Alberta NAWMP Partnership

North American Waterfowl Management Plan

ALBERTA NAWMP PARTNERSHIP

2020-2021 PROGRESS REVIEW

APRIL 2020 TO MARCH 2021

DUC

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CONTENTS

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PREFACE: A PASSION FOR CONSERVATION ROOTED IN SCIENCE

Science nourishes and strengthens the work of the Alberta NAWMP Partnership, which implements the North American Waterfowl Management Plan (NAWMP) in this province.

Research, monitoring and mapping are central to what we do to conserve wetland and upland habitat for sustaining waterfowl and other bird populations. We conduct monitoring to see what is being done well and what could be improved, we develop better tools for mapping, monitoring and evaluation, and we conduct research to uncover new information and continually move our efforts forward.

This Progress Review offers many great examples from 2020-21 of our Partnership's science-based approach.

In ***Advancing Alberta's Wetland Policy Goals***, we look at two Alberta NAWMP-funded projects on technical tools related to the Wetland Policy. This policy plays a crucial role in conserving wetlands and their functions such as wildlife habitat, flood and drought management, water quality improvement, and biodiversity. For instance, one of our projects identified improvements to an existing provincially based wetland assessment system as part of the requirements for mitigating wetland losses under the policy.

Piloting an Improved Wetland Mapping Process highlights a project to test a much faster, more cost-effective method to prepare wetland inventories, which was developed by our Partner Ducks Unlimited Canada (DUC). With help from Alberta NAWMP funding, DUC piloted this method on the Pakowki NAWMP Priority Landscape, a habitat haven for breeding waterfowl and other wildlife. The resulting inventory will inform conservation programming in the region. Plus, the new mapping method will speed up completion of the baseline wetland inventory for the whole province, and enable regular updating of that inventory, important for monitoring the Wetland Policy's effectiveness.

The Partnership also helped support a DUC-led study to increase understanding of the remarkable array of ecosystem services generated by well-managed grazing landscapes. In ***Grazing Cattle, Stored Carbon and Wetlands Go Hand in Hand***, we learn about this study, including its use of some advanced technologies to more accurately measure greenhouse gas fluxes of wetlands within grazing landscapes. Communicating the study's results could bolster consumer confidence in the environmental sustainability of the Canadian beef industry. And that could help toward greater public and private support for conserving grazing landscapes and their wetlands.

The potential to increase consumer and public support for conservation through this DUC-led study is a reminder that wetland and upland conservation is as much about people as it is about science. This Progress Review also showcases two excellent examples of our collaborative efforts to encourage landowners to help achieve our conservation goals.


DUC

"RESEARCH, MONITORING AND MAPPING ARE CENTRAL TO WHAT WE DO..."

Incentivizing Grassland Retention describes one example: the ongoing work to develop carbon market-based incentives for Canadian landowners to keep their grasslands intact – despite financial pressures to convert these lands to cropland. Retaining grasslands means retention of grassland ecosystem services such as storing carbon, maintaining habitat, and protecting watershed health. In 2020-21, Alberta NAWMP supported development of some of the technical tools needed to implement these incentives.

We learn about the other example in ***Stewarding Trumpeter Swans and Their Wetlands***. Trumpeter swan conservation is an important concern in southwestern Alberta's Waterton Biosphere Reserve (WBR). With Alberta NAWMP funding, the WBR launched a community outreach and engagement initiative. This initiative is building awareness of the reserve's valuable role in the lives of trumpeter swans and encouraging local landowners and others in reporting swan sightings and in stewarding swan wetlands. These stewardship practices will help ensure healthy wetlands across the reserve for trumpeters and a multitude of other wildlife species.

On behalf of Alberta NAWMP, I thank the diverse agencies and individuals who share our passion for wetland and upland habitat conservation and helped make this past year a success.

I am pleased to present the Alberta NAWMP Partnership 2020-2021 Progress Review.

Travis Ripley

Chair, Board of Directors
Alberta NAWMP Partnership

NAWMP IN ALBERTA

The North American Waterfowl Management Plan (NAWMP) is a landmark partnership between Canada, the United States and Mexico for habitat conservation to sustain continental waterfowl populations.

Created in 1986, NAWMP defines and prioritizes geographic regions across the continent based on their biological values for waterfowl and other wetland-associated birds. Its initiatives address regional and continental priorities, using a collaborative approach at local, regional, national and international levels.

NAWMP achieves its goals through voluntary regional partnerships that implement local actions. The Prairie Habitat Joint Venture (PHJV) is the regional NAWMP partnership with responsibility for prairie, parkland and boreal landscapes in western Canada. Combined, these landscapes are the most important waterfowl breeding areas in North America. They contain some of the most productive waterfowl areas in the world. Conserving these landscapes is vital to the maintenance and recovery of mid-continent waterfowl populations.

Since its inception in 1986, the PHJV has developed a series of science-based Habitat Implementation Plans to guide its activities. The 2013-2020 plan continued the PHJV's long-term focus on conserving waterfowl populations and their key habitats, plus it added a heightened emphasis on engagement with hunters, other conservationists and the general public. The plan also formally added the Western Boreal Forest Region to the PHJV's longstanding focus on the Prairie and Parkland regions. And it increased the PHJV's attention on other types of birds, while maintaining its enduring commitment to waterfowl conservation.

In 2020-21, the PHJV worked with its provincial NAWMP partnerships in Alberta, Saskatchewan and Manitoba to develop the next implementation plan. The 2021-25 implementation plan for the Prairie, Parkland and Western Boreal is expected to be released by the end of 2021-22.

The Alberta component of the PHJV's implementation plan provides the springboard for the Alberta NAWMP Partnership's activities. The Partnership is composed of three government and two non-government organizations. It is directed by a Board of Directors and a Management Committee, which are advised by Policy and Communications committees. The board and committee members are mainly drawn from the five Partner agencies.

