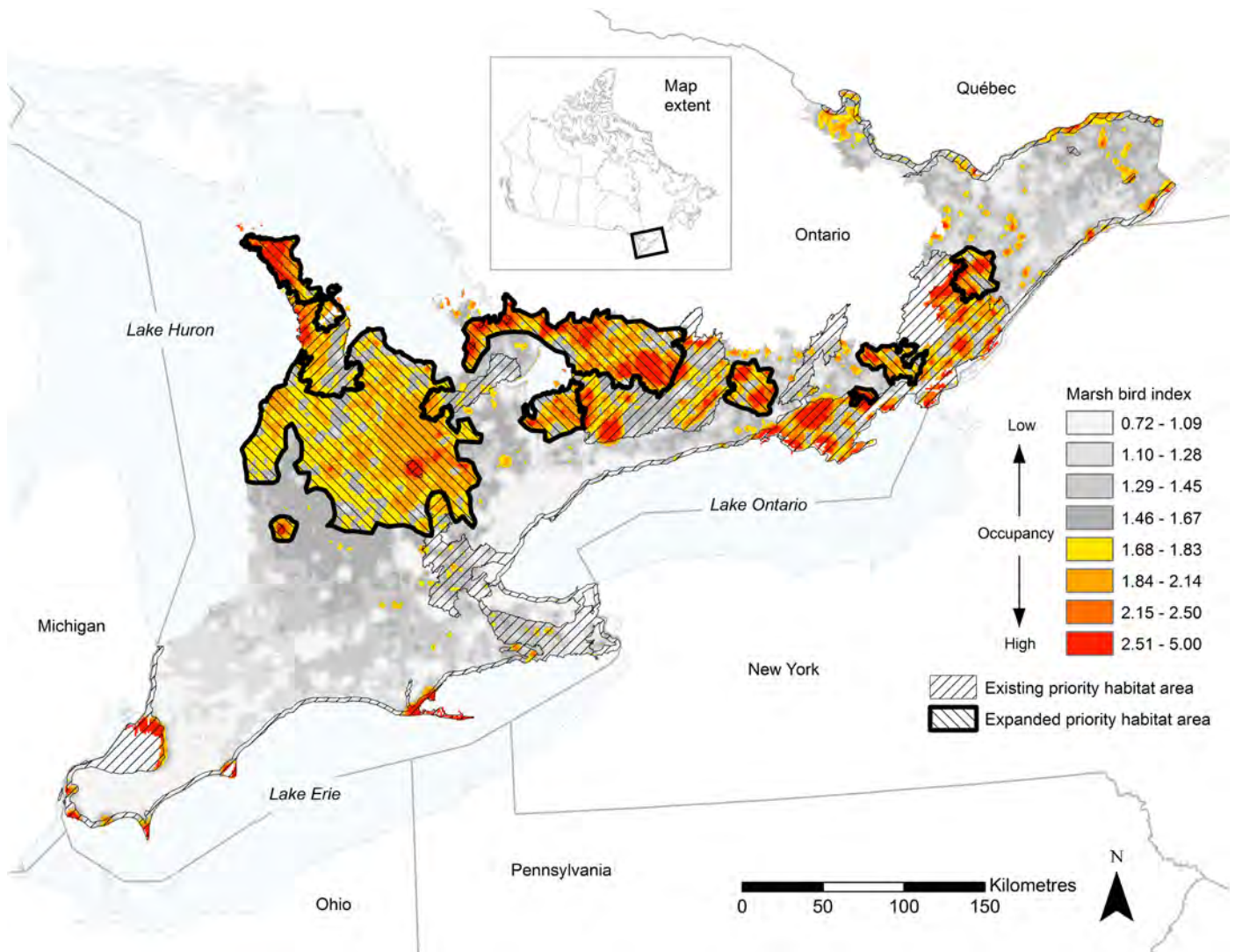
Phragmites, an invasive grass in Ontario wetlands.
Steve Timmermans

Canada, the U.S. Fish and Wildlife Service through the *North American Wetlands Conservation Act*, private landowners and others, has led to the successful control of 2,840 acres (1,150 hectares) of *Phragmites* within 22,240 acres (9,000 hectares) of southern Ontario’s highest-quality wetlands. An additional 1,980+ acres (800+ hectares) of surrounding habitat are slated for future treatment, not only increasing the total area of restoration but also greatly improving the probability of continued success of past control efforts.

