



Species Status Report

Porcupine Caribou and Barren-ground Caribou

(Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose-West, Bluenose-East, Bathurst, Beverly, Ahik, Qaminirjuaq, Wager Bay and Lorillard subpopulations)

Rangifer tarandus groenlandicus

Tutu | Tuttu | Tuktu | Tuktut | Vadzaih | ɔekwé | ɔeda

Hozìl Ekwò | Ekwò | Nòdi | ɔetthën | Atihk

DRAFT

IN THE NORTHWEST TERRITORIES

NORTHWEST TERRITORIES
**SPECIES
AT RISK**
COMMITTEE

Porcupine caribou – ASSESSMENT – TBD

Barren-ground caribou – ASSESSMENT – TBD

JULY 2026



Species at Risk Committee status reports are working documents used in assigning the status of species suspected of being at risk in the Northwest Territories (NWT).

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Production Note

The drafts of this report were prepared by John Blyth (Blyth and Bath Inc.; Indigenous and Community knowledge component) and Deborah Cichowski (Caribou Ecological Consulting; Scientific Knowledge component) under contract with the Government of the Northwest Territories, and edited by Michele Grabke, Species at Risk Implementation Supervisor, Species at Risk Secretariat with extensive comments and contributions from caribou knowledge holders.

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ABOUT THE SPECIES AT RISK COMMITTEE

The Species at Risk Committee was established under the *Species at Risk (NWT) Act*. It is an independent committee of experts responsible for assessing the biological status of species at risk in the NWT. The Committee uses the assessments to make recommendations on the listing of species at risk. The Committee uses objective biological criteria in its assessments and does not consider socio-economic factors. Assessments are based on species status reports that include the best available Indigenous knowledge, community knowledge, and scientific knowledge of the species. The status report is approved by the Committee before a species is assessed.

ABOUT THIS REPORT

This species status report is a comprehensive report that compiles and analyzes the best available information on the biological status of Porcupine Caribou and Barren-ground Caribou (Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose-West, Bluenose-East, Bathurst, Beverly, Ahlak, Qamanirjuaq, Wager Bay and Lorillard subpopulations) in the NWT, as well as existing and potential threats and positive influences. Full guidelines for the preparation of species status reports, including a description of the review process, may be found at www.nwt-speciesatrisk.ca.



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Executive Summary

Indigenous and Community Knowledge	Scientific Knowledge
About the Species	
Description Barren-ground caribou are mid-sized mammals found across the Northwest Territories. They overlap with other caribou populations, including woodland caribou and Dolphin and Union caribou, and can be distinguished by their size and colour. For the purposes of this report, nine herds of barren-ground caribou are recognized in the NWT including: Porcupine, Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose-West, Bluenose-East, Bathurst, Beverly, Ahlak, and Qamanirjuaq¹. Differences are noted among barren-ground caribou herds; Porcupine caribou are larger and lighter compared to the other herds. Barren-ground caribou are slightly smaller and lighter than boreal woodland caribou. Bulls are typically larger, darker, and have larger antlers and mane than cows. Barren-ground caribou are known for their large-scale migrations. Knowledge holders describe barren-ground caribou as intelligent, sentient beings with a strong memory of good habitat, forage, and	Description Barren-ground caribou are a medium-bodied cervid (deer family). They are highly gregarious, travel in large groups, and exhibit long-distance migrations between wintering and calving grounds. Mature males have a striking white neck and mane, a brown back, and a distinct band along the flank separating the brown back from the white belly. Females and juveniles show a more muted version of the males' colours. Wide variation in colouring from light to dark can often be seen in caribou groups. Both sexes are antlered and breeding males may have large antlers for display and contest during the rut (breeding season). Lifecycle and Reproduction Caribou usually calve at three years of age, although under high forage availability and a corresponding high rate of body growth, females can calve at two years of age. The females typically have a single calf every year (twinning is rare), although breeding pauses may occur when females are in poor condition. Synchrony during the rut likely leads to

¹ Note: For the purposes of the status report Porcupine caribou will be assessed separately from the additional 8 herds collectively referred to as barren-ground caribou throughout the report.

calving grounds. They are intelligent animals capable of making conscious decisions about where to travel and what to eat. This collective memory helps caribou survive but can be disrupted if herd leaders are lost. Relationship with People Barren-ground caribou have been an essential part of the culture, identity, and livelihoods of Indigenous peoples in the Northwest Territories since time immemorial. This deep connection is more than just subsistence; it reflects relationships of respect, responsibility, and cultural continuity. Hunting caribou, preparing meat and hides, and sharing within communities are integral to Indigenous ways of life, passing down traditions, language and traditional knowledge to younger generations. Caribou are vital for self-determination, self-governance, and sovereignty. They also play a key role in preserving Indigenous languages, cultural practices, and the relationship to the land. Knowledge holders emphasize the spiritual, cultural, and physical importance of caribou, describing them as central to community well-being and cultural identity as Indigenous peoples. However, caribou scarcity across parts of the NWT has made access increasingly difficult for many communities. Harvesters now travel farther to find caribou or face challenges with access, which impacts the ability to sustain cultural practices. This	birth synchrony. Calving is highly synchronized with most calves born within a few days of each other. Interactions Intra-specific interactions (interactions among barren-ground caribou) are an important factor in the life cycle of barren-ground caribou, given their social nature. Predators figure in a large way in caribou ecology. An array of predators and scavengers depend on barren-ground caribou. The role of predation in caribou dynamics probably differs among subpopulations, and has a stronger role in caribou population dynamics during declines and the phase of low numbers. Grizzly bears may have a greater impact on newborn caribou on calving grounds than wolves in some subpopulations, but wolves are effective year-round predators of all sex and age classes of caribou. Parasites and diseases are also an important part of caribou ecology, although their role at the population level and the effects of climate change have been less studied.
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has created growing concern about the loss of Indigenous knowledge, language and culture tied to caribou.

The loss of caribou access threatens not only food security but also the cultural identity of current generations who are growing up with limited access to caribou meat and the cultural practice of caribou harvesting. Indigenous knowledge holders stress the urgency of action to protect caribou, highlighting that without caribou, traditional ways of life would be lost.

Biology and Behaviour

Barren-ground caribou have distinct biological and behavioral traits shaped by their northern environment. Cows reach maturity by two to three years of age, giving birth to a single calf annually, though environmental conditions can impact reproduction. During good years, cows may have twins, while poor conditions can result in no calves being born. Calves are typically born between late May and early June on calving grounds near the Arctic coast, areas chosen for safety, good forage, and wind to reduce insect harassment. Calves bond closely with their mothers, who teach them foraging habits as they grow.

Throughout summer and fall, caribou focus on foraging to gain weight and build fat reserves. They rely on nutrient-rich plants like lichens, grasses, and shrubs, adapting their diet based on seasonal availability. In winter, snow and ice conditions influence access to food, with

caribou digging for lichens or consuming arboreal lichens when ground forage is inaccessible. Caribou undergo long-distance seasonal migrations, traveling hundreds of kilometers between calving and wintering grounds. These migrations are adaptations to find food, avoid predators, and escape insect harassment. In summer, caribou move to open tundra and coastal areas to find good forage and reduce insect stress. In winter, they seek out soft, shallow snow in or near the treeline, where forage is easier to access. In recent winters some herds have wintered largely on the tundra. Bulls and cows follow different migration patterns during calving. Bulls do not accompany cows to the calving grounds, remaining south of the calving grounds and rejoining them later in the summer. Bulls compete for cows during the rutting season in October, a time when bulls expend energy and lose body condition. Their meat is considered less desirable for eating during this period. Caribou are highly intelligent and rely on their collective memory to navigate the land, remembering areas of good forage and avoiding disturbances. They travel in large groups as a defense against predators, though they may split into smaller groups during winter when forage is less available. Noise and human disturbances, such as mines, roads, and low-flying aircraft, are known to disrupt	
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migration routes and feeding patterns, which pushes caribou away from traditional areas.

Well-adapted to the northern climate, caribou thrive in extreme cold and are capable of moving quickly across soft snow, which helps them evade predators like wolves.

Relationships Within and Among Species

Indigenous and community knowledge emphasizes the interconnectedness of barren-ground caribou with other species and the land. Caribou are closely linked to predators such as wolves and grizzly bears as well as competitors such as muskox and to a limited extent with reindeer where their ranges overlap.

Wolves are the main year-round predators of barren-ground caribou and have coexisted with them for thousands of years. They use pack strategies to hunt, often targeting calves and weaker adults but they are also capable of killing healthy individuals. Wolves play a role in maintaining a healthy caribou population by removing weaker animals. However, Indigenous knowledge holders note that fewer people are currently trapping which has led to increased wolf numbers, contributing to population pressures on caribou. Wolves and caribou populations are closely linked; when caribou numbers rise or fall, wolf numbers typically follow.

Grizzly bears are significant predators, especially during calving season. They hunt calves and sometimes adult caribou,

using ambush tactics near water crossings or dense vegetation. Bears also scavenge caribou carcasses left by other predators. Numerous grizzly bear observations on the calving grounds have raised concerns about their impact on caribou calf survival. Muskoxen are widely distributed across much of the barren-ground caribou's range and have expanded their range in the NWT over the past few decades. This expansion has led to increased sightings in areas where muskox was previously uncommon. Knowledge holders report that muskox may compete with caribou for forage, as both species consume similar plants. Muskoxen can affect caribou forage through multiple mechanisms, including uprooting shared forage species and disturbing soils. Their large body mass may also damage fragile vegetation, particularly lichens. Additionally, muskoxen can outcompete caribou for space due to their ability to eat a greater variety of plants and can remain in an area longer than caribou. Perspectives on the muskox-caribou relationship vary regionally and amongst knowledge holders; in some communities muskoxen are seen as having a negative effect on caribou while in other communities the two species are considered to co-exist peacefully. Caribou may avoid areas occupied by muskoxen, possibly due to fear. Muskoxen can be aggressive, and emit a strong odor that caribou dislike, including urine that	
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may contaminate forage. The presence of muskoxen may also indirectly maintain predator populations. Reindeer were introduced to the Mackenzie Delta in the 1930s and overlap with barren-ground caribou in areas like the Tuktoyaktuk Peninsula and the Cape Bathurst herd's range. Both species share similar habitat and forage needs, potentially leading to competition. For example, after reindeer were removed from the Tuktoyaktuk Peninsula, barren-ground caribou returned to the area. Interbreeding between reindeer and barren-ground caribou has been observed. Reindeer breed and calve earlier, potentially giving them a competitive edge for resources. Knowledge holders note that mixed caribou-reindeer individuals have been identified, though the broader implications of interbreeding on caribou populations remain unclear. Barren-ground caribou and hyperabundant light geese (Snow and Ross's Geese) breeding colonies share forage and occupy the same areas during the summer (geese) breeding season. Knowledge holders describe that caribou and light geese impact each other through changes to forage availability and potentially through transmission of disease.	
Place	
Distribution	Distribution