Alberta NAWMP coordinates joint projects, communications, planning and policy support, and facilitates funding options among the Partners. It supports Partner activities through technical and logistical assistance and by advancing innovative ideas through facilitation, funding support and capacity building.

ALBERTA NAWMP (PHJV)

VISION

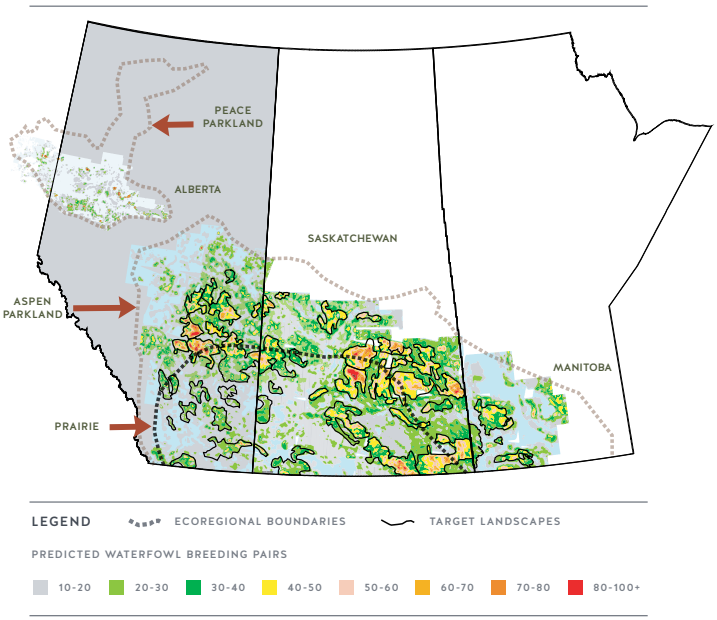
HEALTHY PRAIRIE, PARKLAND AND BOREAL LANDSCAPES THAT SUPPORT SUSTAINABLE BIRD POPULATIONS AND PROVIDE ECOLOGICAL AND ECONOMIC BENEFITS TO SOCIETY.

ALBERTA NAWMP (PHJV)

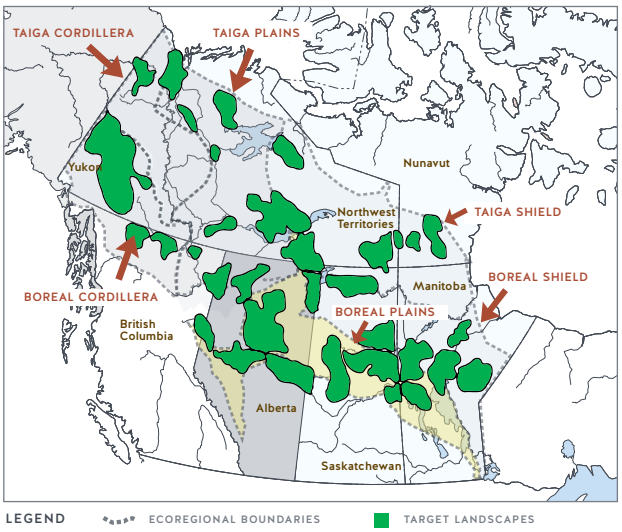
MISSION

PROVIDE LEADERSHIP TO ACHIEVE HEALTHY AND DIVERSE WATERFOWL AND OTHER BIRD POPULATIONS THROUGH CONSERVATION PARTNERSHIPS. THESE PARTNERSHIPS STRIVE FOR SUSTAINABLE AND RESPONSIBLE MANAGEMENT OF THE LANDSCAPE TAKING INTO ACCOUNT SOCIAL, ECONOMIC AND ENVIRONMENTAL FACTORS.

PRAIRIE/PARKLAND TARGET LANDSCAPES



WESTERN BOREAL FOREST TARGET LANDSCAPES



WHO IS ALBERTA NAWMP?

The Alberta NAWMP Partnership's successes in wetland and waterfowl conservation spring from the synergy of working together. The Partnership is composed of one federal and two provincial government departments and two non-government organizations that all have a responsibility for Alberta's wetlands as part of their mandates.

The five Partners continually seek opportunities to work with each other and with regional and municipal organizations and other stakeholders. These collaborative networks enhance existing wetland and upland stewardship efforts, launch innovative initiatives that otherwise might not happen, and build interest in and capacity for wetland and upland conservation.

Together, the Partners and their collaborators are making exciting progress on shared conservation goals.

HOW WETLAND LANDSCAPES RELATE TO EACH PARTNER AGENCY'S ROLES, OBJECTIVES AND RESPONSIBILITIES:

GOVERNMENT

Alberta Environment and Parks (AEP) is the lead provincial agency responsible for the stewardship of Alberta's air, land, water and biodiversity. AEP administers the Alberta Wetland Policy, the objective of which is to conserve, restore, protect and manage Alberta's wetlands to sustain the benefits they provide to the environment, society and economy.

The **Alberta Ministry of Agriculture and Forestry** includes the Department of Agriculture and Forestry and a number of agencies, boards and commissions. Among the ministry's core business activities are: providing the framework and services necessary for the protection, conservation and sustainable management of forests; and enabling environmentally responsible and economically competitive forestry, agriculture and agri-food industries in Alberta and its global marketplaces.

Environment and Climate Change Canada strives to preserve and enhance the quality of the natural environment, including water, air, soil, flora and fauna, conserve Canada's renewable resources, conserve and protect Canada's water resources, and coordinate environmental policies and programs for the federal government.

PRIVATE, NON-PROFIT

Ducks Unlimited Canada (DUC) is a registered charity that has over 80 years of experience in wetland conservation and restoration. DUC partners with government, landowners, industry, Indigenous peoples and non-profit organizations to conserve wetlands for the benefit of society, waterfowl, other wildlife and the environment.

Nature Conservancy of Canada, in partnership with corporations, governments, individual donors and landowners, works to achieve the direct protection of Canada's most important wild spaces through property securement and long-term stewardship of these properties. This work maintains critical lands and waters for wildlife and ensures clean air and water for our future generations.