This work has transformed dense monocultures of *Phragmites* “dead zones” back to functional wetland habitat for all types of wildlife. Recent analyses by Birds Canada using GLMMP and other long-term monitoring data indicate that this massive *Phragmites* control effort—which uses herbicide application, cut-and-drown techniques, and rolling and burning to encourage re-growth of native species—is well worth it for all marsh birds, including waterfowl. Semicircular study plots with a 109-yard (100-metre) radius provided results showing that species richness of marsh-breeding bitterns and rails, which are of conservation concern, increases by one species and total abundance increases by two individuals in response to control of invasive *Phragmites*. These population increases highlight the importance of wetland restoration for recovering declining marsh bird species across southern Ontario.

Aerial herbicide control of invasive *Phragmites* in Ontario, via special permit.
Gregor Beck





Existing and expanded priority habitat areas in southern Ontario. Coloured shading indicates the chance of marsh birds occurring in the areas shown.
 Doug Tozer, Birds Canada

We know what works, but where to next?

For decades, EHJV partners have worked hard to restore, protect and manage wetlands for waterfowl and other wildlife in 5 million acres (2 million hectares) of priority habitat areas within southern Ontario. The EHJV chose these priority areas based primarily on numbers of staging and breeding waterfowl and the threats they face. However, it was unclear whether these areas work well for conserving other marsh birds.

Birds Canada and DUC aim to expand existing priority areas to include new ones based on marsh-breeding birds. Data analyses of five bird species that breed only in marshes, in conjunction with a regional prioritization scheme, show that

about two-thirds of high-occupancy areas for marsh-breeding birds in southern Ontario are outside the existing priority areas that were identified for waterfowl (see map).

The EHJV will carefully consider expanding its wetland restoration work in southern Ontario to include wetlands within these new priority areas based on marsh-breeding birds. Some restoration activities outside but adjacent to priority areas will also be important for rebuilding marshes for these species across this intensively farmed and developed region. Doing so will target the best wetlands for restoration and other conservation actions to benefit waterfowl and marsh-breeding birds, and will be an important step for moving the EHJV toward achieving all-bird conservation in the region.

Restoring a riverbank habitat in the Codroy Valley

The Grand Codroy estuary in southwest Newfoundland is one of Atlantic Canada’s richest habitats for migratory birds. The extensive estuary was designated a Ramsar site in 1987 and provides habitat for more than 300 bird species, including American Wigeon, American Black Duck, Mallard, Northern Pintail, Common Merganser and Common Goldeneye. As a productive agricultural area and a popular tourist spot, the Grand Codroy estuary and surrounding Codroy Valley face development pressures, making the area an important focus for the Nature Conservancy of Canada (NCC).

Through purchases and land donations, NCC has conserved 647 acres (262 hectares) in the Codroy Valley. Although mainly a mix of forests and wetlands, NCC’s nature reserve includes a field along the Grand Codroy estuary. In June 2019, NCC staff and volunteers planted 1,500 native tree seedlings in a buffer between the field and the estuary to restore the riverbank. The seedlings are a mix of White Spruce and Tamarack, commonly found in Newfoundland wetlands. Once established, these hardy native trees will reduce the amount of sediment flowing into the Grand Codroy River, improve water quality for fish and waterfowl and provide habitat for wildlife.