Barren-ground caribou are found across circumpolar North America, with their historic maximum ranges spanning much of the NWT, Nunavut, and parts of northern Yukon, Manitoba, Saskatchewan, and Alberta. Indigenous and community knowledge indicates that barren-ground caribou populations once occupied a broader range, but their distribution has contracted. Caribou are currently not present in some parts of their southern historic range, including areas of the Sahtú, Wek'èezhìi, North Slave, and South Slave regions. However, if populations increase, herds could likely migrate back to their southern winter range. Barren-ground caribou migrate long distances between northern coastal calving grounds and southern winter ranges, following a seasonal north-south pattern. Herds often overlap, particularly on winter ranges, such as the Bluenose-East, Bathurst and Beverly herds or the Bluenose-East and Bluenose-West herds. Herd mixing and individual caribou joining other herds are commonly observed, though the extent of these shifts on the population level is not well understood. While some Indigenous knowledge holders view caribou as distinct herds based on calving grounds, others consider them part of a larger intermixed, less isolated population. Despite this, calving grounds are commonly used to define caribou populations and for management purposes for the caribou herds. However,	Barren-ground caribou in Canada are primarily located in the NWT, Nunavut (NU), and Yukon. The Porcupine subpopulation is primarily located in Alaska, with wintering range and calving/summer range in the northern Yukon, and wintering range in the NWT. The barren-ground caribou subpopulations other than Porcupine caribou (Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose-West, Bluenose-East, Bathurst, Beverly, Qamanirjuaq, Ahiak, Wager Bay and Lorillard) calve in tundra barrens near the Arctic coast in the NWT and NU. The Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose West, Bluenose East, Bathurst, Beverly, and Qamanirjuaq winter below the treeline of the NWT and in northern regions of Manitoba, Saskatchewan, and (historically) Alberta, and the Ahiak, Wager Bay and Lorillard mostly winter in the barren lands of NU. The Porcupine subpopulation range includes Alaska, Yukon, and the NWT. The ranges of the Tuktoyaktuk Peninsula, Cape Bathurst, and Bluenose-West subpopulations are almost entirely within the NWT. The ranges of the Bluenose-East, Bathurst, Beverly and Ahiak subpopulations currently include the NWT and NU. The Qamanirjuaq subpopulation's range is mostly in NU and Manitoba, with a portion in the NWT and Saskatchewan. The Wager Bay and Lorillard ranges are mostly in NU, but recently they have been using the NWT more than they did in the past.
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the Porcupine caribou are recognized as a separate group with minimal movement and mixing with the other barren-ground caribou herds. Movement and Dispersal Barren-ground caribou undertake annual migrations of up to 850 km, moving from the northern calving grounds near the arctic ocean to winter ranges near or south of the treeline. These migrations are led by experienced caribou with strong memories and a keen sense of smell. Migration routes are guided by natural features such as water bodies, land bridges, eskers, and mountain passes, with many trails in use for thousands of years. Despite seasonal changes in their specific routes, caribou show a general fidelity to specific larger regional scale landscapes over time. Caribou migration is influenced by human and natural barriers. Industrial activities like mines have disrupted migration routes, creating "dams" that block caribou movement. Natural factors such as wildfires, which destroy forage, and severe weather conditions, including deep snow and thin ice, also limit their ability to move and find seasonal forage. Over time, burned areas may recover and attract caribou back, but this process is slow. Caribou migration is further shaped by seasonal forage availability and environmental conditions. Changes in Distribution The distribution of barren-ground caribou has significantly contracted from its	Habitat requirements are partly driven by the need for forage, which depends on the timing of the caribou's annual breeding cycle and its nutritional costs relative to the brief plant growing season and long winters of the subarctic and Arctic regions. Barren-ground caribou are generalist foragers and select for nutrient content according to the stage of plant growth more than plant species. Habitat requirements for calving vary among calving grounds, and include reducing the risk of predation while obtaining adequate nutrient intake. On summer ranges, reducing exposure to insect harassment while obtaining high quality forage are key habitat requirements. Winter habitat varies among subpopulations and can be tundra or taiga; lichens are the preferred winter forage in the taiga and on the tundra. The most conspicuous cause of natural fragmentation and change of caribou habitat other than the large lakes and major rivers is from forest fires. Habitat fragmentation caused by human activities has not been documented on a large scale within barren-ground caribou ranges, although reduced use near active mines, communities and roads represents a degree of functional habitat loss.
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historic maximum, with a general shift northward in the NWT. Historical accounts indicate that barren-ground caribou once occupied vast areas of the NWT, Nunavut, and parts of Alberta, Saskatchewan, and Manitoba. This contraction has left barren-ground caribou absent from regions where they were once abundant, including the southwestern portions of their range in the eastern portion of the Gwich'in Settlement Area, Sahtú, Wek'èezhìi, North Slave, and South Slave regions.

These shifts are influenced by multiple factors, including wildfires, habitat changes increased by climate change, and human developments. For example, large-scale wildfires in northeastern Alberta during the 1950s destroyed critical winter forage, resulting in barren-ground caribou abandoning this area. Similar trends occurred in the Gwich'in region in the 1980s and the South Slave region beginning in the late 1990s. Industrial developments such as mines, winter roads, and the Inuvik to Tuktoyaktuk Highway, have further disrupted migration patterns, creating barriers that caribou avoid.

The contraction of barren-ground caribou range has made them less accessible to many communities in the southern and western portions of their range. Many communities such as Inuvik, Tsiigehtchic, Fort Good Hope, Délı̨ne, Wrigley, Gamètì, Whatì, Behchokò, Yellowknife, N'dilo, Dettah, Fort Resolution, and Fort Smith report difficulty accessing caribou for subsistence harvesting. Knowledge

holders emphasize that past changes in caribou distribution were part of natural cycles; however, current declines are attributed to cumulative human impacts, including loss of habitat, climate change, and in some regions overharvesting and industrial activities.

Search Effort and Harvest Patterns

Barren-ground caribou are a vital resource for many communities across the NWT, with their seasonal migrations shaping the locations of many settlements. Knowledge of caribou movements has been passed down for generations, reflected in the extensive network of trails used by harvesters. However, changes in caribou distribution have significantly impacted harvest patterns and food security in the communities.

In the last decade, the barren-ground caribou range has contracted due to population declines, and shifted their range northward, most herds remain on the tundra throughout the winter and fewer migrate into the southern forests. Many communities, such as Fort Smith, Fort Resolution, Whatì, Behchokò, and N'dilo, and Dettah, have found caribou less accessible. During winter, harvesters now often rely on winter roads, such as the Tibbitt to Contwoyto winter road, to access caribou further north on the tundra. In the Sahtú region, communities like Délı̨nę and Fort Good Hope report reduced harvests and requiring longer travel to Colville Lake, where caribou remain more available.

The Porcupine herd has been increasing and remains relatively accessible in the 2020s via the Dempster Highway and other traditional routes, leading to decreased reliance on other barren-ground caribou herds in the Gwich'in Settlement Area (GSA). Meanwhile, the construction of the Inuvik to Tuktoyaktuk Highway in 2017 has expanded access to the Cape Bathurst and Bluenose-West herds, increasing harvest of Cape Bathurst caribou that may be present in neighbouring wildlife management units where harvest is permitted.

Key Habitats

Barren-ground caribou utilize a variety of habitats across their vast migratory range. Their habitat requirements are complex, combining high-quality forage, favorable snow and ice conditions, minimal predator presence, low human disturbance, and relief from insects across the landscape. Barren-ground caribou are highly mobile and will adjust their movements in response to changing conditions to meet their needs for food, safety, and suitable seasonal areas, such as during calving and wintering.

Barren-ground caribou rely on their entire range for survival, including calving grounds, post-calving and summer habitats, fall range, and wintering grounds. These key habitats are critical to caribou survival and connection between the seasonal habitats must remain undisturbed to ensure the long-term health of barren-ground caribou populations. The survival of caribou

populations relies on the herds being able to migrate uninterrupted between these seasonal habitats. Calving grounds are essential for barren-ground caribou, offering safety, good forage, and low predator presence. These areas, often located near the coast, are critical for newborn survival. Barren-ground caribou are known to periodically shift their calving grounds in response to changing environmental conditions, forage availability, and predator pressures. After calving, barren-ground caribou seek areas with abundant forage, low predator density, and minimal insect harassment. These post-calving and summer habitats are crucial for nursing cows to produce high-quality milk and regain their energy. Disturbance during this period can lead to calves being abandoned. Barren-ground caribou often seek windy, cooler areas near coasts or uplands to escape insects during summer. Energy expenditure on avoiding insects, balanced against forage quality, determines their body condition going into fall. Fall habitats vary but are typically located on the tundra or near the treeline. Continued foraging at the fall habitats are essential for Barren-ground caribou to build sufficient fat reserves for the rutting season and for the oncoming winter season. Snow and ice conditions play a significant role in determining forage accessibility, and ice crusts from late fall rains can create barriers to feeding.	
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Winter habitats are mostly below the treeline, often in mature boreal forests where caribou forage for lichen beneath the snow. Snow depth, hardness, and ice cover influence habitat quality, with caribou avoiding areas where digging is too difficult. As caribou populations declined barren-ground caribou are using areas north of the treeline during winter in recent years.

Specific habitat corridors such as land bridges and water crossings are vital for barren-ground caribou migration. These areas enable caribou to navigate landscapes with numerous large water bodies and have been used for generations. These corridors are essential to maintaining caribou habitat connectivity. Disturbances such as mines or infrastructure can disrupt these routes, forcing caribou to alter their migration patterns and avoid traditional pathways.

Habitat Trends

Barren-ground caribou habitat is declining due to climate change, wildfires, and human activities. Historically, caribou managed their habitat by moving to new areas, but today's smaller populations make overgrazing less of an issue.

Warmer winters and changing snow conditions are altering caribou migration, with some herds staying above the treeline for most of the year. Rising temperatures increase shrub growth and insect harassment, reducing the quality of tundra habitat. Wildfires are a major threat, destroying winter forage like lichen, which can take decades to regrow. Frequent

and severe fires have left some southern areas unsuitable for caribou. Human activities, including mining, roads, and increased motorized access, disrupt migration routes and degrade habitat. Roads act as barriers to movement, and some developments cause caribou to abandon areas entirely. Habitat Fragmentation Barren-ground caribou habitat is increasingly fragmented due to wildfires, industrial development, and infrastructure. This disturbance is, fragmenting and limiting access to key habitats, and altering migration routes between their seasonal habitats. In northeastern Alberta and parts of northern Saskatchewan, numerous large wildfires have permanently reduced the quality winter range for barren-ground caribou. Even though some of these areas have regrown, subsequent fires in the South Slave have created barriers, preventing caribou from reconnecting with these habitats. Industrial activities on the Bathurst caribou range, especially near critical migration paths like land bridges and water crossings, have disrupted migration routes. Increased human activity drives caribou away from traditional areas, forcing them to find new migration paths. In the northwest, the Inuvik to Tuktoyaktuk Highway fragments the habitat of the Tuktoyaktuk Peninsula and Cape Bathurst herds. Caribou avoid areas west of the	
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highway, but the full extent of its impact on habitat use is not well understood.	
Population	
Abundance Large populations are a defining characteristic of barren-ground caribou. Understanding total caribou abundance is difficult using Indigenous and community knowledge. Instead, this knowledge focuses on observing changes in relative abundance, availability, and accessibility. When caribou numbers appear low or they are not found where expected, it is often explained as the caribou having moved to other areas. Historically, caribou populations have experienced cycles of scarcity and abundance, with Elders explaining that caribou go away to replenish and return when conditions improve. Across the NWT, in most barren-ground caribou herds (Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose-West, Bluenose East, Bathurst, Beverly, Ahlak, and Qamanirjuaq) abundance is lower than in the past, with concerns more significant in areas where caribou are less accessible, such as the southwest portion of Wek'èezhìi, the North Slave, South Slave, and parts of the Sahtú. Harvesters in these regions must travel farther to access caribou, which can be inferred as a sign of scarcity. In contrast, Porcupine caribou remain more accessible in the western NWT, and concerns about abundance are less	Abundance In 2025, the Porcupine subpopulation was estimated at approximately 143,135 animals (including calves). The most recent estimates (2021-2025) for the Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose-West, Bluenose-East, Bathurst, Beverly, Qamanirjuaq, Ahlak, Wager Bay and Lorillard subpopulations indicate approximately 586,788 animals (excluding calves). Given approximately 729,923 barren-ground caribou within subpopulations that reside either entirely or partially within the NWT, the NWT supports approximately 92% of the Canadian population of barren-ground caribou, approximately 73% of the North American population, and approximately 65% of the global population (including western Greenland). By the mid-1980s to mid-1990s (timing varied among subpopulations), most NWT subpopulations were peaking in abundance; declines were underway during the late 1990s and into the 2000s. By the mid 2010s, most subpopulations continued to decline or were somewhat stable at low population levels. Currently, most subpopulations are at low population levels and/or experiencing decreasing trends, although some (Tuktoyaktuk Peninsula, Cape Bathurst,