ALBERTA NAWMP PARTNERSHIP COMMITTEES, 2020-21

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Greg Hale, Alberta NAWMP Partnership

"A ROBUST AND EFFECTIVELY IMPLEMENTED WETLAND POLICY VERY MUCH ALIGNS WITH AND ADVANCES ALBERTA NAWMP'S GOALS."

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ADVANCING ALBERTA'S WETLAND POLICY GOALS

Part of the value of the Alberta NAWMP Partnership is collaborating on projects that provide mutually beneficial outcomes. One key area for collaboration is support for the implementation of Alberta's Wetland Policy, which aims to minimize wetland loss and degradation across the province while allowing economic development.

"A robust and effectively implemented Wetland Policy very much aligns with and advances Alberta NAWMP's goals," emphasizes Tracy Scott, Chair of Alberta NAWMP's Policy Committee. "If the policy succeeds, Alberta NAWMP succeeds."

This past year, Scott guided several Wetland Policy-related projects jointly with Matthew Wilson, who was a Policy Committee member and the Wetlands Team Lead with Alberta Environment and Parks (AEP) at the time. Two of these projects have been completed so far.

One project focused on refining the Alberta Wetland Replacement Evaluation Tool – Actual (ABWRET-A). This tool uses field data and GIS data to evaluate a wetland's capacity to perform functions related to hydrology, water quality, ecology, and human use. The evaluation generates an overall value rating for the wetland, relative to other wetlands in the same region.

"That value informs decisions under the policy about the effort that a proponent [of a development project] has to put into avoiding impacts to a wetland and the amount of money the proponent needs to pay for mitigation if they get approval to impact that wetland," explained Wilson.

Since the tool's launch in 2015, the Partnership has worked with AEP on some of the technical pieces to help ensure the tool is upgraded as needed. The 2020-21 project developed recommendations for clear, scientifically based metrics and datasets that can be used in a more robust GIS-based processing method for quantifying each metric. AEP is now considering those recommendations in its efforts to keep ABWRET-A up to date.

The second project explored what the term 'wetland enhancement' might mean as one of the options under the policy for replacing losses in wetland value and area. "The policy has a suite of restorative replacement options. The two currently in use are: restoring a previously drained wetland, and constructing a new wetland," explains Scott, who is with Ducks Unlimited Canada.

"But the policy also makes a provision for another option, wetland enhancement, which would involve improving the function of an existing wetland, without increasing the wetland's area. However, the policy does not define what would be included in enhancement or how it would be valued."

Therefore, the project scanned how other jurisdictions are defining wetland enhancement, identified common types of enhancement activities, and made recommendations on how enhancement might be implemented in Alberta. The resulting report offers some initial input into AEP's deliberations on enhancement.

As well, Alberta NAWMP has started development of outreach and educational tools to help various sectors, including the agricultural sector, get a better understanding of the policy, how it applies to their own situation, and the benefits that wetlands provide to them.

"While the Wetland Policy was introduced in 2013, we need to continue with tool upgrades, outreach and education around the policy, including the benefits of conserving and restoring wetlands. It is important that we work with partners like Alberta NAWMP to assist us with sharing that message," says Amanda Cooper, who is now AEP's Wetlands Team Lead. "When more individuals understand the objectives of the policy and the benefits wetlands can have to their private lands, within their community and to the economy, it ensures that we can sustain Alberta's wetlands."

INCENTIVIZING GRASSLAND RETENTION

A collaborative effort continued in 2020-21 to bring about a new carbon opportunity for Canadian grassland landowners. The idea is to financially reward these landowners for keeping their grasslands.

To realize this carbon opportunity, Viresco Solutions and the Canadian Forage and Grassland Association (CFGA) are leading the development and implementation of the 'Avoided Conversion of Grassland to Cropland' carbon offset protocol. An offset protocol sets out the procedures to measure, monitor, report and verify the reduction in greenhouse gas emissions associated with a specific practice. Such protocols ensure the integrity of offsets sold in carbon markets.

Grassland conversion to cropland releases carbon stored in the soil to the atmosphere. It also reduces the landscape's ability to perform other functions such as protecting watershed health, maintaining biodiversity, and providing habitat for waterfowl and other wildlife.

"Grasslands continue to disappear because converting grassland to annual crop production can make economic sense for a landowner, especially now with record grain prices. Incentivizing grassland retention through carbon offsets helps the environment and the landowner," says Tracy Scott with Ducks Unlimited Canada (DUC), who is Chair of Alberta NAWMP's Policy Committee.

The CFGA/Viresco grassland protocol was approved in 2019 for the Climate Action Reserve (CAR) voluntary carbon market. Now, led by CFGA and Viresco, a diverse group of organizations are conducting a pilot test to operationalize and finetune the protocol for use in a Canadian compliance carbon market, like Alberta's market, where companies can meet regulated emission reduction requirements by purchasing carbon credits to offset their emissions.

Viresco's Jonathon Alcock explains that compliance markets tend to have potentially higher prices for carbon, which would help put more dollars into landowners' pockets.

The pilot team includes Shell Canada, CAR, DUC, Nature Conservancy of Canada (NCC), Agriculture and Agri-Food Canada, Legacy Land Trust Society, Southern Alberta Land Trust Society, Regrow, Saskatchewan Stockgrowers Association, Radicle Balance, and Brightspot Climate. This group encompasses representatives of the many key players needed when conducting grassland offset projects, such as landowners, land trusts, project developers, verifiers, technical service providers, and offset buyers. Observers of the pilot include compliance market regulators, such as Alberta Environment and Parks (AEP) and Environment and Climate Change Canada, which are both Alberta NAWMP Partners.

The two-year pilot, launched in 2020-21, is showing how these projects can work on the ground, getting feedback from all the participants, and sharing the findings with all the players. Alcock notes, "We have about 7,000 eligible acres enlisted in the pilot's first project, plus many more landowners waiting for next year's project."

