

THE EFFECTS OF CLIMATE CHANGE AND WILDFIRE ON CARIBOU IN THE SAHTÚ – KEY TOPICS 3 AND 4

Introduction

The ʔehdzo Got'ín̄ ę Gots'ę́ Nákedı (Sahtú Renewable Resources Board) retained Gould Environmental to prepare a report on the effects of Climate change on boreal caribou. This report addresses two of four key climate change topics listed below. The first two topics were addressed in a report prepared under separate cover. The final two topics are addressed in this report.

1. overview of climate change and wildfire impacts on boreal caribou [globally, federally, provincially, territorially]
2. summary of climate change and wildfire impacts on boreal caribou in the Sahtu.
3. summarize climate change adaptation programs in other areas of North America (or globally) to help inform Planning for the Future (PFF) options (i.e., examples of caribou conservation measures defined specifically to address climate change impacts on boreal caribou).
4. examples of using Western science to write and implement climate change adaptation plans to adjust to changes to boreal caribou habitat and changes to caribou.

The report will be distributed to five Sahtú communities as information for a Public Listening Session (PLS) in February 2024. The purpose of the meeting is to exchange information on key topics on boreal caribou and climate change to assist with PFF.

“Climate change adaptation is how we respond or prepare for climate change. Adaptation planning enables Indigenous communities to mitigate the impacts of climate change within their communities and traditional lands.”

Climate change adaptation means taking action to prepare and adjust to both the current and projected impacts of climate change. Climate change affects wildlife and wildlife habitats and people in every region of the world by forcing changes to the environment, livelihoods and traditional activities. Climate change also damages the infrastructure, ecosystems, and wildlife populations that support traditional activities. To protect traditional ways of life, the following effects of climate change must be considered when adapting to a rapidly changing environment:

- Changes in where wild species live, often in changes in elevation;
- Changes in life-history events like breeding or physical features for some wildlife species.
- Changes in interactions, such as the time of hunting.
- Changes in wildlife survival and breeding success like caribou calf numbers and survival.
- Small populations, especially in boreal and mountain species.
- Local extinction or extinction of species with isolated ranges and populations.
- habitat loss due to sea-level rise, increased fire frequency, insect outbreaks (e.g., bark beetles), changing weather patterns, receding glaciers, and direct warming of habitats (such as streams and rivers).
- increased spread of wildlife diseases, parasites, and diseases that could harm people, like Lyme disease and chronic wasting disease.

- increased populations of different species are direct competitors of locally important species like caribou and
- increased spread of new invasive or non-native species, including plants, animals, and disease or poisons.
- Both pollutants and diseases may cause harm to Arctic plants and animals—including subsistence food species—posing new health challenges, especially to rural communities.
- Warming can also release pollutants from thawing permafrost, such as poleward-transported mercury and organic pesticides.
- Diseases may also spread into new regions as the climate changes.

The following sections are responses to the Key Topics.

Key Topics

3. summarize climate change adaptation programs in other areas of North America (or globally) to help inform Planning for the Future (PFF) options (i.e., examples of caribou conservation measures defined specifically to address climate change impacts on boreal caribou).

Climate change adaptation plans are being developed locally, nationally, and globally. Indigenous peoples in northern climates are developing many strategies. No specific climate adaptation plans for boreal caribou were found during this project. However, for this report, plans developed in Canada, the United States (U.S.), and Europe were reviewed. This report emphasizes climate adaptation plans by Indigenous peoples in Canada.

Canada

There are many resources available for the planning of climate adaptation programs. The Indigenous Climate Hub (<https://indigenousclimatehub.ca/>) is a website for Indigenous peoples in Canada that provides information on programs, funding opportunities, and resources. It is also a platform for sharing climate change experiences and knowledge. The Indigenous Climate Hub lists seven Indigenous Community Adaptation projects occurring in Canada.

Ontario First Nations Technical Service Corporation

The Ontario First Nations Technical Service Corporation, in partnership with Stantec, used a protocol developed by a Public Infrastructure Engineering Vulnerability Committee (PIEVC) to assess the climate change vulnerability of First Nations communities in Ontario. In 2018, Stantec prepared a report on the results of the Climate Risk Assessment (CRA) study conducted for the housing infrastructure in the Oneida Nation of the Thames community (Stantec, 2018). The report identified infrastructure vulnerabilities to current and future severe weather, focusing on different types of housing units. The report establishes a risk profile for the assessed infrastructure and provides recommendations regarding mitigating the risks (Stantec, 2018). In 2017, an assessment was completed on the water and wastewater systems at Akwesasne and Moose Factory in 2018. Other climate change adaptation plans were for the shoreline of the Kahnawà:ke community along the St. Lawrence River near Montreal.