pronounced. Although accessibility may vary from year to year, the population of Porcupine caribou appears stable, alleviating some of the concern. Population Dynamics Information about current population dynamics for barren-ground caribou varies by region, with knowledge gaps in some areas. Key organisations and programs, including the Advisory Committee for Cooperation on Wildlife Management (ACCWM), the Bathurst Caribou Advisory Committee (BCAC), and the Ekwò Nàxoèhdee K'è program, provide ongoing yearly insights into the population dynamics of the following barren-ground caribou herds in the NWT: Cape Bathurst herd: Indigenous and community knowledge indicates positive trends in population dynamics for the Cape Bathurst herd from 2021 to 2023. Indicators such as sex ratios, birth rates, and recruitment show improvement. Bluenose-West herd: Annual reviews suggest generally positive signs for the Bluenose-West herd over the same period. Indicators like birth rates and recruitment are improving. Bluenose-East herd: Has shown positive trends from 2021 to 2023. Key indicators, including recruitment, birth rates, body conditions and health, suggest the population is stabilizing and may be increasing. Bathurst herd: The Bathurst herd shows mixed signs. The Ekwò Nàxoèhdee K'è program reported lower calf:cow ratios	Bluenose East) have recently started increasing. The Porcupine subpopulation was increasing in the early to mid 2010s, but has declined by 34% since 2017. Barren-ground caribou populations undergo large fluctuations over several decades. The causes of these fluctuations in abundance are complex, likely driven by climate interacting with forage availability, predation, and parasites. Harvest and predation play a stronger role in the decline phase of the cycle and at low numbers. Variability in the strength of age classes (cohorts) can be a factor in population declines and recoveries.
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from 2019-2021, normal calf:cow ratios in 2022 and good ratios in 2023. However, data for 2024 suggests lower calf:cow ratios. Changes in Population Size Many of the barren-ground caribou populations across the NWT are lower than in the past, deviating from a natural 30-year cycles described by knowledge holders. Many explain that populations should have begun recovering in the 2010s, but multiple factors, including climate change, wildfires, increased predators, industrial development, and overharvest and disrespectful harvest practices, are preventing recovery. Knowledge holders often link changes in population to distribution patterns, with caribou becoming less accessible in many regions. The Cape Bathurst herd population remains relatively low but is showing signs of increase in recent years. The Bluenose-West herd is also showing signs of population growth, though numbers remain low compared to historic levels. The Bluenose-East herd is showing signs of recovery and stabilization, but its population remains low compared to past peaks. The Bathurst herd has experienced a dramatic population decline. Knowledge holders report that caribou were abundant in the 1990s but began declining in the mid 2000s. Emigration to other herds may be contributing to this	
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decline. There is high concern that without significant management actions, the Bathurst herd could disappear, which would profoundly affect cultural practices tied to this barren-ground caribou herd.

The Beverly and Qamanirjuaq herds are reported to be at their lowest population levels in 25 years, although the recent Beverly calving ground survey estimate an increase in population, the low population levels are particularly affecting the cultural harvesting practices for the communities in the southern and western parts of their range.

Porcupine caribou have been generally accessible over the last 10 years, however in 2025 they were less accessible to harvesters in the NWT, suggesting that the population is stable or slightly decreasing following its peak in 2017.

Health

Barren-ground caribou health varies by sex, season, and environmental conditions. Bulls are healthiest in late summer and early fall but lose significant body fat during the rut. Cows are in better condition during winter and spring but use energy reserves to care for calves in summer. Body condition is strongly influenced by climate, which affects snow conditions, forage availability, and insect populations, as well as by disturbance and the distances they migrate.

Harvesters assess caribou health by observing various physical traits, such as the size of the rump, the flatness of the back, antler shape, posture, and gait.

During processing, indicators such as backfat levels, the colour of bone marrow, and the quality of meat and organs are used to evaluate health. Unhealthy animals often show signs such as cysts, swollen joints, lungs sticking to the rib cage when butchered, poor hides, and abnormal smelling meat. Parasites and diseases affecting caribou include warble flies, lung worms, besnoitia, and brucellosis. Warmer weather linked to climate change may have increased the range and prevalence of some parasites, impacting caribou condition and behavior. Rescue Effects Barren-ground caribou herds are highly migratory, traveling long distances across northern Canada and overlapping seasonally with other herds and other types of caribou. Porcupine caribou also range across Alaska, Yukon, and the NWT. Despite this mobility, there is limited information from Indigenous and community knowledge about whether barren-ground caribou herds from outside the NWT could replace extirpated herds or mitigate population declines. Knowledge holders recognize that caribou leaving an area allows the habitat to recover, which may encourage caribou to return if conditions remain favorable. However, examples like northeastern Alberta highlight that even when habitat recovers locally, barriers such as burnt areas can prevent caribou from reoccupying those regions.	
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It is also noted that if habitat conditions in the NWT are poor, they may not support incoming barren-ground caribou from other regions. Historical cycles show that even at population peaks in the 1990s, caribou did not always return to their full historic range, particularly in the southern areas. This underscores the importance of maintaining favorable habitat conditions for caribou to thrive.	
Threats and Limiting Factors	
Wildfires and Habitat Loss in the Winter Range Wildfires are a major threat to barren-ground caribou, especially in their winter range. While wildfires are a natural part of the boreal and taiga ecosystems, knowledge holders observe that they are now larger and more intense due to climate change and changing fire management policies. These fires have significantly reduced winter habitat and changed the distribution of caribou in the NWT. The regeneration of forage, particularly lichens, in burnt areas takes decades, making the impact of wildfires long-lasting. Knowledge holders are certain that habitat loss from wildfires is contributing to the decline in barren-ground caribou populations, particularly in herds like the Bathurst, Beverly, Qamanirjuaq, and Bluenose-East. This threat is expected to persist over the next decade due to ongoing climatic changes.	The following is a summary of threats to barren-ground caribou, organized in no particular order. For the Porcupine subpopulation, activity on the winter range, improved access as a result of the Dempster Highway (NWT and Yukon), and potential future mineral exploration in the Peel River watershed represent potential threats. Of more significance, however, is the October 2025 decision to allow oil and gas exploration and development on the 1.56 million acre Coastal Plain of the Arctic National Wildlife Refuge in Alaska. That decision could impact critical calving habitat used by the subpopulation. Industrial development activities vary over time, in a boom-and-bust cycle dependent on the global economy. After the 2008 market crash and resulting lower commodity prices, exploration and development activities had, for the most part, declined in the NWT. Of the NWT's barren-ground caribou subpopulations,

The effects of wildfire are not uniform across all barren-ground caribou herds. Regions such as the Porcupine, Tuktoyaktuk Peninsula, Cape Bathurst, and Bluenose-West ranges show lower levels of concern. However, areas with significant habitat loss, range contraction, and population declines—such as those affecting the Bluenose-East, Bathurst and Beverly herds—show much higher levels of concern. Restoring winter habitat requires not only forest regeneration but also connectivity to other suitable habitat. Ice on Snow Events Changes in snow conditions caused by a warming climate, such as ice forming on snow, are increasingly impacting barren-ground caribou. These events occur when rain falls on snow or temperatures rise and refreeze mid-winter, creating a hard ice layer that makes it difficult for caribou to dig through and access forage. This leads to poor body condition and, in some cases, starvation. Though specific dates for icing events are rare in the available knowledge sources, such events have been periodically observed. For example, during the winter of 2004-2005, icing conditions in the range of the Bluenose-West herd led to poor body condition among caribou. With the ongoing warming climate, these events are expected to increase over the next decade. Knowledge holders also observe that barren-ground caribou are wintering	the Bathurst subpopulation likely faces the most pressure from human activities. With respect to linear disturbance, some projects recently constructed, and some proposed future construction (e.g., all-weather road connecting a deep-water port to the interior territory) represent possible threats to barren-ground caribou by acting as potential barriers to movement, sources of disturbance (noise and dust from roads), and increasing access for hunters. Harvest plays a greater role in caribou population changes during the decline and low phases of cyclic abundance. Hunting is likely not a current threat for subpopulations where harvest restrictions have been implemented or where recent population estimates indicate stable to increasing populations. Climate change may act as a continuing threat for barren-ground caribou through a complex mechanism involving shift in timing of greening, shift in timing and severity of insect harassment, increase in existing and expansion of novel pathogens, lower summer forage quality, and subsequent lower calf production and reproductive potential of females . Forest fires are the largest natural driving factor in habitat fragmentation and change, impacting forage availability and movement. Regeneration of lichen-supporting forest stands can take 50-100 years following fire depending on stand type. It is predicted that climate change
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further north than they have historically, likely due to changing snow and ice conditions, and loss of winter habitat due to wildfires. While caribou can migrate to seek better conditions, herds with smaller ranges, such as the Tuktoyaktuk Peninsula and Cape Bathurst herds, may experience more severe impacts from localized icing events. The severity of the effects on barren-ground caribou populations in the NWT remains unclear. While there is high concern about the broader impacts of climate change on barren-ground caribou, the specific concern about ice on snow events is noted as medium to low in the available knowledge. Other Impacts of Increased Temperatures A warming climate is increasing the duration and intensity of insect harassment for caribou, which can lead to poor body condition and lower pregnancy rates. Hot, summers with low winds create conditions for high insect activity, while cool, wet summers are more favorable for caribou. Over the next decade, increased insect activity is expected to occur periodically. Caribou respond by moving to cooler, windier areas such as higher elevations, the edges of water bodies, or further north, but their options are limited by geography. Extended periods of high insect activity could negatively affect populations, but the severity of these impacts remains uncertain. Concern about this issue is moderate to low.	will result in an increase in the frequency and intensity of fires, due to hotter, drier summers. Predation is known to affect survival and reproduction. However, while there are some reports of increasing predator populations, recent information suggests a declining trend in the population of wolves and active den sites in the Bathurst range. Predator control through a wolf harvest incentive program was used over a 5-year period in the Bathurst caribou range as a tool for short-term recovery of caribou populations; and an evaluation of the program and currently underway. Contaminants are not currently considered a threat. Parasites and diseases are a potential and complex threat under a warmer climate. In the NWT, caribou management involves interaction among many government agencies, co-management boards, various organizations, and industrial interests. Caribou seasonally migrate over large geographical areas and this can lead to inter-jurisdictional complexity between political, land management and wildlife management agencies. Most barren-ground caribou subpopulations are now at low points in their abundance, and they are facing cumulative effects from multiple interacting threats that are unprecedented.
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The tundra is undergoing changes due to climate warming, with shrubs expanding in size and distribution and the treeline moving north. This "shrubification" has been ongoing for decades and is likely to continue. While this transformation is recognized across caribou ranges, its impacts on barren-ground caribou populations are not well understood, and concern among knowledge holders appears to be low. Thawing permafrost is causing changes in ground firmness and moisture, leading to slumping and potential habitat loss. Caribou may avoid areas affected by permafrost thaw, altering migration routes and habitat use. This issue is most noted in the ranges of Porcupine caribou and western herds near the Mackenzie Delta, but it is occurring across barren-ground caribou ranges. The severity of its impact on populations is unclear. While climate change raises significant concerns, the specific threat of permafrost thawing is considered of medium-low concern. Industrial and Infrastructure Developments Industrial developments, such as mining, oil and gas exploration, and hydroelectric projects, are considered significant threats to barren-ground caribou. These activities disturb caribou through noise, smells, and habitat disruption, causing them to alter migration routes and avoid certain areas. The dust and pollution from mining reduce	
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the quality of forage and habitat. Low-level flights associated with mineral exploration increase stress and can cause caribou to expend unnecessary energy or sustain injuries. Mining has long occurred on caribou ranges, with increased activity since the 1990s and 2000s. Active diamond mines in the NWT impact the Bathurst and Beverly herds, while operating mines in Nunavut and northern Saskatchewan affect the Beverly and Qamanirjuaq herds. Mineral exploration is widespread, particularly in the Bathurst, Beverly, and Qamanirjuaq ranges. Projects, such as the Back River Gold mine in Nunavut, may further impact barren-ground caribou populations. Mining-related disturbances are ongoing and highly likely to continue, with a high level of concern among knowledge holders, particularly in the Bathurst, Beverly, and Qamanirjuaq ranges. Oil and gas activities primarily occur in the winter ranges of the Bluenose-West, Cape Bathurst, and Tuktoyaktuk Peninsula herds. Seismic lines and pipelines increase access for harvesters and predators, potentially altering distribution. Future pipelines built above ground in permafrost areas may deter caribou from crossing. While the level of concern about oil and gas developments is currently low, future projects remain a potential threat. Hydroelectric projects impact caribou by altering ice conditions on waterways, potentially making crossings unsafe.	
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Power lines associated with these projects can also influence caribou distribution. Existing impacts include dams on the Taltson River in the NWT and northern Saskatchewan. Proposed expansions of the Taltson hydro system could introduce new impacts on the Bathurst and Beverly herds. Current effects are limited, and the level of concern is relatively low. Industrial developments are ongoing and very likely to continue over the next decade, particularly mining activities. Knowledge holders express high concern about these activities and their cumulative effects on barren-ground caribou populations. Infrastructure developments, such as roads and winter roads, have significant impacts on barren-ground caribou populations. Roads create barriers to movement, reduce and fragment available habitat, and alter migration routes due to vehicle noise, visual barriers, alter predator dynamics, and dust affecting forage quality. Increased access provided by roads often leads to higher harvesting rates, potential for over-harvesting, disrespectful harvesting practices, changes in harvest patterns, and elevated risks of vehicle collisions, and predation by wolves. These impacts are a source of stress for caribou, potentially altering their behavior and distribution, and can potentially lead to population declines. Knowledge holders and community members express high concern about the impact on caribou populations	
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from disrespectful and overharvesting on the Tibbitt to Contwoyto Winter Road. Currently, several roads cross the ranges of barren-ground caribou in the NWT, Nunavut, and Yukon. These include all-season highways, such as the Dempster Highway and the Inuvik to Tuktoyaktuk Highway, as well as seasonal ice roads like the Tibbitt to Contwoyto and Gahcho Kué winter roads, which services the diamond mines in the Bathurst and Beverly herd ranges. Other winter roads in the Sahtú and Wek'èezhìi provide access to the Bluenose-West and Bluenose-East herds. Mining roads are present in the range of the Beverly and Qamanirjuaq herds in Nunavut. Proposals for new roads also pose potential threats. Proposed projects include all season road from Yellowknife to the Nunavut border, and possibly continuing with a 230 km road from the Jericho mine by Contwoyto Lake to Grays Bay on the Arctic coast, crossing the Bathurst calving grounds, a winter road for the Back River Gold project in the Bathurst and Beverly ranges, and the transformation of the Sahtú winter road into an all-season Mackenzie Highway, which would increase access to Bluenose-West and Bluenose-East herds, with discussion of a potential future extension into the GSA. The impacts from existing roads are ongoing and likely to increase over the next decade. Many knowledge holders	
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express a high level of concern about how infrastructure development is affecting barren-ground caribou populations, emphasizing the need for careful consideration and management of future projects.