This is the second restoration project NCC has completed in the Codroy Valley, following a similar tree planting project in 2017. Along with the practical benefits of restoring the riverbank, the project engaged the local community in hands-on stewardship work and provided an opportunity for volunteers to learn about Newfoundland’s wildlife and habitats.



Wetlands of the Grand Codroy Estuary, Newfoundland.

Mike Dembeck

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

Eastern Habitat Joint Venture Contributions (CAD)

	2019-2020	Total (1986-2020)*
Total	31,229,422	637,785,198

Accomplishments (Acres)

	2019-2020	Total (1986-2020)*
Secured	25,049	2,109,857
Enhanced	6,111	682,047
Influenced	208,487	77,976,302

Secured and enhanced acres are not additive.

2019-2020 consists of the April 1, 2019 to March 31, 2020 time frame.

1986-2020 consists of the January 1, 1986 to March 31, 2020 time frame.

* Includes first-step projects completed from 1986-1988 before the formal recognition of the EHJV in 1989.



Wood Duck.
Catherine Jarjour



Species Joint Ventures

Snow Geese.
Mike Wintroath

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.

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Fill out our survey by December 31, 2020,
for a chance at winning a prize.

<https://www.surveymonkey.com/r/HabitatMatters>
https://www.surveymonkey.com/r/Habitats_Canadiens



Black Duck Joint Venture

American Black Duck.

Ryan Askren



The Black Duck Joint Venture (BDJV) includes the provinces of Ontario, Quebec, New Brunswick, Nova Scotia, Prince Edward Island and 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, swamps, shallow lakes and wetlands throughout the boreal landscape. Black ducks are mostly found in the Mississippi and Atlantic Flyways.

American Black Duck populations in North America declined by about half between the 1950s and 1980s. These declines have been attributed to habitat loss and degradation, as well as competition with Mallards. Since the 1990s, black duck numbers have stabilized, likely due in part to more restrictive harvest regulations. The current black duck Adaptive Harvest Management strategy, developed jointly by Canada and the United States, maintains a balanced harvest between the two countries, but Canadian and U.S. hunters have the potential to harvest individuals that hatched in and migrated from different regions. Given this, effectively managing black duck harvest requires a clear understanding of the harvested ducks' origins.

Previous studies suggest that most American Black Ducks harvested in the Great Lakes and southern Quebec hatch in the boreal forest. By contrast, black ducks harvested in the Atlantic provinces more often hatch in southern agricultural areas. In addition, if black ducks breeding in the boreal forest migrate and arrive south later, it is possible that the northern segment of the population may be more likely to be harvested in the United States.

If this hypothesis is true, modifications to the current management strategy may be called for, or targeted habitat restoration work in certain regions may be needed. Habitat managers and biologists need to know where the harvested birds are coming from to be able to direct habitat restoration and species conservation programs.



B. Campbell banding a black duck. At the bottom right, note the envelopes used to collect feathers.

Shawn Meyer, Canadian Wildlife Service

Researchers with Western University and the Long Point Waterfowl and Wetlands Research Program, run by Birds Canada, a BDJV partner, have been using survey data and analyses of feathers to get a clearer picture of the likely breeding origins of harvested black ducks. The study obtained feathers sent by hunters from throughout Canada and the United States to the Species Composition and Parts Collection surveys run by the Canadian Wildlife Service and U.S. Fish and Wildlife Service. The feathers were analyzed to determine their chemical signatures (using stable isotopes), and the signatures were then compared with chemical signatures of rainwater in different parts of the black ducks' breeding range. In this way, it was possible to assign birds to locations where the feather was grown (natal sites), as shown by the graduated colour scale on the maps on page 31.

Preliminary results suggest that immature black ducks harvested in Atlantic Canada (bottom left map on page 31) likely originated within the southern portion of the breeding range, whereas immature birds harvested in Ontario, Quebec and all three of the U.S. regions analyzed (interior, north Atlantic, south Atlantic) likely originated in the boreal forest. These results are consistent with previous evidence.