Kanaka Bar Indian Band

The Kanaka Bar Indian Band completed a climate change vulnerability assessment in 2018 (Indigenous Climate Hub 2022). The knowledge keepers of Kanaka Bar recognized that the air, land, and water were changing in ways that represented an imbalance to their territory's ecological systems and resulted from climate change. Changes observed were population declines in sockeye salmon, drier berries, trees dying, the plants blooming earlier, some migratory birds becoming residents, less snow, and poor air quality associated with forest fires.

The vulnerability assessment included significant community engagement, identified watersheds to be assessed, identified the effects of climate change and ecosystem and community vulnerabilities to climate change, determined baseline conditions, and identified potential adaption strategies.

Resources vulnerable to climate change include traditional foods like salmon, berries, mushrooms, roots, and other traditional plants. It also addresses the climate change effects regarding the wildlife movement of bears and ungulates.

Vulnerability risks were ranked low to high severity. A high severity was assigned to water resources, traditional foods (e.g., salmon and berries), air quality, forest fires, and access roads to the community.

Mitigation strategies identified in the vulnerability assessment included restricting water use activities, implementing a FireSmart strategy, updating the community emergency response plans, installing air filters and air conditioning, developing food production in the community, maintaining roads and designing alternate access routes to the community.

Chippewas of Georgina Island First Nation

The Chippewas of Georgina Island First Nation completed climate change adaptation planning for their community near Lake Simcoe, approximately 100 km north of Toronto (Indigenous Climate Hub 2022). The adaption plan had seven steps that included.

- define the methodology used to collect Traditional Ecological Knowledge (TEK) and other pertinent information to help identify climate risks and vulnerabilities.
- Explain how vulnerabilities will be compared to Western science assessments of watershed vulnerability.
- Outline how to prioritize climate risks perceived by the community.
- Outline how the results will be shared with the community.
- Build a process to collect and prioritize adaptation recommendations and how the adaptation recommendations will be implemented.

The project assessed and ranked risk to prioritize activities to mitigate the effects of climate change.

Poplar River First Nation

Poplar River First Nation completed a forest fire vulnerability assessment (Indigenous Climate Hub 2022). The Poplar River First Nation Elders initiated the assessment and noticed increased forest fire activity, summer vegetation drying, and higher temperatures throughout the year. The assessment identified possible mitigation activities that included the following:

- Discuss moving firefighting resources closer to the community and clearly understanding the provincial firefighting response.

- Reevaluated the nature firebreak capability of the peat lands as they become drier.
- Activities to reduce the amount of forest near the community to reduce fire risk
- Develop a fire management strategy.

Alberta

Climate adaption plans were prepared for Ferruginous hawks and Burrowing owls for the province of Alberta (Shank and Bayne 2015; and Fisher and Bayne 2014). The climate adaptation plans provided an overview of the species' natural history and population trends. The adaption report also provided a detailed analysis of climate parameters like rainfall, snow quantities and changes to wind. Predictive models were used to assess long-term climate changes. From the analysis, the report authors identified the risk and vulnerability of these two species. Mitigation was proposed for these species to mitigate climate change. These two climate adaptation models provide a methodology that will inform climate adaptation models for caribou.

Government of Canada

The Government of Canada and Environment and Climate Change Canada hosts a website with general information on climate change and adaptation for Indigenous and other communities.

United States

The U.S. Climate Resilience Toolkit provides information addressing climate change (U.S. Federal Government 2014). It guides climate adaptation and includes case studies. The Toolkit is a website designed to help people find and use tools, information, and expertise to build climate resilience. The website is managed by the National Oceanic and Atmospheric Administration (NOAA), and users can explore climate change, find guidance on climate change adaptation strategies, and find resources.