Predators

Predation by wolves and grizzly bears is frequently mentioned by knowledge holders as a contributing factor to the decline in barren-ground caribou populations. Increased wolf numbers are often attributed to reduced trapping and predator harvesting across barren-ground caribou ranges. Grizzly bears are known to prey on barren-ground caribou, and particularly prey on caribou newborn calves on the calving ground.

The impact of predation on barren-ground caribou populations is happening now and is expected to continue over the next decade. However, knowledge holders express varying views about the severity of this impact. Some see predators as part of the natural balance, while others consider predation levels elevated. This variation results in a medium level of certainty about the negative influence of predators on caribou populations. Although the exact severity of the impact is unclear, there is a heightened level of concern about the effects of predation on barren-ground caribou populations.

Harvest

Harvest practices, including disrespectful harvest, overharvest, and the legacy of outfitted sport hunting, are recognized as threats to barren-ground caribou populations. Disrespectful harvest includes actions such as wasting meat, chasing caribou, harvesting the leader of the herd, and taking more than necessary. Knowledge holders emphasize that respecting caribou is essential to ensuring their return. Discarding remains improperly or leaving campsites littered with bones and scraps is believed to discourage caribou from returning to the area. Online meat sales are seen as a potential driver of overharvesting, with hunters taking more caribou than they need for personal use. Overharvesting is a controversial topic. Some believe current harvest rates are relatively low compared to the past when caribou were used more extensively for clothing, feeding dog teams, and sales to fur trading posts. However, concerns remain that overharvest along the winter roads, especially when combined with other threats, could impact caribou populations. Harvest management measures vary across herds. For example, the Bluenose-West, Bluenose-East, Cape Bathurst, and Bathurst herds are under total allowable harvest (TAH) systems, while others, such as the Porcupine, Beverly, Ahiak and Qamanirjuaq herds, currently have no restrictions on Indigenous harvest. Total allowable	
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harvest for the Bathurst, and Cape Bathurst herds is currently set at zero.

Outfitted sport hunting for barren-ground caribou was suspended in the NWT beginning in 2010. However, knowledge holders express concerns about its lasting effects. Past hunting practices targeted prime bulls, which may have weakened herd genetics. Additionally, abandoned outfitter camps near migration routes and water crossings continue to litter the land and disturb caribou, leading to avoidance of these areas and changes in migration patterns.

Competitors

Muskox are considered a potential threat to barren-ground caribou in some NWT communities. Their presence is noted across caribou ranges, with increasing localized populations creating potential competition for forage resources. While the interaction between muskox and caribou is already occurring and likely to continue over the next decade, there is uncertainty about the extent of its impact on barren-ground caribou populations.

The concern varies regionally, with areas like the Sahtú, where muskox populations are higher, expressing greater apprehension. Other regions report low levels of concern. Overall, the severity of the effect remains unclear.

Colonies of hyperabundant light geese (Snow and Ross's Geese) have been identified by knowledge holders as a potential threat to barren-ground

caribou. The potential impact is already occurring and is expected to continue over the next decade; there remains uncertainty about whether large light geese colonies will negatively affect caribou. Currently the concern over light geese as competitors with caribou is low.	
Positive Influences	
Across the range of barren-ground caribou, several positive initiatives are contributing to the health and recovery of caribou populations. These efforts, rooted in Indigenous knowledge and leadership, such as strict harvest restrictions, including no hunting zones, closure of outfitting and resident harvest, community-led conservation plans, implementations of collaborative herd management and range plans, predator management programs, Indigenous guardianship initiatives, and youth education programs. Local communities are actively implementing conservation plans that emphasize Indigenous knowledge and traditional practices. These plans often involve voluntary harvest reductions, seasonal restrictions, and respectful harvesting methods. Initiatives in the Sahtú by the communities of Délı̨ne and Colville Lake demonstrate how community leadership in conservation decision-making can effectively promote sustainable caribou management while respecting cultural traditions. Community-based predator management programs are potentially making a	Collaborative co-management has allowed for cooperative/joint management planning for caribou. In some cases, agreement among management authorities has resulted in management actions, including harvesting restrictions for commercial, outfitted, resident and Indigenous hunting, which contribute to addressing caribou declines, as well as the development of co-management plans for barren-ground caribou subpopulations in the NWT. Harvest of the Porcupine caribou subpopulation is led by a harvest management plan. This plan establishes a total allowable harvest based on the status of the subpopulation and requires harvest reporting for all Parties to the plan. There are various measures for reducing subsistence and resident harvest in place for the Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose-West, Bluenose-East, Bathurst, Beverly, Ahiak, and Qamanirjuaq subpopulations.

positive impact. These initiatives, particularly in the ranges of the Bathurst and Bluenose-East herds, aim to reduce predation pressures on caribou. By targeting wolves, these programs may help improve calf and adult caribou survival rates. Indigenous guardianship programs have expanded significantly over the last decade. Programs such as the Tłıchǫ Ekwǫ Nàxoèhdee K'è, Łutsel K'e Ni Hat'ni Dene, and others across the NWT play a vital role in caribou conservation. These programs help reinforce cultural connections to the land and caribou, monitor caribou health and habitat conditions, and provide independent oversight of industrial activities. Through these efforts, guardianship programs support the well-being of barren-ground caribou populations and empower communities to maintain sustainable practices, and gives Indigenous communities are greater influence in caribou management. Youth education and the promotion of traditional harvest protocols are other key developments. Communities are increasingly publishing harvest protocols that emphasize respect for caribou and sustainable practices, such as proper handling of meat, avoiding wastage, and sharing resources with others. At the same time, outreach and education programs are teaching younger generations ethical and traditional hunting methods. These efforts foster respect for caribou and the land while ensuring that cultural	Currently, there is no commercial harvesting of any NWT barren-ground caribou subpopulations. Specific co-management structures have been built to address concerns with some barren-ground caribou subpopulations. These structures include the Advisory Committee for Cooperation on Wildlife Management, the Porcupine Caribou Management Board, the International Porcupine Caribou Board, the Bathurst Caribou Advisory Committee, and the Beverly and Qamanirjuaq Caribou Management Board. Subpopulation-specific management plans are in place for the Cape Bathurst, Bluenose-West, Bluenose-East, Bathurst, Beverly and Qamanirjuaq subpopulations. These include guidance on recommended harvest, which depends mostly on subpopulation status. Current and proposed habitat protection for barren-ground caribou in the NWT can be found through existing protected areas (Thaidene Nene, Ezodzitı, Thelon Game Sanctuary, Edaııla, Saoyú-æhdacho National Historic Site, Tukut Nogait National Park, Yambahti, Queen Maud Gulf Bird Sanctuary), range planning processes, and through regional land use planning processes (Gwich'in, Sahtú, Tłıchǫ, and Nunavut land use plans, Inuvialuit community conservation plans). Restrictions on development vary among land management regimes, but many include some form of restriction on resource development.
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knowledge is passed down to future generations. Together, these initiatives highlight the crucial role Indigenous-led efforts play in safeguarding barren-ground caribou populations. They illustrate how traditional knowledge, combined with community leadership and collaboration, can help ensure the survival of caribou and the culture, language and way of life of the communities that depend on them.	Portions of the Porcupine caribou subpopulation in the Yukon are also offered some protection from Ivvavik National Park and Old Crow Flats Special Management Area. A key positive influence is that currently most of the range occupied by barren-ground caribou is relatively undisturbed by development and road access, but there are proposals for roads or other linear corridors in place that could have significant impacts on several subpopulations.
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Technical Summary – Indigenous and Community Knowledge Component

Question	Barren-ground Caribou (Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose- West, Bluenose-East, Bathurst, Beverly, Ahlak, and Qamanirjuaq)	Porcupine Caribou
Population		
How often is the species observed compared to the past (less, more, same)? Include an estimate of how much of the species range these observations represent (percentage).	Barren-ground caribou are observed less than they have in the past. Particularly by communities across the southern and southwestern edge of their range.	Although accessibility may vary from year-to-year (accessibility was down in 2025) Porcupine caribou remain more accessible in the NWT, and are more frequently observed.
Have there been changes observed in the sizes of groups?	Knowledge holders have noted smaller group sizes in the range of the Bathurst herd. Data gaps exist for other herds.	Unknown
If the species is observed less frequently, what is the level of concern (high, moderate, low)?	Concerns are high in all areas of barren-ground caribou range, particularly the southwest portion of Wek'èezhii, the North Slave, South Slave, and parts of the Sahtú (Bluenose-West, Bluenose-East, Bathurst, Beverly, Qamanirjuaq).	Though seasonal variability exists, the population appears stable, alleviating some of the concern.
If concerns being expressed about the	The timescale of the concern varies by region or	Where concern exists, it is expressed over the long term,

future of the species, are these concerns expressed in the short-, medium-, or long-term? (e.g. disappearance or decline within their grandchildren's lifetimes)	herd. For the Bathurst herd this concern is in the short-term, and in the rest of the range where concern exists it is expressed more as taking place over the lifetime of their children or grandchildren.	more as taking place over the lifetime of their children or grandchildren.
Distribution		
Is the species still observed in all the places it was in the past? Or is the species now unavailable, or less available, in areas where it was historically abundant?	Barren-ground caribou are now absent or significantly less available in much of the southern and southwestern part of their range, and in the following communities, where they were to varying degrees formerly readily harvested: Inuvik, Tsiigehtchic, Fort Good Hope, Délı̨ne, Wrigley, Gamètì, Whatì, Behchokò, Yellowknife, N'dilo, Dettah, Fort Resolution, and Fort Smith.	Porcupine caribou range has contracted slightly with animals avoiding proximity to communities and ranging slightly further west in the NWT.
Have declines or changes to movements of the species been observed? If so, are these changes to movements or distribution considered normal or unusual for the species?	Cycles are no longer following the natural patterns from the past. Caribou populations are no longer following the 30-year cycles predicted by knowledge holders. Based on the 30-year cycle caribou distribution (and population) should have	Though seasonal variability exists in distribution, the population appears stable and annual changes in availability are considered normal as caribou migrate to different areas.