Alberta NAWMP Partners DUC and NCC are involved in the pilot as land trusts. Scott explains, "A primary consideration for a piece of grassland to be eligible for compliance-grade offsets is that you can demonstrate that the land will remain as grassland. To do that you need a very strong protective mechanism. The only tool identified by the pilot team as available for this use today is a conservation easement – a legal agreement, registered on the land title, between the landowner and a land trust to preserve the property's conservation attributes."

DUC already uses such easements to protect waterfowl habitat. "From DUC's perspective, carbon offsets are a way for our landowner partners to receive some additional value for having a conservation easement on their land," says Scott.

Alberta NAWMP has been funding some of the technical work for the protocol, including a 2020-21 project. As part of this project, CAR and Viresco have developed and tested GrassTool, a tool for landowners and others to calculate the expected offsets from a grassland project. The funding also helped Viresco develop the technical document required by AEP for protocols in Alberta's market. This document details how the protocol works and the science behind it. Although the document targets AEP's requirements, the information could likely also be used for other compliance markets.

Alcock concludes, "This protocol represents the first-ever carbon-specific incentive for Canadian grassland landowners. We're excited about the rural investment it could bring, as well as the environmental benefits."

DUC

"THIS PROTOCOL REPRESENTS THE FIRST-EVER CARBON-SPECIFIC INCENTIVE FOR CANADIAN GRASSLAND LANDOWNERS."

PILOTING AN IMPROVED WETLAND MAPPING PROCESS

An inventory of all the wetlands across a landscape is a vital tool for conserving and protecting wetland resources. In Alberta, Ducks Unlimited Canada (DUC) has been conducting high-resolution **wetland mapping of NAWMP priority landscapes** since 2004. Now, DUC has successfully piloted a much faster, more cost-effective way to create these inventories.

The new mapping methodology can accelerate progress toward completing wetland inventories for NAWMP priority landscapes in Alberta – and across the Canadian Prairies.

"A wetland inventory can help industry, governments and conservation groups to develop land-use policies, protocols and programs. It can also provide a foundation for ongoing wetland monitoring to assess the impacts of those policies, protocols and programs. It can be used to identify changes in wetland abundance and classification, and to target wetland research and conservation activities," says Lyle Boychuk, Manager of GIS and Inventory Programs for DUC's Prairie Region.

For decades, DUC has been using hands-on, painstaking photogrammetric methods to map wetlands using aerial photography. More recently, DUC started an initiative to partially automate the mapping process. This initiative was spurred on by technological advances, such as improved imagery sources and analysis methods, and by new Alberta standards for wetland inventories.

"[To begin developing a more automated process], DUC teamed up with the University of Lethbridge to test many image sources and mapping methodologies," notes Boychuk, who is leading the initiative. "We came up with a few promising candidates that worked very well in central Alberta's Camrose Creek watershed as a test landscape."

In 2020-21, DUC then piloted the best candidate on a 6,000-square kilometre area of southern Alberta centred on the Pakowki NAWMP Priority Landscape. This beautiful grassland landscape is dotted with wetlands, providing significant habitat for breeding waterfowl and other wildlife.

The Pakowki pilot was an opportunity to confirm that the new methodology also works in a prairie setting, as well as a parkland setting like the Camrose Creek watershed. More importantly, the pilot enabled Boychuk's team to operationalize the methodology.

"The Pakowki landscape is about 10 or 12 times larger than the Camrose Creek watershed. It is about the size of a project area that we would tackle with traditional photogrammetric methods. So, the pilot allowed us to evaluate the new methodology in a production setting with defined outputs and accuracy requirements, establish inventory workflows, develop programming for automating the workflow, and assess the costs and efficiencies."

According to Boychuk, the results from the pilot are impressive. "We successfully defined and classified wetlands to the Alberta standard and the Canadian Wetland Inventory national standard with this new methodology, creating a baseline map for the Pakowki landscape. The high-resolution wetland data for this landscape are critical to successful implementation of conservation programming in the region," he says.

"Furthermore, the methodology dramatically improves project turnaround time and dramatically drops the staff time required. We have a handful of priority landscapes in Alberta that haven't yet been mapped in high resolution; now we can map those much faster and more efficiently."

The progress made through the pilot also means the methodology is ready to be applied across the entire Prairie Pothole Region.

Boychuk identifies a couple of key players in the project's success: "Alberta NAWMP's funding support really was the tipping point for us to do the Pakowki project. Also, the Alberta Biodiversity Monitoring Institute (ABMI), our partner, developed the final hydroperiod layer of the inventory, a very significant variable in [wetland mapping in the Prairie Pothole Region]."

Along with mapping priority landscapes, the new methodology can help toward completing the baseline wetland inventory for the whole province, and updating that inventory every few years. Those two tasks are crucial for meeting objectives such as monitoring the effectiveness of the Alberta Wetland Policy.

"Achieving those tasks efficiently will require rapid mapping of very large regions," notes Boychuk. "I am confident that DUC and the ABMI will figure out how to scale this process to much larger areas."

STEWARDING TRUMPETER SWANS AND THEIR WETLANDS

"In many places, trumpeter swans are a conservation success story. Populations have rebounded from historic lows in the early 1900s to sustainable and increasing populations in many places in North America. However, the population here in southwestern Alberta is not increasing in the same way," explains Elizabeth Anderson, Conservation Biologist with the Waterton Biosphere Reserve Association (WBRA).

The WBRA is the convenor organization for the Waterton Biosphere Reserve (WBR), which is part of a world network of such reserves. One of the functions of these reserves is to conserve biodiversity.

The association sees trumpeter swan conservation as an important concern in the WBR. The biosphere has the only breeding population of trumpeters in southern Alberta, a population that is separate from the ones in Montana and northern Alberta. Plus, this unique population may be at risk.

Anderson says, "At best, our trumpeter breeding population appears to be just holding steady. On average, it produced only 2.3 successful broods per year between 1990 and 2015. With so few successful broods, the swans are very vulnerable to impacts from chance events."