Examples in the Toolkit are primarily U.S. but include examples for northern communities in Alaska which apply to northern Canada. Alaska is rapidly warming because of climate change. For Indigenous peoples in Alaska, it has resulted in a need to expand networks and travel to share food and ideas. The community of Shaktoolik's initiative to build a community-led program to build a mile-long and seven-foot-high berm made from driftwood and gravel to protect the community from flooding and erosion. Communities are building more efficient housing that reduces wind exposure and piling up snow at the doors. Some communities have shifted harvest species as the wildlife community is changing. For example, some Alaskan Indigenous communities harvest different fish species for subsistence.

The Toolkit has information on the change to permafrost, the Arctic landscapes, and the resulting impacts on transportation. Permafrost damage to transportation infrastructure is expensive; protecting and relocating roadways costs \$10 million annually (Chapin et al., 2014). Less obvious damage from the frost heaves that result from more frequent freezing-thawing cycles reduces the load-carrying capacity of roadways and decreases overall performance. These impacts on transportation affect access to resources and burden northern communities financially (USGCRP 2018).

Europe

Sámi-speaking peoples inhabit the region of Sápmi, which today encompasses large northern parts of Norway, Sweden, Finland, and the Kola Peninsula in Russia. Their best-known means of livelihood is semi-nomadic reindeer (European caribou) herding. The Saami people are concerned about their way of

life being impacted by climate change. The Sami challenges of living on the land and reliance on reindeer are like those faced by the Indigenous peoples of northern Canada.

To adapt to climate change, the Sámi commissioned a climate change adaption study that assessed the adverse effects of climate change on their culture, livelihoods, and society. Impacts assessed included fishing, hunting and gathering, reindeer husbandry, and community health and well-being. The study of the Sami territory found:

- Climate change affects the Arctic very fast compared to other parts of the world.
- Climate change hurts ecosystems, culture and traditional land practices. The changes in environmental conditions have a direct impact on the Sami society. Climate change and a warmer Arctic threaten cold-adapted Arctic wildlife species and ecosystems because of changes in snow and ice conditions. More occurrences of rain-on-snow and winter haw/refreezing events have been observed. This is affecting grazing wildlife like caribou, reindeer, and muskox.
- Land users are also affected by the change in transportation access to rivers, lakes and land. Climate change is causing thinner ice, later freeze-up, earlier ice break-up and unpredictable weather.
- In an Arctic context, climate change has negatively affected mental health and well-being and increased the risk of injuries, food insecurity and food-borne and water-borne diseases. Food security, in particular, is a concern for Arctic Indigenous Peoples.
- Climate change has required changes and adjustments to activities and cultural practices because of unsafe ice and snow conditions, new seasonal weather conditions, and changes in wild species distribution and abundance.
- Climate change has increased food insecurity and the diseases associated with a changed diet. Scientists have speculated that pathogens (e.g., bacteria and viruses) have contributed to the death of muskox, caribou, and reindeer. Many of these pathogens are historically rare or undocumented in the Arctic and are believed to result from climate change and spreading disease northward. There have been observations of changes in the taste and quality of berries and meat in the Sami traditional territory.
- Climate change has hurt mental health and well-being by increasing stress, anxiety, worry and depression.

The Sami-commissioned study concluded that climate change impacts ecosystems and biodiversity, affecting species abundance and distribution, impacting culture, changing subsistence activities and reducing security. Cross-disciplinary measures and adaptation strategies are required to respond to changes and risks. Coordinated action from institutions and governments is required to address issues. Actions require flexibility and must incorporate Indigenous Knowledge and acknowledge Rights.

The Sami people's way of life is intertwined with reindeer's health and the natural environment. There are many parallels to climate change impacts on the Sami lands and the Sahtu territory. Sami community members have observed that the populations of many grouse and ptarmigan species have declined. They have observed a range expansion of deer species, wild boar, and changes in the bird community. Similar observations have been made in Canada regarding white-tailed deer (Latham et al., 2011) and escaped wild boar have been observed in Saskatchewan.

4. examples of using Western science to write and implement climate change adaptation plans to adjust to changes to boreal caribou habitat and changes to caribou. Western-trained scientists have collected information and developed tools to inform climate adaptation plans for caribou and their habitat. Many of these tools have been developed for other species, but the approaches and tactics identified will directly or indirectly benefit boreal caribou and other northern wildlife species. Western science can provide data and methods, but it is widely acknowledged that local Indigenous knowledge is required for successful climate adaptation planning.