This work highlights the importance of the boreal forest for breeding black ducks, and also shows that harvest in Atlantic Canada may disproportionately target birds breeding in the southern portion of the breeding range. While southern agricultural black duck populations make up only about 4% of the overall breeding population, restoring and conserving black duck habitat in these landscapes may be integral to the persistence of these birds within their overall breeding range.

In addition to informing restoration activities, the information from this research will be useful for identifying important breeding areas as well as connectivity between breeding and harvest regions, and it will contribute to improved management, conservation and restoration of black ducks and their breeding habitat.

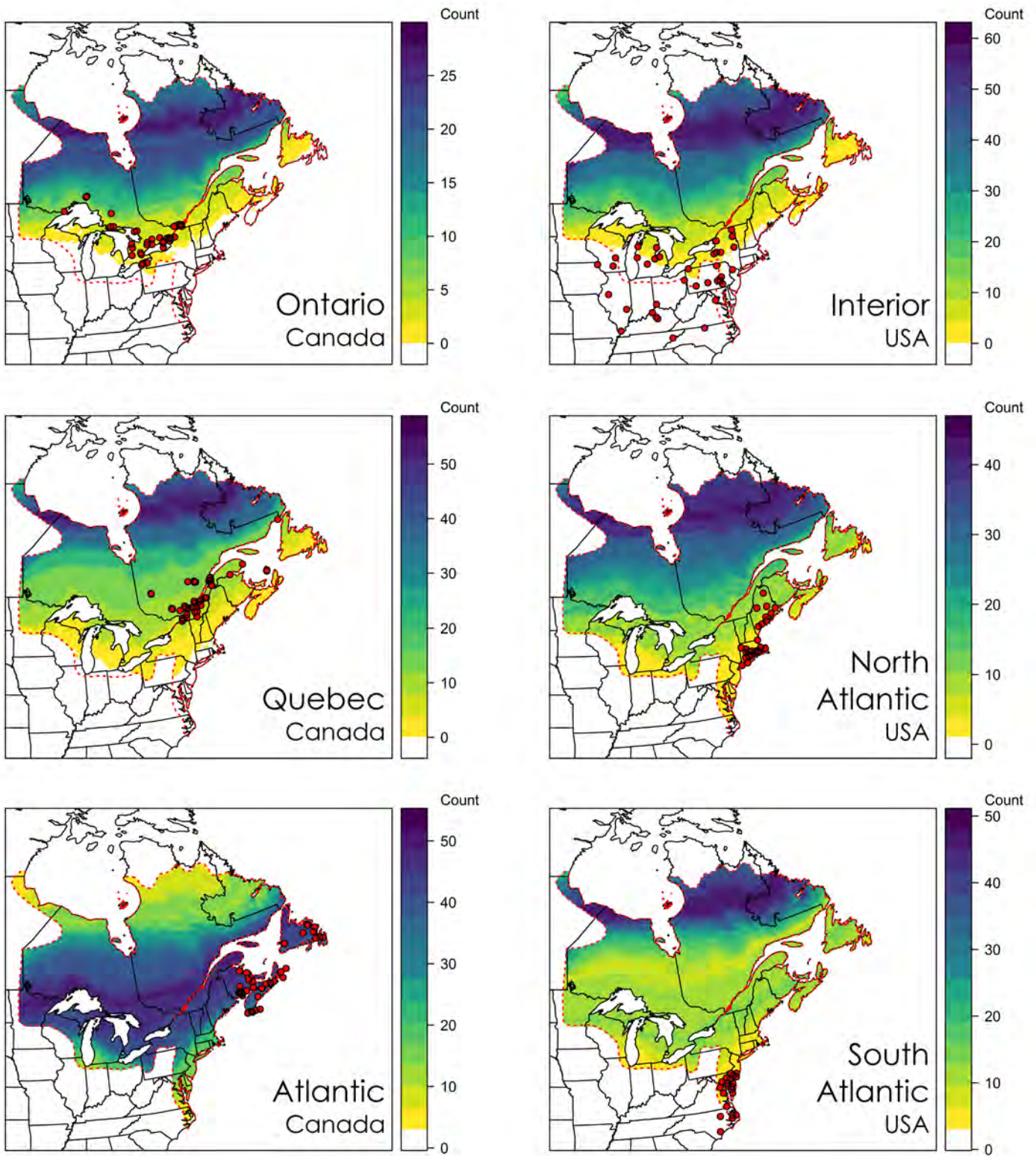
For more information, contact Tania Morais, Black Duck Joint Venture Coordinator, (506) 364-5085, tania.morais@canada.ca.