	begun to expand in the 2010s.	
How often do people talk about the disappearance of the species from its historic range? What is the level of concern (high, moderate, low)?	Often, a high level of concern exists around the inaccessibility of barren-ground caribou. This concern is particularly present in the communities that are found on the southern and western edge of the range for Bluenose-East, Bathurst, and the Beverly herds where caribou have become difficult to access. This concern is especially acute for the Bathurst herd.	The Gwich'in harvest survey shows a low level of concern expressed about the disappearance of Porcupine caribou from its range. In the June 2022-May 2023 harvest survey 50% of respondents saw the same amount, while 30% saw more caribou.
Is there any indication the species has moved elsewhere?	The mixing of herds and immigration of individuals from one herd to another is frequently mentioned as a potential factor in the change in distribution. However, the extent of immigration from one herd to another is less well understood.	Porcupine Caribou distribution varies year to year; however they have stayed within their historic range.
What is the amount and quality of habitat available to the species? How does this compare to the past?	Knowledge holders point to an overall decrease in quality and availability of habitat relative to the past due to an increase of wildfires on the winter range, effects associated with climate change, and industrial and infrastructure developments.	Knowledge holders mention a slight decrease of the available habitat in the NWT near communities and other industrial and infrastructure developments.

Does the species have specific habitat requirements? (e.g. salt licks, ice patches, sea ice, karst, hot spring or specific food requirements)	Good barren-ground caribou habitat is considered holistically and can be described as the combination of high-quality forage, good snow, ice, and climactic conditions, low levels of predators, insect harassment, and human disturbance across a large regional landscape. Barren-ground caribou migrate seasonally in search of the optimal conditions on the land which in turn are guided by the combination of the above factors.	Good Porcupine caribou habitat is considered holistically and can be described as the combination of high-quality forage, good snow, ice, and climactic conditions, low levels of predators, insect harassment, and human disturbance across a large regional landscape. Barren-ground caribou will move seasonally in search of the optimal conditions on the land which in turn are guided by the combination of the above factors.
Biocultural linkages		
Have declines resulted in significant adverse impacts to Indigenous cultures and traditional ways of life tied to the species or its habitat?	Yes The decline in caribou and imposed harvest restrictions have significant adverse impacts on indigenous cultures, as there is an entire generation of youth in the range of the Bathurst and Bluenose-East herds, growing up between 2010 till now who have not been able to learn and practice the cultural traditions and teachings of caribou harvesting, including	Unlikely

	inability to maintain the traditional ways of life and language tied to caribou and the land. There is a direct link between caribou decline and decline in cultural practices tied to caribou.	
Are continued cultural connections and practices related to the species now impossible or extremely impaired?	Cultural connections and practices are impaired and some cultural practices such as traveling to barrenlands in the late summer/fall to harvest caribou, and all the cultural teaching/practices involved, has been made impossible during the last 10-15 years by the scarcity of barren-ground caribou.	Seasonal availability of the Porcupine caribou herd continues to play a critical role in sustaining cultural traditions and land-based practices.
Are people affected across the species' range or only certain parts of the range?	People along the southern and western edge the range of barren-ground caribou are most affected. The communities of: Inuvik, Tsiigehtchic, Fort Good Hope, Délı̨ę, Wrigley, Gamètì, Wekweetì, Whatì, Behchokò, Yellowknife, N'dilo, Dettah, Fort Resolution, and Fort Smith.	N/A
Threats and limiting factors		
Is the species being adversely impacted by one or more natural or human-caused threats?	Yes • Wildfires and habitat loss in the winter range • Ice on snow events	Yes • Wildfires and habitat loss in the winter range • Ice on snow events

	• Increased insect harassment • Habitat change and shrubification • Melting permafrost • Mining and mineral exploration • Oil and gas developments and exploration • Hydroelectric developments • All-season and winter roads • Predators • Harvest • Competition from muskox	• Increased insect harassment • Habitat change and shrubification • Melting permafrost • Oil and gas developments and exploration • All-season and winter roads • Predators • Harvest • Competition from muskox
What level of concern is expressed about threats impacting the species (high, moderate, low)? How often are these concerns expressed?	Wildfires and habitat loss in the winter range. • A high level of concern exists in regions where wildfire has led to a loss of habitat, contraction in range, and decline in population size. Lower levels of concern expressed in the Tuktoyaktuk Peninsula, Cape Bathurst, and Bluenose-West range. Ice on snow events	Wildfires and habitat loss in the winter range. • Though wildfire impacts the availability of winter habitat, there is lower levels of concern expressed in the range of the Porcupine caribou Ice on snow events • Concern for the impacts relating to climate change is high though in the available knowledge there is a medium-low amount of concern specifically

	- Concern for the impacts relating to climate change is high though in the available knowledge there is a medium-low amount of concern specifically relating to ice on snow events. Increased insect harassment - Though frequently mentioned by knowledge holders. The content of the concerns expressed in the available information suggests that the concern is moderate to low. Habitat change and shrubification - Concern surrounding habitat change is high while concerns around shrubification appears to be low. Melting permafrost - Though concern for the impacts relating to climate change are high, in the available knowledge	relating to ice on snow events Increased insect harassment - Their frequent mention in the available information suggests that the concern is moderate to low. Habitat change and shrubification - Concern appears to be low. Melting permafrost - Though concern for the impacts relating to climate change are high, in the available knowledge there is a medium-low amount of concern in the northwest portion of the range specifically relating to permafrost thawing. Oil and gas developments and exploration - There are currently no proposed pipelines in the range of Porcupine caribou in the NWT, therefore the level of concern regarding oil and gas developments on
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	there is a medium-low amount of concern in the northwest portion of the range specifically relating to permafrost melting. Mining and mineral exploration - Knowledge holders have a high level of concern for the impacts these developments are having on barren-ground populations. Oil and gas developments and exploration - The level of concern regarding oil and gas developments on barren-ground caribou is low. Hydroelectric developments - The level of concern is low. All-season and winter roads - Knowledge holders have expressed a high level of concern.	Porcupine caribou is high. All-season and winter roads - Knowledge holders have expressed a high level of concern. Predators - There is an high level of concern for the impacts of predators on caribou Harvest - The level of concern surrounding harvest varies by region with knowledge holders in the range of the Porcupine herd having a moderate level of concern. Competition from muskox - The concern surrounding competition from muskox is low.
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	Predators • There is a high level of concern for the impacts of predators on caribou. Harvest • The level of concern surrounding harvest varies by region with knowledge holders in the range of the Bathurst and Beverly herd having a high level of concern, particularly for the harvest along the Tibbitt to Contwoyto winter road. Competition from muskox • The level of concern is not even, certain areas with more muskox such as the Sahtú have higher levels of concern, while other regions concern is low	
How sensitive is this species to natural or human-caused threats?	Caribou are sensitive to noise and tend to avoid areas of human disturbances including: mining, mining exploration, roads, hydro lines, communities, work camps, low flying aircraft, oil and	Caribou are sensitive to noise and tend to avoid areas of human disturbances including: mining, mining exploration, roads, hydro lines, communities, work camps, low flying aircraft, oil and gas developments,

	gas developments, pipelines, and seismic exploration. Barren-ground caribou are particularly sensitive during calving. Barren-ground caribou are also sensitive to changes to their winter range resulting from wildfire.	pipelines, and seismic exploration. Porcupine caribou are particularly sensitive during calving. Porcupine caribou are also sensitive to changes to their winter range resulting from wildfire.
To what extent are these threats being managed?	The available information does not speak specifically to this; however, it does make it clear that these threats are impacting caribou, suggesting that they are not being fully managed. Harvest is managed to a high extent for some herds, although there have been issues with compliance.	The available information does not speak specifically to this; however, it does make it clear that these threats are impacting caribou, suggesting that they are not being fully managed
Does the species have characteristics that are likely to negatively affect their response to declines? (e.g. reproduces late in life, has few offspring, unable to go elsewhere if habitat becomes unsuitable)	They are intelligent animals capable of making conscious decisions about where to travel and what to eat. This collective memory helps caribou survive but can be disrupted if herd leaders are lost. Caribou become less brave when they are in smaller groups. This may lead to contractions in their range when populations are low.	They are intelligent animals capable of making conscious decisions about where to travel and what to eat. This collective memory helps caribou survive but can be disrupted if herd leaders are lost. Caribou become less brave when they are in smaller groups. This may lead to contractions in their range when populations are low. Caribou currently migrate north to the coast to seek

	Caribou in most herds currently migrate north to the coast to seek colder climates to reduce insect harassment. They are unable to move any further north in as the arctic ocean limits the ability to move any further. Caribou cows can only have one offspring per year which makes reproducing populations slow.	colder climates to reduce insect harassment. They are unable to move any further north in as the arctic ocean limits the ability to move any further.
Positive influences		
Briefly summarize positive influences and indicate the magnitude and imminence for each.	Harvest restrictions - The largest positive influence for protecting the Bathurst caribou is the implementation of the Mobile Core Bathurst Caribou Management Zone (the no-hunting zone), which has been in effect since 2016. The zone is adjusted each week of the year following the movement of the Bathurst caribou collars. Protected areas and Land Use Planning - The calving grounds of the Bluenose-	Protected areas and Land Use Planning - Ivvavik National Park and Vuntut National Park, as well as in the Aullaviat/Anguniarvik Traditional Conservation Area, the Old Crow Flats Special Management Area, and in Dàadzàii Vàn Territorial Park encompasses portions of the range of Porcupine caribou - Land use plans are approved and in place for the North Yukon, and Peel Watershed Planning regions of the Yukon.