Handler et al. (2022) identified a process for climate change adaptation (Figure 1). The first step of the process is to define the objective, such as conserving a healthy, self-sustaining caribou population. The second step of the process is to assess and determine how climate change affects caribou and in which ways caribou and their habitat are vulnerable to a changed environment. Examples could be less food, more predators, or diseases. The third step of the process is to evaluate the original management objectives in Step 1 and adjust as necessary based on the findings of Step 2. For example, the objective may not have considered a new, previously unknown disease. The fourth step is to determine adaptation approaches and tactics and try them. For example, a community could limit harvests to increase populations. The last step is to monitor the approach and tactic, evaluate effectiveness and reassess management objectives. Counting the caribou to determine if a reduced harvest is increasing the population is essential. The monitoring results will determine if changes to the process are needed.



Figure 1: A diagram of a structured process to support climate adaptation planning for natural resources management (Adapted from Handler et al., 2022).

Approaches and Tactics

Handler et al. (2022) also described several general adaptation approaches and tactics (Step 4 in Figure 1) relating to conserving biological diversity. The approaches and tactics are grouped into three broad categories: 1) population management, 2) habitat management, and 3) other activities.

- **Population Management**
 1. Maintaining and enhancing genetic diversity
 2. Maintaining connectivity between populations
 3. Facilitate shift in wildlife species ranges by anticipating future conditions
 4. Manage interactions between species
 5. Maintain a sustainable population size
 6. Adjust harvest regulations
 7. Reduce human disturbance and human-wildlife conflict
- **Habitat Management**
 8. Restore habitat to provide for wildlife
 9. Adjust management of habitat for wildlife
 10. Establish or enhance protected areas
 11. Promote habitat protection outside of protected areas
- **Other Activities**
 12. Intentionally no conservation activity
 13. Engage human communities in wildlife conservation

Population Management

Maintaining and enhancing genetic diversity

Boreal woodland caribou (*Rangifer tarandus caribou*) are listed as threatened in Canada, and populations are declining. In Alberta, caribou populations are expected to decrease as much as 50 percent over the next 8–15 years (Barber et al., 2018). A small and declining population may have trouble recovering because of low genetic diversity and inbreeding, which can negatively impact population viability (ECCC, 2020). Scientists can determine genetic variability in caribou populations using non-invasive genetic sampling of fecal pellets. DNA analysis allows scientists to determine population changes, family networks, individual health, and the number of inbreeding levels (C).

Generally, low genetic diversity is viewed as a problem for animal populations. However, there are exceptions. For example, a reindeer population in Norway has adapted to climate change (Hestvik, 2023). The Svalbard reindeer is an isolated population living on a Norwegian archipelago with significant inbreeding and very low genetic diversity. However, this small herd is adapting to climate change and has developed the ability to digest mosses when lichens are unavailable. In addition, this reindeer herd has also been able to adjust to the extreme seasonal variations on Svalbard better than other herds in Norway. The Svalbard herd has adapted and developed these new traits relatively quickly and survived climate change (Hestvik, 2023).

Maintaining connectivity between populations

Land use and climate change are recognized as two main drivers of the current biodiversity decline, and connectivity is an essential component of maintaining a healthy population (ECCC 2020). Protected areas help safeguard the landscape from additional human-caused disturbances and, when properly designed, can help species cope with climate change impacts. Connectivity of habitat is essential for caribou. Connectivity is required within ranges and between ranges. Within a range, connected habitat allows for seasonal movement to different habitats to obtain food and other resources needed for survival (ECCC, 2020). Connectivity between caribou ranges provides opportunities for movement between local populations. This allows gene flow and maintaining genetic diversity. Genetic diversity helps caribou, for example, withstand disease and severe weather (ECCC 2020).

Facilitate shift in wildlife species ranges by anticipating future conditions.

Climate change is forcing wildlife to change where they live. For example, caribou may need to find new habitats for food, shelter, and rearing young as the land changes. Some scientists are using computer models to predict how habitats for caribou and other species are changing.

Some Western scientists are trying to predict changes in wildlife habitat by using a method called state-and-transition modelling. These computer models attempt to predict changes in land cover and use. For example, scientists can model the expansion/contraction of vegetation types, wildfires, and shrub encroachment into open areas. State-and-transition models can also try to predict shifts in moisture and temperature due to climate.