Black Duck Joint Venture Expenditures (CAD)

	2019-2020	Total (1986-2020)
Banding	334,157	9,009,199
Research		2,171,259
Surveys	398,922	9,165,905
Conservation Planning	27,072	404,987
Communication and Education		42,600
Total	\$760,151	\$20,793,950

2019-2020 consists of the April 1, 2019 to March 31, 2020 time frame.

1986-2020 consists of the January 1, 1986 to March 31, 2020 time frame.



Likely origins of immature American Black Ducks harvested in three regions of Canada and three regions of the United States during the 2017–18 and 2018–19 harvest seasons. The colours represent the number of immature ducks likely to have originated in that area, from yellow (few ducks) through deep blue (relatively more ducks). The red circles show harvest locations. The red-dashed lines indicate the breeding range.

Jackson Kusack, Western University



Sea Duck Joint Venture

Black Scoter pair in flight.

Tim Bowman



www.seaduckjv.org

The Sea Duck Joint Venture (SDJV) encompasses 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. As a group and depending on the season, sea ducks use all four flyways.

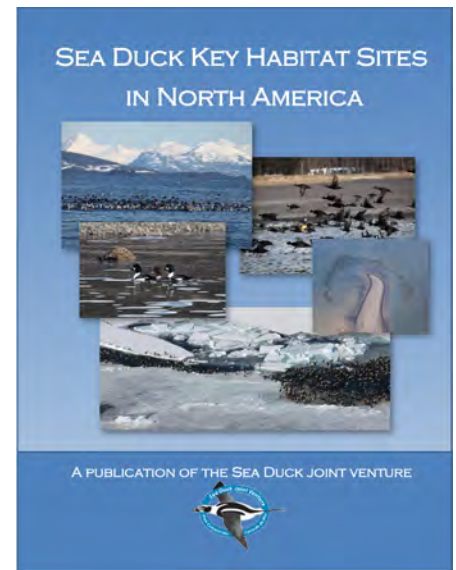
The SDJV has been spearheading an effort to synthesize science-based information from surveys, satellite telemetry studies and expert knowledge to identify areas of special importance to sea ducks in North America throughout their annual life cycles. All these data are being used to assemble the Sea Duck Key Habitat Sites Atlas. The purpose of this tool will be to make information on seasonal distribution and abundance of sea ducks readily available to decision makers and stakeholders such as the coastal Habitat Joint Ventures under NAWMP. Other potential users may include conservation organizations, natural resource agencies, industry and marine and land-use planners.

In developing the atlas, the SDJV identified about 160 candidate habitat sites, of which approximately 80 met the criteria for designation as a key site. To be a key site, data had to show the presence of at least 5% of a sea duck species' continental population or the presence of 20,000 sea ducks of any species in any season. In either of these cases, the density of sea ducks within the area had to be at least 25 birds per square mile (10 birds per km²). By designating key habitat sites in this way, the atlas will provide information about sea ducks at a meaningful and practical scale for habitat conservation and protection.