	West herd are located in Tukturn Nogait National Park and are protected from development. • The calving grounds of the Beverly herd are located in the Queen Maud Gulf Migratory Bird Sanctuary • Thaidene Nëné National Park Reserve encompasses portions of the winter habitat of the Beverly and Qamanirjuaq herds. • Land use plans are approved and in place for the Gwich'in, Sahtú, and Tłı̨chǫ regions. Community conservation plans • These plans often involve voluntary harvest reductions, seasonal restrictions, and respectful harvesting methods. Initiatives in the Sahtú by the communities of Délı̨nę and Colville	Youth education and the promotion of traditional harvest protocols. • Communities are increasingly publishing harvest protocols that emphasize respect for caribou and sustainable practices, such as proper handling of meat, avoiding wastage, and sharing resources with others. At the same time, outreach and education programs are teaching younger generations ethical and traditional hunting methods. These efforts foster respect for caribou and the land while ensuring that cultural knowledge is passed down to future generations.
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	Lake demonstrate how community leadership in conservation decision-making can effectively promote sustainable caribou management while respecting cultural traditions. Community-based predator management programs • These initiatives, particularly in the ranges of the Bathurst and Bluenose-East herds, aim to reduce predation pressures on caribou. By targeting predators, these programs may help improve calf and adult caribou survival rates. Indigenous guardianship programs • Programs such as the Tłı̨chǫ Ekwǫ̀ Nàxoèhdee K'è, Łutsel K'e Ni Hat'ni Dene, the Imaryuk Community Monitoring Program, the Caribou Guardians Coalition, and others across	
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	the NWT play a vital role in caribou conservation. These programs help reinforce cultural connections to the land, monitor caribou health and habitat conditions, and provide independent oversight of industrial activities. Through these efforts, guardianship programs support the well-being of caribou populations and empower communities to maintain sustainable practices. Youth education and the promotion of traditional harvest protocols in areas where caribou are still readily accessible. • Communities are increasingly publishing harvest protocols that emphasize respect for caribou and sustainable practices, such as proper handling of meat, avoiding wastage, and	
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	sharing resources with others. At the same time, outreach and education programs are teaching younger generations ethical and traditional hunting methods. These efforts foster respect for caribou and the land while ensuring that cultural knowledge is passed down to future generations.	
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Technical Summary – Scientific Knowledge Component

Question	Scientific Knowledge
Population Trends	
Generation time (average age of parents in the population) (indicate years, months, days, etc.).	Eight to nine (8-9) years, based on adult survival and fecundity.
Number of mature individuals in the NWT (or give a range of estimates).	Porcupine: 143,135 (2025) Roughly 587,000 barren-ground caribou (not Porcupine caribou) exist either always or sometimes within the NWT. ² Tuktoyaktuk Peninsula: 2,798 (2024) Cape Bathurst: 8,533 (2025) Bluenose-West: 20,476 (2025) Bluenose-East: 28,759 (2025) Bathurst: 3,609 (2025) Ahiak: 39,131 (2021) Beverly South³: densities of breeding females too low to survey further (2011) Beverly North (Queen Maud Gulf): 152,131 (2023) Qamanirjuaq: 252,892 (2022) Wager Bay: 45,005 (2021) Lorillard: 33,454 (2021)
Percent change in total number of mature individuals over the last 10	Porcupine: +16% (net change since 2001 but the subpopulation peaked in 2017 then declined 34% by 2025)

² Please refer to the section on *Abundance* for more details on subpopulation population estimates.

³ See *Systematic/taxonomic/naming clarifications* (p. 93) for more information on Beverly subpopulation naming.

years or 3 generations, whichever is longer.	Subpopulations east of the Mackenzie River (excluding the Wager Bay and Lorillard, which only have one population estimate): -49%
Percent change in total number of mature individuals over the next 10 years or 3 generations, whichever is longer.	The Porcupine subpopulation has declined since 2017 and is expected to continue declining. Based purely on previous population fluctuations, there is the expectation that for subpopulations currently at low numbers, the population should increase over the next three caribou generations. However, there is uncertainty in this prediction due to unknown management actions going forward, and the effect of environmental variation, particularly with climate change. Fluctuations may not follow the same pattern as previously observed. The Bathurst subpopulation has continued to decline and is now about 2% of the size that it was in 2003.
Percent change in total number of mature individuals over any 10 year or 3 generation period that includes both the past and the future .	See above (% change over the last 3 generations).
If there is a decline in the number of mature individuals, is the decline likely to continue if nothing is done?	Declining subpopulations are vulnerable to unprecedented cumulative effects. Conceivably, current severe declines could continue if nothing is done. Management actions would likely reduce the risk of continuing decline.
If there is a decline, are the causes of the decline reversible?	Some likely causes of the decline (primarily human harvest and industrial development) are reversible.
If there is a decline, are the causes of decline clearly understood?	Causes of declines are complex, likely driven by a combination of climate change, forage availability, predation, human harvest, and pathogens. Predation and human harvest play a greater role in caribou

	population changes during the decline and low phases of fluctuating abundance.
If there is a decline, have the causes of the decline been removed?	Some likely contributors to decline have been mitigated in recent years (e.g., harvest has been reduced) but other causes, including natural causes, remain.
If there are fluctuations or declines, are they within, or outside of, natural cycles?	Insufficient information on magnitude of previous cycles to answer.
Are there 'extreme fluctuations' (>1 order of magnitude) in the number of mature individuals?	There is insufficient information to answer. The Bathurst caribou subpopulation has declined by more than one order of magnitude, but there has been no sign of recovery.
Distribution	
Estimated extent of occurrence in the NWT (in km ²).	The Porcupine subpopulation is primarily located in Alaska with wintering range in the northern Yukon and NWT. The extent of occurrence for the Porcupine subpopulation, excluding the portions of its range not within in the NWT, and based on telemetry location data from 1982 to 2024 is 11,698 km². The range of the Tuktoyaktuk Peninsula, Cape Bathurst, and Bluenose-West subpopulations is almost entirely within the NWT. The range of the Bluenose-East, Bathurst, Ahiak, Beverly, and Qamanirjuaq subpopulations currently includes the NWT and Nunavut. The Wager Bay and Lorillard subpopulations are mostly in Nunavut, with a small portion in the NWT. Updated range maps for these subpopulations are not yet available. Extent of occurrence for these 10 subpopulations, excluding portions of their range not within the NWT, and based on data from 1996 to 2008 is approximately 787,473 km².
Index of area of occupancy (IAO) in the	The area of occupancy for the Porcupine subpopulation, calculated based on the smallest area essential for the

NWT (in km ² ; based on 2 x 2 grid).	survival of existing populations (calving grounds), either within the NWT or outside the NWT, is 23,952 km². The area of occupancy for the 10 central/eastern subpopulations, calculated in the same manner, and based on data from 1996 to 2008 is 161,852 km², excluding calving ground overlap between the Beverly and Ahikak subpopulations.
Number of extant locations ⁴ in the NWT.	Eleven (based on extant calving grounds although not all calving grounds are in the NWT). It is possible that one threat could impact each calving ground independently.
Is there a continuing decline in area, extent, and/or quality of habitat?	Range size for some individual subpopulations has decreased as population numbers have declined. Habitat is changing (e.g., forest fires, climate change, disturbance), but the effects of these changes on caribou ecology and population dynamics are poorly understood. Updated range and seasonal range maps that reflect changes in distribution are not available.
Is there a continuing decline in number of locations, number of subpopulations, extent of occupancy, and/or IAO?	The number of locations and subpopulations has remained constant, notwithstanding changes in subpopulation definitions over time. Range size fluctuates with abundance, thus recent annual areas in some subpopulations are reduced from peak abundance.
Are there 'extreme fluctuations' (>1 order of magnitude) in number of locations, extent of occupancy, and/or IAO?	No. The number of subpopulations has remained the same.

⁴ Extant location - The term 'location' defines a geographically or ecologically distinct area in which a single threatening event can rapidly affect all individuals of the species present. The size of the location depends on the area covered by the threatening event and may include part of one or many subpopulations. Where a species is affected by more than one threatening event, location should be defined by considering the most serious plausible threat.

Is the total population 'severely fragmented' (most individuals found within small and isolated subpopulations)?	No.
Immigration from Populations Elsewhere	
Does the species exist elsewhere?	Caribou (including wild reindeer) are also in Scandinavia, Greenland, the Russian Federation, Svalbard and Jan Mayen, Alaska, and in the mountain, tundra and taiga habitats in the rest of Canada. In North America, domestic reindeer exists in Nunavut on the Belcher Islands. In North America, barren-ground caribou also exist in Nunavut on Southampton, Coats, and Baffin islands and the Boothia Peninsula. In 2011, COSEWIC identified 11 ecotypes of caribou, identified as Designatable Units based on five lines of evidence. Barren-ground caribou in the NWT and NU, including all of the subpopulations considered in this report, were identified as DU3. In Alaska, all caribou subpopulations are considered to be <i>Rangifer tarandus granti</i>, including four tundra-migratory subpopulations ecologically similar to migratory barren-ground caribou subpopulations in the NWT, as well as multiple mountain subpopulations that are generally smaller in size.
Status of the outside population(s)?	Most barren-ground caribou subpopulations in North America have shown declines in recent decades.
Is immigration known or possible?	Possible among subpopulations, but observed immigration rates are generally low (<5%) based on exchange rates of collared females among neighbouring subpopulations. Currently, adult females from the Bathurst appear to be emigrating at a higher rate.

Would immigrants be adapted to survive and reproduce in the NWT?	Yes.
Is there enough good habitat for immigrants in the NWT?	Yes.
Is the NWT population self-sustaining or does it depend on immigration for long-term survival?	Subpopulations that are covered in this report do not depend on immigration for long term survival.
Threats and Limiting Factors	
Briefly summarize negative influences and indicate the magnitude and imminence for each.	For the Porcupine subpopulation, activity on the winter range, improved hunting access, and potential future mineral exploration are key threats. A threat of a greater magnitude is the decision that was made in October 2025 to allow oil and gas exploration and development on the 1.56-million-acre Coastal Plain of the Arctic National Wildlife Refuge in Alaska which would impact critical calving habitat. Of the NWT's barren-ground caribou, the Bathurst likely faces the most pressure from human activities including linear disturbances and mining-related activities. Unsustainable harvest can affect all subpopulations but is likely less of a current threat due to harvest restrictions. At low subpopulation levels, harvest can have a significant impact on population dynamics. Climate change interacts with other threats through complex mechanisms including shifts in timing of greening, and lowering summer forage quality which may exacerbate population declines. Forest fires are predicted to increase in frequency and intensity impacting forage availability and movement patterns on the winter ranges.

	Predation, which affects all subpopulations, is known to affect survival and reproduction rates. At low population levels, predation can have a significant impact on population dynamics. Parasites and diseases are an unknown but potential and complex threat with a changing climate. In the NWT, caribou management involves interaction among many government agencies, co-management boards, various organizations, and industrial interests. Caribou seasonally migrate throughout extensive ranges and this can lead to inter-jurisdictional complexity between political, land management and wildlife management agencies Most barren-ground caribou subpopulations are now at low points in their abundance and they are facing the cumulative effects from the multiple interacting threats that are unprecedented.
Positive Influences	
Briefly summarize positive influences and indicate the magnitude and imminence for each.	Specific co-management plans and processes have been built to address concerns with some barren-ground caribou subpopulations (Advisory Committee for Cooperation on Wildlife Management, Porcupine Caribou Management Board, International Porcupine Caribou Board, Bathurst Caribou Advisory Committee, Beverly and Qamanirjuaq Caribou Management Board). Harvest of the Porcupine caribou is led by a harvest management plan. This plan establishes a total allowable harvest based on the status of the subpopulation and requires harvest reporting. Various forms of subsistence and resident harvest restriction are in place for the Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose-West, Bluenose-East, Bathurst, Beverly, Ahik, and Qamanirjuaq subpopulations.