Barber et al. (2018) used computer models to predict future climate and habitat quality in Alberta. They predicted the amount of upland vegetation cover in the future and developed a fire simulation model to project the frequency and extent of wildfires. They also estimated food resources and predation risk from the future vegetation cover type and stand age. Their study predicted that grassland vegetation would cover up to half of the study area in northeastern Alberta by the 2080s. This was an expansion from less than 1% grass, and the amount of mixed wood and coniferous forest would be significantly reduced. The vegetation would also increase the risk of predation and disease. This is because the habitat (grass) would become more suitable for white-tailed deer and wolves.

Manage interactions between species

Human-caused habitat change has been implicated in North America's current boreal caribou (*Rangifer tarandus caribou*) population declines. Habitat change leads to a higher white-tailed deer population and higher wolf densities. This can result in increased encounters between wolves and caribou and, consequently, higher mortality. Increased wolf populations have led to wolf control programs in Alberta. Currently, Alberta has a wolf kill program in five ranges to protect caribou that are preventing caribou population declines (Alberta Government 2024).

Scientists have demonstrated the importance of caribou conservation for other species. Science shows that the threatened boreal caribou is an umbrella for bird and beetle conservation as the climate changes. Essentially, by protecting caribou, other species are conserved. This provides additional reasons why the government should protect caribou.

Scientists are evaluating how restoration can protect caribou. Some restoration reduces the movement rates of predators. Shrubs and trees over 0.5 m tall can slow wolves, decreasing hunting efficiency and reducing caribou mortality. (Dickie et al., 2021).

Maintain a sustainable population size

In 2012, ECCC released the National Boreal Woodland Caribou Recovery Strategy, which identified 51 caribou subpopulations across Canada. At that time, 14 subpopulations were self-sustaining, while the other 37 were unlikely to be self-sustaining (Environment and Climate Change Canada, 2012).

Maintaining a sustainable population is the goal of most conservation efforts. A sustainable population is a vital part of ECCC's recovery strategy for caribou. The recovery strategy requires a population of at least 100 caribou and a range that has 65% undisturbed habitat (ECCC, 2020). Northwest Territories population goals for caribou are to ensure a healthy and sustainable boreal caribou population that offers harvesting opportunities for present and future generations (ECCC 2020).

Another way to help caribou is conservation breeding, a technique involving protection and breeding species in a controlled environment to prevent extinction. A few wild animals are captured to be bred in captivity, and their offspring are then released into the wild. The West Moberly First Nations and Sauteau First Nations started a maternal penning to counter the drastic decline of the Klinse-za subpopulation of caribou. The population declined from 250 to 38 between 1990 and 2013. The program keeps cows and their calves in capacity and under supervision until they are two months old. The cows and calves are then released into the wild. The population of the Klinse-za subpopulation has over doubled since the start of the program (Lamb et al., 2023).

Adjust harvest regulations

The hunting is a threat to boreal caribou, and non-Indigenous hunting is prohibited. Although government laws do not restrict Indigenous hunting, there is voluntary closed, restricted, and managed hunting by Indigenous people across Canada (ECCC 2020).

Reduce human disturbance and human-wildlife conflict

Reducing human disturbance and caribou-human conflict has been addressed in various ways. ECCC determined a 500 m buffer from disturbance (e.g., cutline or road) for habitat to be used by caribou and considered undisturbed (ECCC 2020). In addition, restricted activity periods have been established in some jurisdictions. For example, in Alberta, activities are restricted from February 15 to July 15 in boreal caribou ranges to reduce stress on adults in late winter (Alberta Government 2012).

Habitat Management

Restore habitat to provide for wildlife

Caribou habitat is very disturbed throughout Canada. Alberta alone has more than 100,000 km of unrestored seismic lines and pipelines within caribou habitat (Pinzon 2020). To recover boreal caribou habitat populations, restoring human-altered habitats is a critical management tool for achieving self-sustaining woodland caribou populations (Alberta Government 2011, ECCC 2020). Scientists have developed and tested multiple ways to restore habitat. Active restoration of linear features for caribou recovery takes a three-pronged approach: obstructing access by humans and wildlife, preparing the site for revegetation, and planting trees.