The atlas will have a map display that identifies important breeding, wintering and staging/moulting sites, along with documents that highlight the importance of each site. For example, for each key site, the atlas will include the geographic coordinates,



Canada and the United States, showing proposed key habitat sites for sea ducks.
Sea Duck Joint Venture and Atlantic Canada Conservation Data Centre



Cover of the Sea Duck Key Sites Atlas.
Sea Duck Joint Venture

site area, a general description, a note about precision of the data used, biological values, sensitivities (such as pollution), potential conflicts with other users, status of the area (such as Important Bird Area or other designations) and a list of references. The atlas will complement other bird habitat designations such as Important Bird Areas, Marine Protected Areas and NAWMP’s Areas of Continental Significance to Waterfowl.

The atlas will assist with planning and decisions for habitat protection, environmental assessments, off-shore energy developments, disaster mitigation planning (e.g., from oil spills) and other such complex projects. Users will be able to consult the atlas to:

1. provide justification for protecting areas of importance to sea ducks,
2. improve decision making for resource development in key areas,
3. direct research investigating biotic and abiotic features that characterize sea duck habitats, and
4. predict how habitat conditions may change and potentially impact populations.

Preparation of the Sea Duck Key Habitat Sites Atlas is an important first step for ensuring that adequate quantity and quality of sea duck habitat remains intact. The atlas is expected to be available as a PDF document from the SDJV website by the end of 2020.

Black Scoters at Chaleur Bay, a key site in New Brunswick and Quebec.

Tim Bowman

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

Sea Duck Joint Venture Expenditures (CAD)

	2019-2020	Total (1998-2020)
Banding		695,345
Research	1,212,344	11,674,651
Surveys		3,630,006
Conservation Planning		1,040,515
Communication and Education	19,712	102,744
Total	\$1,232,056	\$17,143,261

2019-2020 consists of the April 1, 2019 to March 31, 2020 time frame.

1998-2020 consists of the January 1, 1998 to March 31, 2020 time frame.





Arctic Goose Joint Venture

Snow Geese.
Frank Baldwin

The Arctic Goose Joint Venture (AGJV) covers 924 million acres (374 million hectares) spanning North America and 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.



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

While this year's restoration theme has most people thinking about restoring habitats, the context from the AGJV is a little different, but equally important. Restoring and maintaining goose populations at or near their optimal range is a key aspect to a balanced ecosystem and has been an underlying focus of the Joint Venture since inception.

One example is the role of the AGJV in addressing overabundant populations of light geese. There are five populations of light geese: Greater Snow Geese (Atlantic Flyway), midcontinent Lesser Snow Geese (Mississippi and Central Flyways), Ross's Geese (Mississippi, Central and Pacific Flyways), and the Wrangel Island population and western Arctic population of Lesser Snow Geese (Pacific Flyway).

Light geese are native species essential to well-functioning ecosystems. They link complex food webs throughout North America and provide both tangible and intangible benefits to humans. For some arctic and subarctic Indigenous communities, light geese provide an important traditional food source and have cultural and spiritual significance. Large concentrations of staging light geese represent one of the greatest wildlife migration spectacles in North America. Bird watching and hunting activities provide enjoyment and food to these user groups as well as substantial economic benefits, particularly in rural communities. Goose grazing of vegetation, up to certain levels, can actually increase nutrient cycling and promote higher primary productivity of foraging areas. Furthermore, the presence of large numbers of geese at nesting colonies provides important foods

for some predator species, such as arctic fox, jaegers and grizzly and polar bears, and can have positive effects on other sympatric species. Conversely, large concentrations of light geese can have negative effects on their foraging habitats when they exceed the ability of those habitats to sustain them, and this can have cascading negative effects on the abundance and biodiversity of plants and wildlife through disruption of the food chain and ecosystem.



Greater Snow Geese on Ellesmere Island, Northwest Territories.