In addition to this local population, WBR wetlands are important stopovers for migrating trumpeters on their way further north, although these stopover habitats have not been well documented.

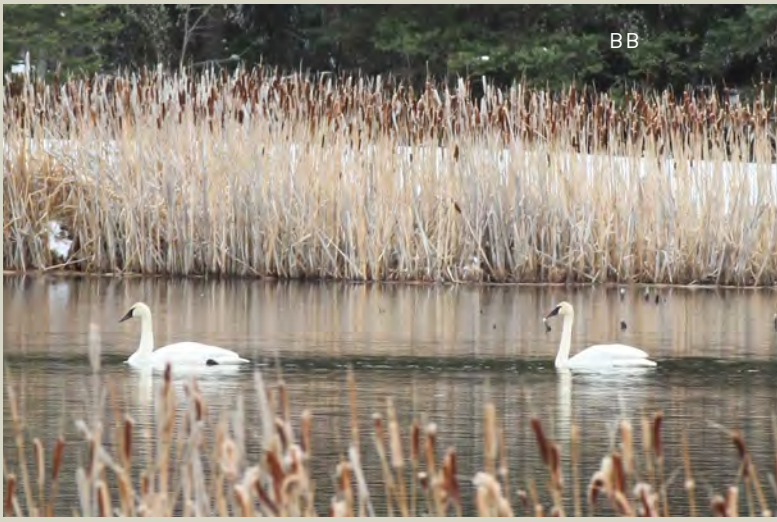
Therefore, the WBRA initiated its Stewarding Trumpeter Swans Through the Seasons project in 2021. The goal is to ensure that trumpeter use of wetlands is sustained in the WBR with the help of the local community. The project's outreach and education campaign is key.

"We really focus on building relationships with landowners because they are the decision-makers whose practices can affect the wetlands used by trumpeter swans and other wildlife, and the habitat on the land base in general," notes Anderson, who is the project lead.

"SUCH [STEWARDSHIP] ACTIONS MAKE VERY OBVIOUS AND TANGIBLE DIFFERENCES TO THE SWANS USING THOSE WETLANDS."

The outreach initiative aims to enhance awareness of the WBR's vital role in the lives of trumpeter swans, and to encourage landowners and others in reporting swan sightings and in stewarding swan wetlands.

"Although the WBRA makes use of swan sightings reported to such sources as eBird, that is not the same as asking people who are on the land 24/7 where they see swans. We also hope that by building awareness and soliciting local knowledge, we can find landowners willing to work toward adoption of stewardship practices that enhance swan habitat and/or ensure continued use of wetlands by the swans."



Examples of these practices include: removing flight hazards like a fenceline that goes through or next to a wetland; protecting water quality by limiting cattle access to specific sites or perhaps moving to an off-site watering system; or ensuring that a wetland with breeding swans isn't disturbed during the breeding season. "Such actions make very obvious and tangible differences to the swans using those wetlands."

Other stewardship practices help to ensure healthy wetlands across the WBR. That way, both locally breeding and migrating trumpeters can refuel so they will be ready to breed. As well, healthy wetlands provide habitat for a multitude of other species.

Trumpeter swans make an eye-catching outreach vehicle. "Landowner detection of swan use of a wetland is far more likely than a less conspicuous species like the northern leopard frog or a nocturnal species like the little brown bat, both of which are within our species at risk portfolio," explains Anderson. "The swans are also really charismatic, and swan use on a wetland is rarely a concern for people, compared to a species like the grizzly bear."

The outreach efforts include products like a **webpage**, postcards and a social media presence, as well as workshops, youth activities and other events. "We're thrilled with the level of engagement the campaign is generating," she says. "By the end of the workshop we held in late August, participants were raving about this interactive opportunity to learn about swans and swan habitat. And our mailout of a really attractive postcard has sparked a lot of interest in our swan population."

The Alberta NAWMP Partnership supported the development and launch of the outreach initiative. Other project funders include Shell Canada-Foothills Legacy Fund and Wildlife Habitat Canada.


FLUX TOWERS

PB

"COMMUNICATING OUR RESEARCH RESULTS TO CONSUMERS COULD BOLSTER CONFIDENCE IN THE ENVIRONMENTAL SUSTAINABILITY OF THE CANADIAN BEEF INDUSTRY."

GRAZING CATTLE, STORED CARBON AND WETLANDS GO HAND IN HAND

In sustainable grazing systems, good management by beef producers ensures that perennial plants provide a protective blanket over the landscape. This plant cover supplies forage for livestock, stores carbon in the soil, provides wildlife habitat, maintains biodiversity, and protects watershed health.

An added bonus to this impressive set of natural benefits – or 'ecosystem services' – is that grazing landscapes favour wetland conservation. Furthermore, wetlands in grazing landscapes actually amp up the ecosystem services generated by these landscapes.

But amp up by how much? A research project is working to fill that information gap.

"By filling this important information gap, we hope to increase understanding of the ecosystem services that sustainable grazing landscapes provide to society as a whole," explains Dr. Pascal Badiou, a Research Scientist with Ducks Unlimited Canada (DUC) who is leading the project.

"Communicating our research results to consumers could bolster confidence in the environmental sustainability of the Canadian beef industry. And that could help toward ensuring that the remarkable array of ecosystem services provided by grazing landscapes and their wetlands are conserved for the long term."

Badiou notes that a tremendous number of Prairie wetlands have been drained over the past century, mainly to try to increase annual crop production. "Where a lot of wetlands remain intact seems to overlay with intact pasture, grassland and forest landscapes. That makes sense because you need access to water for livestock production."

The project is taking place in three agricultural watersheds in the Prairie Parkland Region: Camrose Creek in Alberta, Smith Creek in Saskatchewan, and Broughton's Creek in Manitoba. The project team includes researchers with diverse expertise from many agencies including DUC, Agriculture and Agri-Food Canada, University of Manitoba, University of British Columbia, University of Lethbridge, and Environment and Climate Change Canada.