The Canadian Oil Sands Innovation Alliance (COSIA) tracks successful and unsuccessful restoration techniques. Among the successful methods are using rollback of coarse woody debris and tree felling to obstruct access to the linear feature, soil mounding and decompacting (ripping) to prepare the site for revegetation, and summer and winter tree planting (COSIA 2019).

Adjust management of habitat for wildlife

ECCC (2020) has worked with scientists and another province to develop range plans that outline range-specific population and habitat management activities with measurable targets to achieve their recovery goal of 65% undisturbed habitat and sustainable populations. Habitat management can include legislated protected areas (e.g., parks), no-development zones, mixed-use zones, and conservation agreements.

The Sauteau First Nations, West Moberly First Nations, Canada, and British Columbia signed a partnership agreement in June 2019 to temporarily protect 734,000 hectares of land in caribou critical habitat. The agreement will protect habitat, allow some mining and logging, and boreal caribou maternal penning (Saulteau First Nation, 2020).

Establish or enhance protected areas

Protected areas help safeguard the landscape from additional anthropogenic disturbances and, when properly designed, can help species cope with climate change impacts. (Bauduin et al., 2020). ECCC 2020 acknowledges that, in some instances, it may be necessary to identify and designate protected areas with biophysical attributes for boreal caribou. As an example of expanding protected areas, in 2019 Alberta expanded the Kitaskino Nuwenëné Wildland by adding 152,000 hectares. This protected area is the world's largest contiguous area of protected land. This enhanced protected area provides habitat protection for caribou, the Ronald Lake buffalo herd, and many other species (Alberta Government 2022).

The establishment of protected areas is not limited to action by Western scientists and politicians. Several Indigenous Protected and Conserved Areas (IPCAs) have been formed in Canada. IPCAs are lands and waters managed by Indigenous peoples or in partnership with territorial, provincial and federal governments). These areas protect cultural values and ecological features identified by Indigenous communities. Makeway and The Firelight Group completed a report on five IPCAs, discussing challenges, successes, and implementation. (ref)

Promote habitat protection outside of protected areas

A specific example of climate change adaptation includes standardizing forest fire rating systems across North America, by having consistent reporting allocation of resources to another area. For instance, if forest fires in Alberta and Northwest Territories have the same rating system, a wildfire manager in Manitoba, as an example, can send help where it is most needed.

Other Activities

Intentionally no conservation activity

Organizations can make an active decision to do nothing, allowing for a natural adaptation to occur. An organization could also decide that resources could be allocated for different purposes or focused on a different group of animals (e.g., a different caribou herd) as a triage decision (Hagerman & Satterfield, 2014). An area could also be part of a conservation program where an area is left alone (control area) for comparison and evaluation to an area where active conservation is occurring.

Engage human communities in wildlife conservation

The engagement of Indigenous communities in climate adaptation programs is critical. Engaging Indigenous communities provides an opportunity to incorporate Indigenous knowledge about the environment, wildlife community, and specific species.

Caribou Management and Recovery Plans

The Government of Canada has written a Recovery Strategy for Woodland Caribou. This document addresses many factors and challenges in developing caribou adaptive management strategies. ECCC's Recovery Strategy document does not explicitly include "climate change adaptation" but refers to climate change actions. Specifically, the Recovery strategy refers to climate change as a threat because of severe weather and warming. It stresses the importance of connectivity and changing habitats.

Canada looks to the provinces and territories to protect caribou habitat on non-federally administered lands. The provinces and territories are required to report on their conservation activity every six months. For example, Alberta reports on habitat restoration, added land protection, and the status of range planning. Northwest Territories reported on conservation agreement commitment and implementation of the Protected Areas Act (ECCC 2020). Unfortunately, reporting stopped because of COVID-19, and reporting has not resumed.

Conservation Agreements

Canada's Species at Risk Act (SARA), Section 11 provides an opportunity for a collaborative approach to caribou (and other wild species) conservation that does not require the federal government to override a territory or provincial jurisdiction. Canada has entered into agreements with provinces and territories to facilitate the protection of species at risk and their habitat. Canada has entered into caribou conservation agreements with Manitoba, Alberta, Ontario, Saskatchewan, Labrador, and Northwest Territories. SARA Section 11 also provides for agreements with First Nations. The Athabasca Chipewyan First Nation, Mikisew Cree First Nation, and Cold Lake First Nations have caribou conservation agreements with Canada.

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