	Currently, there is no commercial harvesting of any NWT barren-ground caribou. Current and proposed habitat protection for barren-ground caribou in the NWT can be found through existing protected areas (Thaidene Nene, Ezodziti, Thelon Game Sanctuary, Edaííla, Saoyú-ᐱehdacho National Historic Site, Tuktut Nogait National Park, Yambahti, Queen Maud Gulf Bird Sanctuary), range planning processes, and through regional land use planning processes (Gwich'in, Sahtú, Tłı̄chǫ, and Nunavut land use plans, Inuvialuit community conservation plans). Restrictions on development vary among land management regimes, but many include some form of restriction on resource development. Portions of the Porcupine caribou subpopulation in the Yukon are also offered some protection from Ivvavik National Park and Old Crow Flats Special Management Area. A key positive influence is that currently most of the range occupied by barren-ground caribou is relatively undisturbed by development and road access, although several existing road proposals are in development or in consideration, which could have significant impacts on several subpopulations.
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Glossary

Term	Dialect	Translation	Source
Dààghò	TY	Lichen-like vegetation on trees	(Tłı̨chǫ Research and Training Institute 2014a)
Dazhoo tsoo	GG	Two year old bull	(Benson 2019)
Dechı̨ Laagot'ı̨	TY	People of Wekweètı̨	(Tłı̨chǫ Research and Training Institute 2016)
Eʔe'gehtsı̨	TY	A dam	(Tłı̨chǫ Research and Training Institute 2016)
Gogha horı̨la	SD	when they're in danger	(Délı̨nǫ ʔekwé Working Group 2016)
K'àowo	TY	A leader, who is the mother of a large bull	(Tłı̨chǫ Research and Training Institute 2014a)
Nálze	DY	Hunting	(Łutsël K'é Dene First Nation 2020)
Néné	SD	Land	(Délı̨nǫ ʔekwé Working Group 2016)
Nátsezé	SD	Hunting	(Délı̨nǫ ʔekwé Working Group 2016)
Sahtúgot'ı̨nǫ	SD	the people of Great Bear Lake	(Délı̨nǫ ʔekwé Working Group 2016)
Tataà	TY	a channel of land between the lakes, a land bridge that allows caribou to cross large lakes along their migration routes	(Tłı̨chǫ Research and Training Institute 2016)
Tı̨'o	TY	Various type of grass and sedge	(Tłı̨chǫ Research and Training Institute 2014a)
Tı̨'odzı̨	TY	Type of sedge or dog berries	(Tłı̨chǫ Research and Training Institute 2014a)
Tódzı̨	TY	Woodland caribou	(Tłı̨chǫ Research and Training Institute 2014a)
Vadzai njoo'	GG	An old cow	(Gwich'in Elders 1997)
Wedziaa	TY	Small bull caribou	(Tłı̨chǫ Research and Training Institute 2016)
ʔadzı̨	TY	Lichen-general	(Tłı̨chǫ Research and Training Institute 2014a)
ʔadzı̨idegoo	TY	white lichen	(Wek'èezhı̨ Renewable Resources Board 2016c)

ᑭᑭᑭᑭᑭᑭ	SD	Our grandparents	(Délᑭᑭ ᑭᑭᑭᑭ Working Group 2016)
ᑭᑭᑭ	SD	Law, principles, policy	(Délᑭᑭ ᑭᑭᑭᑭ Working Group 2016)

DY = Dene Yatíé (South Slavey), DZ = Dene Zhatíé (South Slavey), GG = Gwichya Gwich'in, I = Inuinnaqtun, K = K'áhsho, KG = K'áhsho Got'íᑭᑭ (Fort Good Hope and Colville Lake), S = Shúhta, SD = Sahtú/Délᑭᑭ, SG = Siglitun, TG = TeeTł'it Gwich'in, TY = Tłᑭᑭ Yatí, U = Uummarmiutun, IC = Inland Canadian English

Acronyms

Acronym	Term
ACCWM	Advisory Committee for Cooperation on Wildlife Management
BCAC	Bathurst Caribou Advisory Committee
BQCMB	Beverly and Qamanirjuaq Caribou Management Board
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
EC	Environment Canada
ECC	Environment and Climate Change
ECCC	Environment and Climate Change Canada
ENK	Ekwò Nàxoèhdee K'è (Tłıchq Boots on the Ground)
ENR	Environment and Natural Resources
GN	Government of Nunavut
GNWT	Government of the Northwest Territories
GRRB	Gwich'in Renewable Resources Board
GSA	Gwich'in Settlement Area
HTC	Hunters and Trappers Committee
HTO	Hunters and Trappers Organisation
IGC	Inuvialuit Game Council
IPCC	Intergovernmental Panel on Climate Change
ISR	Inuvialuit Settlement Region
IUCN	International Union for Conservation of Nature
PCMB	Porcupine Caribou Management Board
RRC	Renewable Resources Council
SARC	Northwest Territories (NWT) Species at Risk Committee
SRRB	Sahtú Renewable Resources Board
SSA	Sahtú Settlement Area
TG	Tłıchq Government
WMIS	Wildlife Management Information System
WRRB	Wek'èezhì Renewable Resources Board
WMAC (NWT)	Wildlife Management Advisory Council (NWT)

Table of Contents

Executive Summary	3
Technical Summary – Indigenous and Community Knowledge Component	36
Technical Summary – Scientific Knowledge Component	51
Glossary.....	59
Acronyms.....	61
Table of Contents.....	62
List of Tables	67
List of Figures	70
PLACE NAMES	77
INDIGENOUS AND COMMUNITY KNOWLEDGE COMPONENT.....	80
Preface	80
Preamble	81
ABOUT THE SPECIES	83
<i>Names and Classification.....</i>	<i>83</i>
<i>Description</i>	<i>83</i>
<i>Relationship with People.....</i>	<i>87</i>
<i>Biology and Behaviour.....</i>	<i>89</i>
Diet and Feeding Behaviour.....	92
Adaptations to Environment	94
<i>Relationship Within and Among Species</i>	<i>97</i>
PLACE	113
<i>Distribution</i>	<i>113</i>
Porcupine Caribou	117
Barren-ground Caribou (Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose-West, Bluenose-East, Bathurst, Beverly, Ahlak, Qamanirjuaq)	117
<i>Movement and Dispersal</i>	<i>119</i>
Draft Species Status Report for Porcupine Caribou and Barren-ground Caribou in the NWT (do not cite without permission)	62

<i>Changes in Distribution</i>	122
<i>Search Effort and Harvest Patterns</i>	127
<i>Key Habitats</i>	129
Habitat Requirements	129
<i>Habitat Trends and Fragmentation</i>	134
Habitat Trends	134
Habitat Fragmentation	146
POPULATION	148
<i>Abundance</i>	148
<i>Population Dynamics</i>	150
<i>Changes in Population Size</i>	153
<i>Health</i>	159
<i>Rescue Effects</i>	161
THREATS AND LIMITING FACTORS	162
<i>Wildfires and Habitat Loss in the Winter Range</i>	163
<i>Ice on Snow Events</i>	165
<i>Other Effects of Climate Change</i>	166
<i>Industrial Land Use</i>	170
<i>Infrastructure Developments</i>	172
<i>Predators</i>	174
<i>Harvest-Related Issues</i>	175
<i>Competitors</i>	182
POSITIVE INFLUENCES	182
ACKNOWLEDGEMENTS	187
AUTHORITIES CITED	188
AUTHORITIES CONTACTED	192
BIOGRAPHY OF PREPARER	197
SCIENTIFIC KNOWLEDGE COMPONENT	198
<i>Names and Classification</i>	198
<i>Systematic/Taxonomic Clarifications</i>	198
Draft Species Status Report for Porcupine Caribou and Barren-ground Caribou in the NWT (do not cite without permission)	63

Subpopulation names clarification	199
<i>Description</i>	202
<i>Life Cycle and Reproduction</i>	204
<i>Physiology and Adaptability</i>	208
<i>Interactions</i>	211
Forage/Vegetation	211
Barren-ground caribou	211
Interactions with other herbivores	212
Predators	213
Parasites and Disease	220
Interactions with Humans	223
PLACE	240
<i>Distribution</i>	240
World, Continental, or Canadian Distribution	240
NWT Distribution	241
Extent of Occurrence/Area of Occupancy	244
Locations	245
Search Effort	245
<i>Movements</i>	248
Migration	248
Spatial fidelity and switching	250
Barriers to movement or dispersal	253
<i>Distribution Trends</i>	253
Trends in annual distribution	253
Trends in winter distribution	254
Trends in calving ground distribution and location	258
Trends in distribution during other seasons	264
<i>Habitat Requirements</i>	264
<i>Habitat Availability, Fragmentation, and Trends</i>	268
Habitat availability	268
Habitat fragmentation	269
Habitat trends	271

POPULATION	275
<i>Abundance.....</i>	275
Search Effort.....	277
<i>Population Dynamics</i>	280
Age structure.....	281
Birth rate.....	282
Recruitment and calf survival.....	289
Adult female mortality.....	290
Immigration and emigration rates.....	290
<i>Trends and Fluctuations.....</i>	292
Porcupine	295
Tuktoyaktuk Peninsula.....	297
Cape Bathurst	298
Bluenose-West	300
Bluenose-East	301
Bathurst	305
Beverly	307
Qamanirjuaq.....	311
Ahiak.....	313
Wager Bay.....	315
Lorillard	316
Overall population change and status	316
<i>Possibility of Rescue</i>	320
THREATS AND LIMITING FACTORS	320
<i>Disturbance from human activity</i>	321
<i>Climate change.....</i>	328
<i>Harvest sustainability</i>	330
<i>Wildfires</i>	332
<i>Pathogens and Diseases</i>	332
<i>Predation.....</i>	334
<i>Contaminants.....</i>	336
<i>Cumulative effects</i>	337

<i>Management complexity</i>	337
POSITIVE INFLUENCES	339
ACKNOWLEDGEMENTS	347
AUTHORITIES CONTACTED	348
BIOGRAPHY OF PREPARER	351
STATUS AND RANKS	352
<i>Barren-ground Caribou (Rangifer tarandus groenlandicus)</i>	352
INFORMATION SOURCES	353
<i>Indigenous and Community Knowledge Component</i>	353
<i>Scientific Knowledge Component</i>	365
APPENDIX – THREATS ASSESSMENT	417
<i>Threats Assessment</i>	417
Overall Level of Concern	418
Detailed Threats Assessment	419
Habitat Loss – Infrastructure Development (roads, other linear disturbance)	419
Climate change – Insect Harassment	420
Climate change – Wildfires and Smoke	421
Disrespectful Harvesting / Over-harvesting.....	422
Pathogens and Diseases	423
Predation.....	424
Habitat Loss – Industrial Land Use (exploration and extraction)	425
Climate change – Ice-on-Snow Events	427
Climate change – Habitat Change (thawing permafrost)	428
Climate change – Habitat Change (shrubification and treeline expansion)	428
Climate change – Direct Impacts of Heat Stress.....	429
Climate change – Heat Related Changes to Vegetation	430
Climate change – Drought.....	431

List of Tables

Table 1: Summary of the Indigenous and community knowledge of population dynamics indicators for the Cape Bathurst herd 2021-2024 from the ACCWM annual status meetings. Note the annual status meeting information is published the year following the information.....	151
Table 2: Summary of the Indigenous and community knowledge of population dynamics indicators for the Bluenose-West herd 2021-2024 during the ACCWM annual status meetings. Note the annual status meeting information is published the year following the information.....	151
Table 3: Summary of the Indigenous and community knowledge of population dynamics indicators for the Bluenose-East herd 2021-2024 during the ACCWM annual status meetings. Note the annual status meeting information is published the year following the information.....	152
Table 4: Summary of the Indigenous and community knowledge of population indicators for the Cape Bathurst herd 2021-2024 during the ACCWM annual status meetings. The TK and CK Information presented in the status reports is a summary of the results from the WMAC (NNWT) community tours to both Inuvik and Tuktoyaktuk, where harvesters are asked directly about the various indicators. Note the annual status meeting information is published the year following the information.....	155
Table 5: Summary of the Indigenous and community knowledge of population indicators for the Bluenose-West herd 2021-2024 during the ACCWM annual status meetings. Note the annual status meeting information is published the year following the information.	156
Table 6: Summary of the Indigenous and community knowledge of population indicators for the Bluenose-East herd 2021-2024 during the ACCWM annual status meetings. Note the annual status meeting information is published the year following the information.	156
Table 7: Sources of harvest information across the NWT (Délı́nę ʔekwé Working Group 2016; Inuvialuit Game Council 2023; Advisory Committee for Cooperation on Wildlife Management 2024; Bathurst Caribou Advisory Committee 2024; Nunavut Wildlife Management Board 2024; Gwich'in Renewable Resources Board 2024; WRRB 2024; Advisory Committee for Cooperation on Wildlife Management 2025; Bathurst Caribou Advisory Committee 2025 in prep).....	179