"The project's primary focus is on the carbon storage and greenhouse gas emissions of wetlands within grazing landscapes," he notes. "We have traditionally seen higher greenhouse gas emissions from wetlands embedded in cropland versus wetlands in grassland, but that has not been systematically studied until this project."

In each watershed, the team is measuring the greenhouse gas emissions from 16 wetlands, eight within cropland and eight within grassland and/or pastureland.

In addition, the team has installed advanced monitoring technologies called flux towers in the middle of two wetlands – one in cropland and the other in grazing land – in the Broughton's Creek watershed.

"We are deploying flux towers for the first time in these types of smaller, fresh water, mineral soil wetlands, to look at whole-ecosystem greenhouse gas fluxes," he says. "That is really exciting because there is still a huge amount of uncertainty around the amount of methane [an important greenhouse gas] that is produced from these wetlands."

The team is also assessing water quality, water quantity and biodiversity benefits from wetlands in grazing versus cropping landscapes.

"The beef industry is facing increased scrutiny in terms of the carbon footprint of beef consumption, with some people advising consumers to switch from beef to chicken or vegetarian options as a way to reduce greenhouse gas emissions associated with food production. The flip side of that is the need to help society understand the key role of beef producers in sustainably managing Canada's grassland, pastureland and rangeland landscapes," says Badiou.

"Sharing our research results could help consumers become aware of the environmental value of sustainable management of pasture and rangeland landscapes and the incredible importance of such landscapes to society. Our results could also be used in developing incentive programs or environmental markets, such as carbon markets, to encourage protection of grasslands and their wetlands."

Funding from Alberta NAWMP's Science Fund was instrumental in getting this project started and leveraging support from other agencies. Other funders include the Beef Cattle Research Council, Ag Action Manitoba, the Manitoba Conservation and Climate Fund, Agriculture and Agri-Food Canada, and the Natural Sciences and Engineering Research Council of Canada.

COMMITTEE REPORTS, 2020-21

BOARD OF DIRECTORS

Members are director-level executives from each Alberta NAWMP Partner agency. They are responsible for: defining Alberta NAWMP's vision, mission, goals, and strategies; directing medium-term implementation plans; approving annual work plans and budgets; and ensuring accountability for work plans and budgets. They also facilitate information exchange and engagement opportunities between their own agency and Alberta NAWMP.

The Board of Directors held quarterly meetings (web-based) throughout the fiscal year 2020-21 (FY21), providing guidance to the Management Committee and the Policy and Communications subcommittees. The FY21 Work Plan and Budgeting was successfully implemented, and the final report completed. In addition, the Board developed FY22 Work Plan projections. Board members actively participated in and engaged with the Prairie Habitat Joint Venture (PHJV) Advisory Board and several subcommittees. The Board provided support to various grant funding initiatives through the Partnership and the PHJV, and continued to support development of the new PHJV Implementation Plan (IP).

MANAGEMENT COMMITTEE

Members are senior managers from each Partner agency who facilitate integration of operational opportunities between their own agency and Alberta NAWMP. This Committee shares responsibility with the Alberta NAWMP Coordinator for project-based decision-making and expenditures established in annual work plans and medium-term implementation plans.

The Management Committee moved to monthly meetings (web-based) including additional topic-specific meetings. It also met jointly with the Board in March 2021. The Committee approved funding to support three research-based projects. However, due to field season constraints, only two were implemented: one on the value of wetlands in livestock grazing landscapes, and the other on the perspectives of waterfowl hunters. The Committee continued discussions on the role of human dimensions within the Partnership and participation on the PHJV Policy and Human Dimensions Committees. It also provided support to the Policy and Communications subcommittees. In addition, as part of the PHJV IP planning and development, the Committee examined the concepts of 'all birds conservation' and modeling, and identified collaborative opportunities, particularly for grassland conservation. The FY21 Workplan and Budget was successfully implemented.

COMMUNICATIONS COMMITTEE

The Communications Committee leads information sharing, event hosting and promotion among the Partner agencies and beyond. Members are typically communication experts from each Partner agency.

The Communications Committee shifted to monthly meetings (web-based). A provincial scan of existing wetland conservation education and outreach initiatives and organizations was completed, as part of the ongoing Wetland Education Network review. Alberta NAWMP's Annual Forum was deferred. The Committee hosted a series of webinars on such topics as the role of long-term wetland monitoring initiatives in measuring the success of the provincially based wetland policy work and the PHJV. The Committee continued implementation of the Partnership's Communication Strategy including revisions to abnawmp.ca, launch of an e-newsletter, creation of a Science Page on the website and profiles of Alberta NAWMP-funded research projects. Other activities included support to World Wetland Day celebrations and to a landowner engagement project for trumpeter swans. The Annual Progress Review for 2019-20 was completed.

POLICY COMMITTEE

The Policy Committee members monitor relevant policy, planning and program developments in their agencies and advise on opportunities for Alberta NAWMP support. Members are usually senior policy specialists within the Partner agencies.

The Policy Committee met monthly (web-based), including specific project meetings by working group members. Key projects included: a wetland inventory pilot project in southeastern Alberta; review and refinement of provincial wetland policy tools and concepts; wetland enhancement; and continued support to a carbon credit pilot project to avoid conversion of grasslands to other land uses. In addition, members provided support to several key documents including: imagery for a provincial wetland classification document; the initial development of a guide to Alberta's Wetland Policy for landowners; and an initial review of the legislation, regulations and policy pertaining to grasslands in Alberta. The Committee identified some emerging issues such as: understanding the value of working landscapes; the increased risk of conversion of native grasslands to other land uses; and continued wetland loss. Support to the Communications Committee was provided for webinars on wetland monitoring initiatives in measuring the success of policy-based conservation efforts.