Josée Lefebvre

In the 1970s, researchers began documenting rapidly increasing light goose populations and there was concern about their impacts on critical habitats in central and eastern North America, particularly on northern staging areas. In response, unprecedented federal regulations (special measures/conservation order regulations) were implemented, beginning in 1999, to increase the take of light geese through hunter harvest. To date, conservation order regulations in the United States have been implemented in the states of the Atlantic, Mississippi and Central Flyways. In Canada, special regulations have been implemented in all provinces from Alberta eastward to Quebec, and in Nunavut, Yukon and Northwest Territories.

Currently, Greater Snow Goose abundance has stabilized but is still above the management goal for this species. Midcontinent Lesser Snow and Ross's Geese remain substantially above their management goal; however, their growth rates have decreased, and populations have declined in recent years. Abundance of Wrangel Island and western Arctic populations of Lesser Snow Geese are increasing, rapidly in some areas.

Over the past three decades, the AGJV has played an instrumental role in the management of overabundant populations of light geese (i.e., Snow and Ross's Geese) by supporting and coordinating research, preparing technical documents and developing communication materials. Our knowledge about light goose population dynamics, the effects of hunter harvest and the impacts of light geese on habitats and other species has increased substantially during this time.

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

Arctic Goose Joint Venture Expenditures (CAD)

	2019-2020	Total (1986-2020)
Banding	1,203,639	18,547,745
Research	671,061	23,538,353
Surveys	287,622	11,473,821
Collar Observations		1,324,185
Management		272,992
Conservation Planning	56,925	755,168
Communication and Education		51,882
Total	\$2,219,247	\$55,964,146

2019-2020 consists of the April 1, 2019 to March 31, 2020 time frame.

1986-2020 consists of the January 1, 1986 to March 31, 2020 time frame.



Ross's Geese.

J. White



Canada Goose pair.

Jaden Barney

Thank you to all our partners who contributed financially in 2019–2020:

Canadian Agencies

Acadia University
 Agriculture and Agri-Food Canada
 Alberta Conservation Association
 Alberta Ecotrust Foundation
 Alberta Environment and Parks
 Alberta Sport, Recreation, Parks & Wildlife Foundation
 Alberta-Pacific Forest Industries Inc.
 ArcticNet Inc.
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 British Columbia Ministry of Environment and Climate Change Strategy
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 Canadian Parks and Wilderness Society
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 Nature Trust of New Brunswick
 New Brunswick Department of Natural Resources and Energy Development
 New Brunswick Department of Transportation and Infrastructure
 New Brunswick Environmental Trust Fund
 New Brunswick Wildlife Trust Fund



Greater Yellowlegs.

Jaden Barney

Mallard brood.