CONTRIBUTIONS TO NAWMP IN ALBERTA, 2020-21 AND 1986-2021

AGENCY TYPE	AGENCY	2020 - 2021 TOTAL	1986 - 2021[a] CUM. TOTAL
CANADIAN CORPORATIONS		$236,837	$24,323,580
CANADIAN EDUCATION INSTITUTIONS		$4,255	$474,961
CANADIAN FEDERAL GOVERNMENT	Agriculture and Agri-Food Canada		$38,532,523
	Canadian federal - unspecified		$484
	Environment and Climate Change Canada - Canada Nature Fund	$1,405,440	$2,804,457
	Environment and Climate Change Canada - Canadian Wildlife Service	$1,147,260	$42,309,769
	Environment and Climate Change Canada - EcoAction		$85,571
	Environment and Climate Change Canada - Habitat Stewardship Program		$3,655,828
	Environment and Climate Change Canada - Natural Areas Conservation Program		$28,599,754
	Environment and Climate Change Canada - Natural Heritage Conservation Program*	$18,692	$18,692
	Fisheries and Oceans Canada		$3,940
	Human Resources and Skills Development Canada		$18,761
	Millennium Bureau of Canada		$1,120,100
	Natural Sciences and Engineering Research Council of Canada		$194,736
	Parks Canada		$54,660
	Public Works and Government Services Canada		$500
		$2,571,392	$117,399,775
CANADIAN NOT FOR PROFIT	Agriculture and Food Council of Alberta		$275,000
	Alberta Beef Producers		$ 954,531
	Alberta Conservation Association		$ 4,333,339
	Alberta Conservation Tillage Society		$125
	Alberta Ecotrust Foundation		$22,542
	Alberta Environmental Farm Plan Company		$240
	Alberta Fish and Game Association		$1,506,348
	Alberta Native Plant Council		$600
	Alberta Research Council		$5,000
	Alberta Sport, Recreation, Parks & Wildlife Foundation	$3,460,234	$4,751,914
	Antelope Creek Habitat Development		$5,000
	Canada Trust Friends of the Environment Foundation		$5,500
	Canadian Circumpolar Institute		$3,500
	Canadian Nature Federation		$1,800
	Canadian non-government organizations - unspecified		$180,264
	Climate Change Central		$5,000
	Cropmasters		$46,300
	Ducks Unlimited Canada	$446	$3,375,672
	Eastern Irrigation District		$75,085
	Edmonton Community Foundation		$28,602
	Edmonton Springer Spaniel Club		$200
	George Cedric Metcalf Foundation		$50,000
	Imperial Oil Charitable Foundation		$5,818
	Institute for Wetland and Waterfowl Research		$5,500
	Izaak Walton Killam Memorial Scholarship		$2,000
	James L. Baillie Memorial Fund		$2,000
	Lakeland Industry & Community Association		$14,051
	Land Stewardship Centre of Canada		$18,000
	Nature Alberta		$15,000
	Nature Canada		$1,128,000
	Nature Conservancy of Canada	$455,208	$10,936,515
	North Saskatchewan Watershed Alliance		$234,023
	Peace Parkland Naturalists		$600
	Pheasants Forever		$17,400
	Project Second Life Society		$6,000
	Richard H. G. Bonnycastle Graduate Fellowship		$15,000
	Richardson Foundation Inc.		$374,788
	Rocky Mountain Elk Foundation – Canada		$4,500
	Samuel Hanen Society for Resource Conservation		$350
	Shell Conservation Internship Program		$7,296
	Shell Environmental Fund		$25,123

AGENCY TYPE	AGENCY	2020 - 2021 TOTAL	1986 - 2021[a] CUM. TOTAL
CANADIAN NOT FOR PROFIT	Soil Conservation Council of Canada		$3,417
	Southern Alberta Land Trust Society		$613,119
	Sustainable Forest Management Network		$20,000
	The Calgary Foundation	$6,671	$42,193
	The Flanagan Foundation		$29,049
	The J.W. McConnell Family Foundation		$6,999
	The Kahanoff Foundation		$701
	United Farmers of Alberta		$18,447
	Western Irrigation District		$673,433
	Weston Family Foundation (formerly The W. Garfield Weston Foundation)		$1,534
	Wildlife Habitat Canada	$100,219	$4,178,902
	World Wildlife Fund Canada		$36,000
		$4,022,778	$34,062,320
CANADIAN PROVINCIAL & TERRITORIAL GOVERNMENTS	Agriculture Financial Services Corporation		$446,527
	Alberta Agriculture and Forestry		$10,570,726
	Alberta Culture and Community Spirit		$8,000
	Alberta Energy and Utilities Board		$8,300
	Alberta Environment and Parks	$667,160	$37,903,590
	Alberta Transportation		$9,246
	Alberta Treasury		$693,685
	Manitoba Habitat Heritage Corporation		$45,317
	Saskatchewan Water Security Agency		$10,000
		$667,160	$49,695,391
CANADIAN REGIONAL & LOCAL GOVERNMENTS	Big Hay Lake Drainage District		-$34,639
	Bonnyville (Municipality of)		$22,653
	Calgary (City of)		$269,669
	Camrose County		$14,907
	Carstairs (Town of)		$96,000
	Edmonton (City of)		$211,005
	Flagstaff County		$41,337
	Grande Prairie (City of)		$7,832
	Grande Prairie County		$2,022
	Greenview (Municipal District of)		$6,962
	Lakeland (County of)		$2,800
	Lamont County		$30,425
	Manawan Drainage District		$34,750
	Medicine Hat (City of)		$8,005
	Minburn County		$78,080
	Newell County		$28,750
	Ponoka County		$2,310
	Red Deer County		$1,811
	Rocky View County		$721,759
	Special Areas Board		$325
	St. Albert (City of)		$17,820
	St. Paul County		$19,287
	Stettler County		$2,780
	Strathcona County		$87,629
	Strathmore (Town of)		$198,627
	Sturgeon County		$68,085
	Sylvan Lake (Town of)		$30,000
	Wheatland County		$3,200
		$0	$1,974,191
CANADIAN OTHER	Canadian – unspecified	$5,117,463	$51,930,401
UNITED STATES - ALL SOURCES	U.S. Fish and Wildlife Service, U.S. Bureau of Reclamation, U.S. state governments, Ducks Unlimited Inc., Anonymous Foundation, other	$6,715,709	$306,449,704
INTERNATIONAL	Conservation International Bahamas		$59,744
	GRAND TOTAL	$19,335,594	$586,370,067

a. Includes data from Prairie Habitat Joint Venture - Alberta (Source: NAWMP National Tracking System).

* New contributor in 2020-21

ACTIVITY EXPENDITURES AND HABITAT ACCOMPLISHMENTS, 2020-21 AND 1986-2021

AGENCY	ACTIVITY	EXPENDITURES 2020-21	HABITAT ACRES 2020-21	NET HABITAT ACRES 1986-2021
ALBERTA AGRICULTURE AND FORESTRY (includes Agriculture and Agri-Food Canada, a former Alberta NAWMP Partner)	Securement			425,195
ALBERTA ENVIRONMENT AND PARKS	Securement			10,507
DELTA WATERFOWL FOUNDATION	Communication and education	$11,870		
	Management (habitat assets)	$24,166	1,852	1,852
	DWF TOTAL EXPENDITURES	$36,036		
DUCKS UNLIMITED CANADA	Communication and education	$215,590		
	Compensatory mitigation	$675,785	2,483	2,483
	Conservation planning	$1,606,071		
	Habitat Joint Venture science	$378,920		
	Habitat restoration	$8,637,387	148,962	1,161,559
	Habitat retention (≥10 years through permanent)	$8,148,865	10,729	2,391,600
	Habitat retention (<10 years)	$841,653	151,466	248,068
	Land and water policy support	$25,474		175,320
	Management (habitat assets)	$3,970,736		2,561,112
	DUC TOTAL EXPENDITURES	$24,500,481		
ENVIRONMENT AND CLIMATE CHANGE CANADA – CANADIAN WILDLIFE SERVICE	Conservation planning	$138		
	Habitat Joint Venture science	$113,000		
	ECCC TOTAL EXPENDITURES	$113,138		
NATURE CONSERVANCY OF CANADA	Conservation planning	$66,706		
	Habitat retention (≥10 years through permanent)	$584,105	1,425	355,971
	Management (habitat assets)	$547,700	1,425	358,083
	NCC TOTAL EXPENDITURES	$1,198,511		
OTHER AGENCIES	Communication and education; Conservation planning; Habitat Joint Venture science; Land and water policy support	$61,918		
	TOTAL EXPENDITURES 2020-21	$25,910,084		
	TOTAL HABITAT RETENTION ACRES (≥10 Years through Permanent), 2020-21 and 1986-2021		12,154	3,183,273

NOTES:

This table shows expenditures and habitat activities for the Alberta Prairie and Parkland eco-regions (Source: NAWMP National Tracking System). Variable timing of funds both contributed and received under NAWMP may result in differences between total funds received versus expended each fiscal year. Related habitat retention or restoration acres are similarly affected.

ACTIVITIES:

- Communication and education: communications specific to activities in approved proposals under the North American Wetlands Conservation Act (NAWCA). NOTE: all other communication activities are not eligible for NAWCA funds.
- Compensatory mitigation: involves creation, preservation, restoration and/or enhancement of wetlands or uplands as compensation for impacts on other wetlands or uplands.
- Conservation planning: biological, agrological and engineering planning and targeting activities that occur prior to actual program delivery.
- Habitat Joint Venture science: activities that evaluate the effects and inform future improvement of the NAWCA program throughout the Prairie Habitat Joint Venture.
- Habitat restoration: actions to increase carrying capacity for wetland-associated migratory birds and other wildlife.
- Habitat retention (≥10 years through permanent): protection of wetland and/or upland habitat through land title transfer or binding long-term conservation agreements with landowners.
- Habitat retention (<10 years): activities that promote or directly result in the sustainable use of land for the purpose of conserving wetland-dependent birds and their habitats.
- Land and water policy support: activities that identify or support development of policies benefiting wetlands or associated uplands. NOTE: these activities are not eligible for NAWCA funds.
- Management (habitat assets): actions to maintain carrying capacity for wetland-associated migratory birds and other wildlife on habitat retained for ≥10 years through permanent.

HABITAT ACRES:

- Habitat Acres, 2020-21: habitat acres retained, restored or managed between April 1, 2020 and March 31, 2021. NOTE: total acres are not cumulative.
- Net Habitat Acres, 1986-2021: cumulative total of habitat acres since 1986, less expired agreements.

A HEARTFELT THANKS TO OUR COOPERATORS

The Alberta NAWMP Partnership sincerely thanks all the individuals, companies, governments, conservation organizations, charitable foundations, academic institutions, and others who have contributed funds, conducted research, and collaborated with our Partners, to successfully deliver NAWMP programming across Alberta. As a key partner to the Prairie Habitat Joint Venture (phjv.ca), our motto is Advancing Conservation Together. As a cooperator, you have played a vital part in our progress toward achieving our vision of healthy prairie, parkland and boreal landscapes that support sustainable bird populations and provide ecological and economic benefits to society.

A COMPLETE LIST OF OUR COOPERATORS FROM 1986 TO 2021 IS AVAILABLE AT

ABNAWMP.CA

PHOTO CREDITS

BB	Bruce Brown, WBRA swan project volunteer
DC	Darwin Chambers/Ducks Unlimited Canada
DUC	Ducks Unlimited Canada
PB	Pascal Badiou/Ducks Unlimited Canada
SH	Scott Henowitch/Ducks Unlimited Canada

DC

North American Wetlands Conservation Act

Alberta Government

Environment and Climate Change Canada | Environnement et Changement climatique Canada

Ducks Unlimited Canada

Nature Conservancy Canada

U.S. Fish & Wildlife Service

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