Shea Wyatt



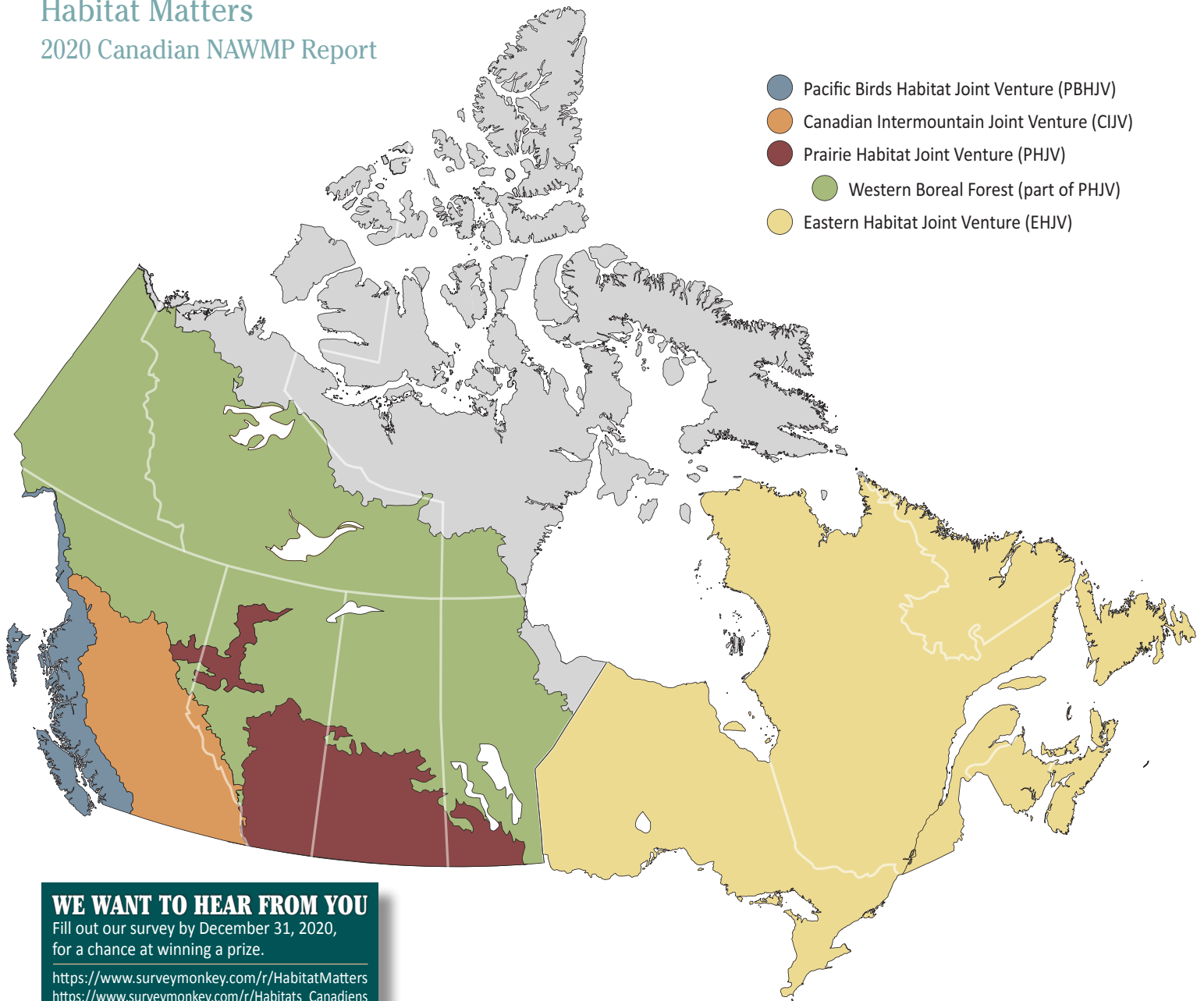
Newfoundland-Labrador Department of Fisheries and Land Resources
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Nova Scotia Crown Share Land Legacy Trust
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Prince Edward Island Wildlife Conservation Fund
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The Harold Crabtree Foundation
The Nature Trust of British Columbia
Université Laval
Université Laval – Sentinelle Nord
University of Alberta
Vermilion Energy Trust
Wildlife Habitat Canada
Yukon Department of Energy, Mines and Resources

U.S. Agencies

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Alaska Department of Fish and Game
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Arizona Game & Fish Department
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Illinois Department of Natural Resources
Kansas Department of Wildlife, Parks & Tourism
Kentucky Department of Fish & Wildlife Resources
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Louisiana Pacific Corporation
Maine Department of Inland Fisheries & Wildlife
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
Montana Fish, Wildlife & Parks
Nebraska Games & Parks Commission
Nevada Department of Wildlife
New Hampshire Fish & Game
New Jersey Division of Fish & Wildlife
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North Carolina Wildlife Resources Commission
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Tennessee Wildlife Resources Agency
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U.S. Fish & Wildlife Service
U.S. Geological Survey – Alaska Science Center
U.S. Geological Survey – Biological Resources Division
University of Alaska
Vermont Agency of Natural Resources
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Habitat Matters

2020 Canadian NAWMP Report



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Contacts

For information on NAWMP 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
819-420-7846
ec.pnags-nawmp.ec@canada.ca

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