Table 8. Approximate chronology of subpopulation names used for barren-ground caribou found in the Northwest Territories.....	200
Table 9. Mean and median calving dates estimated from satellite-collared female daily movement rates (neither study considered the Porcupine, Tuktoyaktuk Peninsula, Wager Bay or Lorillard subpopulations). Median calving date = the date at which 50% of the births had occurred; SD = standard deviation; SE = standard error.....	205
Table 10. Ratios of males/100 females from fall composition surveys conducted on NWT barren-ground caribou subpopulations, 1978-2023.....	207
Table 11. Estimated wolf densities and numbers on the Bathurst caribou range in the NWT based on aerial surveys for wolves.	215
Table 12. Estimated wolf densities and numbers on barren-ground caribou ranges in the NWT based on Ungulate Biomass Index (UBI; from Nishi <i>et al.</i> 2024).....	219
Table 13. Hunting regulations for barren-ground caribou in the Northwest Territories for the 2025/26 season (from GNWT 2025a).....	225
Table 14. Summary of changes to management of barren-ground caribou harvests in the Northwest Territories, 2005/06 to 2024/25. Changes to barren-ground caribou harvest management in Nunavut (NU) are also included. See text for additional description of changes. ISR = Inuvialuit Settlement Region; GSA = Gwich'in Settlement Area; SSA = Sahtú Settlement Area; TAH = total allowable harvest	227
Table 15. Summary of Indigenous caribou harvests collected during harvest studies in the Northwest Territories and Nunavut, 1988/89 to 2003/04.	235
Table 16. Estimated harvest of barren-ground caribou subpopulations in the Northwest Territories. Harvest is Indigenous harvest except where otherwise indicated.....	236
Table 17. Current estimates of size of barren-ground caribou subpopulations that regularly spend at least a portion of their time in the NWT. Numbers provided are for non-calf animals except the Porcupine subpopulation, which includes calves.	275
Table 18. Pregnancy rates of barren-ground caribou in the Northwest Territories. Rates are based on pregnancy testing of collared caribou during captures (red), samples from hunter kits/collection (black), or both (blue).	284
Table 19. Number of adult females, pregnancy rate, back fat (mm) and number of warbles for the Bathurst subpopulation 1990-2009 (data for 2008 and 2009 from Adamczewski <i>et al.</i> 2020, other data from CARMA 2014).....	285

Table 20. Parturition rates (calves/100 females) for barren-ground caribou in the Northwest Territories based on surveys conducted during the peak of calving.....	287
Table 21. Approximate % change in estimated population size for barren-ground caribou in the Northwest Territories within the past 3 generations (24-27 years).....	317
Table 22. Current status of barren-ground caribou in the Northwest Territories with management plans. Evaluation of status is based on subpopulation-specific collaborative management plans.....	319
Table 23. Proposed and operational all-season roads associated with mines on tundra ranges of barren-ground caribou in the NWT (modified <i>from</i> COSEWIC 2016).	325
Table 24. Parasite and disease species and groups affecting barren-ground caribou, number of species and groups where climate change is predicted to have high to moderate effects, and level of concern from climate change (summarized <i>from</i> Kutz 2007).....	333
Table 25. Existing or under development subpopulation-specific and community management plans for barren-ground caribou in the NWT (adapted from CMA 2020).	339

List of Figures

Figure 1. Map of Northwest Territories and Nunavut showing the regions mentioned in this report, communities, and protected areas (existing and proposed). Map courtesy of B. Fournier GNWT-ECC.....	78
Figure 2. Map of Northwest Territories, Yukon, and Alaska showing the regions mentioned in this report, communities, and protected areas (existing and proposed). Map courtesy of B. Fournier GNWT-ECC.	79
Figure 3: Barren-ground caribou bull. Photo courtesy of P.E. Chaillon.....	84
Figure 4: Generalized physical differences (relative size, colouring, antlers) between woodland and barren-ground caribou in the NWT. From left to right: bull boreal woodland caribou, bull mountain caribou, bull barren-ground caribou (Polfus <i>et al.</i> 2017). Illustrations by Jean Polfus. Used with permission.....	85
Figure 5: Barren-ground caribou cow and calf from the Beverly herd in September. Photo courtesy P. Jacobsen.....	86
Figure 6: Historic maximum barren-ground caribou and porcupine caribou range compiled based on spatial data and written descriptions of range (1890s-2023). It is important to note that this represents the maximum range, as the available data indicates a current contraction of the southern portion of their range. Map courtesy of B. Fournier & N. Wilson GNWT-ECC (Thorpe <i>et al.</i> 2001; Parlee and Manseau 2005; Inuvik Community Corporation, Tuktoyaktuk Community Corporation, and Aklavik Community Corporation 2006; Dumond 2007; Community of Aklavik, WMAC (NWT), and Joint Secretariat 2008; Community of Paulatuk, WMAC (NWT), and Joint Secretariat 2008; Beaulieu 2012; Advisory Committee for Cooperation on Wildlife Management 2014a; Benson 2015; Bathurst Caribou Range Plan 2018; Beverly and Qamanirjuaq Caribou Management Board 2023)	113
Figure 7: Current distribution versus historic maximum (circa 1890s) range of Porcupine and barren-ground caribou in the NWT. It is important to note that this figure is based on the written and verbal descriptions from the following sources where caribou were described to be found or harvested in the NWT, as such the boundaries should be seen as an approximate representation. Map courtesy of B. Fournier & N. Wilson GNWT-ECC (Katz 2010; Beaulieu 2012; North Slave Metis Alliance 2012; Bathurst Caribou Range Plan 2017; Bathurst Caribou Range Plan 2018; Bathurst Caribou Advisory Committee 2021; Bathurst Caribou Advisory Committee 2022; Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022; Advisory Committee for Cooperation on Wildlife Management 2023;	

Beverly and Qamanirjuaq Caribou Management Board 2023; Advisory Committee for Cooperation on Wildlife Management 2024; Beverly and Qamanirjuaq Caribou Management Board 2024; Gwich'in Renewable Resources Board 2024).	123
Figure 8: Wildfire history (1975-2024) across the maximum historic range of barren-ground caribou. Map courtesy of B. Fournier & N. Wilson GNWT-ECC.	138
Figure 9: Industrial and infrastructure development in the range of barren-ground caribou (Porcupine, Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose-West, and Bluenose-East herds). Note: linear disturbances are not to scale. Map courtesy of B. Fournier & N. Wilson GNWT-ECC.	140
Figure 10: Industrial and infrastructure development in the range of barren-ground caribou in the southern NWT (Bluenose-East, Bathurst, Beverly, Ahik, and Qamanirjuaq herds). Map courtesy of B. Fournier & N. Wilson GNWT-ECC.	142
Figure 11: Current distribution and historic maximum (circa 1890s) range of Porcupine and barren-ground caribou in the NWT, and herd range as described by collar data mapped over wildfire history (1975-2024). It is important to note that this figure is based on the written and verbal descriptions from the following sources where caribou were described to be found or harvested in the NWT, as such the boundaries should be seen as an approximate representation. Map courtesy of B. Fournier & N. Wilson GNWT-ECC (Katz 2010; NSMA 2012; Bathurst Caribou Range Plan 2017; Bathurst Caribou Range Plan 2018; Bathurst Caribou Advisory Committee 2021; Bathurst Caribou Advisory Committee 2022; Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022; ACCWM 2023; BQCMB 2023; ACCWM 2024; BQCMB 2024; GRRB2024).	164
Figure 12. Barren-ground caribou females in winter (left) and male caribou in velvet in late summer (right; photo credits: GNWT/J. Nagy, ENR).	203
Figure 13. Average number of pups/den and number of dens active in August on the Bathurst caribou summer range (1996-2024) (Klaczek <i>et al.</i> 2016; Wilson <i>et al.</i> 2023, 2024).	218
Figure 14. Daily predicted mosquito (a) and oestrid fly (b) harassment on the Porcupine caribou subpopulation summer range in Alaska, USA, and Yukon and Northwest Territories, Canada, from 1950-2024, averaged by decade, and smoothed using a generalized additive model. Mosquito and oestrid fly harassment were hindcasted using the climate, habitat, and topography (CHT) insect indices. Shading represents 95% confidence intervals. (reproduced from Hein <i>et al.</i> , <i>in review</i>).	222
Figure 15. Barren-ground caribou hunting management zones in the Northwest Territories.	226

Figure 16. An example of the Mobile Core Bathurst Caribou Management Zone from December 17, 2024 (Cluff <i>et al.</i> 2026). The zone is based on a minimum convex polygon around all satellite collared Bathurst caribou with a buffer of at least 20 km. The NU portion of the mobile zone is shown but it has no legal standing in NU.....	232
Figure 17. Estimated numbers of barren-ground caribou harvested by resident hunters in the NWT from 2000/01 to 2023/24. Regions (Fort Smith, Inuvik and Yellowknife) are where hunters reside, not where they hunted. The Inuvik Region consists of hunters from the Inuvialuit, Gwich'in and Sahtú Settlement areas, and the Fort Smith Region consists of hunters from the North Slave (except Yellowknife), South Slave and Dehcho regions (ECC unpubl. Data).....	239
Figure 18. Distribution of migratory caribou in North America.....	240
Figure 19. Designatable Units for caribou (<i>Rangifer tarandus</i>) in northern Canada (COSEWIC 2011).....	241
Figure 20. **Please note that work is currently underway to update barren-ground caribou range use and boundaries** Distribution of barren-ground caribou range (pale colours) and calving grounds (dark colours) in the NWT from 1996–2009. The NU barren-ground caribou subpopulations that are referenced in this report (Southampton Island, Coats Island, Boothia Peninsula, Baffin Island) are displayed in grey scale for completeness only but are not a part of this assessment. Range shape files from Nagy <i>et al.</i> (2011) with data from Government of Nunavut and GNWT. For the Tuktoyaktuk Peninsula subpopulation, all data from GNWT. For the Porcupine subpopulation, all data courtesy of Government of Yukon.	243
Figure 21. Migration paths of the Beverly satellite-collared caribou (red) in comparison to Bluenose-East caribou (tan) and Bathurst caribou (black) from April to May 2023 (reproduced from Boulanger <i>et al.</i> 2024a).....	249
Figure 22. Location of winter (6 December –14 April) range for the Bathurst caribou subpopulation, 1996 to 2014, based on collared females (from left to right, winter range for 1996–99, 1999–2002, 2002–05, 2005–08, 2008–11, and 2011–14) (map by B. Fournier, ENR). Note the general retraction of the southern extent of winter range over time. ..	256
Figure 23. Estimated index of overlap between the Bathurst, Bluenose East and Beverly subpopulations during winter, using the Volume of Intersection Statistic (VI) based on collared caribou locations from 2006–07 to 2020–21 (values from Gurarie <i>et al.</i> 2024a).	258
Figure 24. Distribution of females during calving on the Bluenose-West calving ground June 2002–05. Gray is <1.0 females/km ² ; light green to red is 1.0–24 females/km ² based	

on ordinary kriging analysis to extrapolate between point observations (figure reproduced from Nagy and Johnson 2007b).	260
Figure 25. Overlap of Bluenose-East (blue), Bathurst (red) and Beverly (green) collared caribou locations and 95% kernel polygons around the collars. Year is calendar year (reproduced from Boulanger <i>et al.</i> 2024a).....	261
Figure 26. The cumulative density of peak calving grounds based on a moving window analysis of relative densities for the Bathurst subpopulation aerial surveys (1966-90) and satellite telemetry (1996-2007) (reproduced from Gunn <i>et al.</i> 2008). Years of calving ground centres of activity associated with three areas within the total area of the peak calving grounds: east of Bathurst Inlet (1966-1984); Bathurst Inlet (1986, 1990); west of Bathurst Inlet (1996-2007).....	262
Figure 27. The locations of the Beverly subpopulation's traditional inland calving grounds between 1979 and 2002 (reproduced from Johnson and Mulders 2009).....	263
Figure 28. Fire history from 1965 to 2024 in barren-ground caribou ranges in Canada.	271
Figure 29. Summer range condition index (SRCI; higher values indicate better condition, June 11-20) and late-winter calf:female ratio for the Bathurst caribou subpopulation during 1985 to 2012. Changes in late-winter calf:female ratio correspond to previous summer's range conditions with a time lag of about two years. Note that late winter calf:female ratios from 2007-2012 are likely inflated because of a change in adult female survival during the time series. Reproduced from Chen <i>et al.</i> 2014.....	273
Figure 30. (a) Cumulative plant growth degree days for 1, 10 and 20 June for NWT and NU caribou calving grounds and (b) number of days with freezing rain and rain-on-snow (1987-2005) for winter ranges (annual MERRA data from CARMA 2014). Subpopulation abbreviations: PCH = Porcupine; CBH = Cape Bathurst; BNW = Bluenose-West; BNE = Bluenose-East; BAH = Bathurst; AHI = Ahik; BEV = Beverly; QAM = Qamanirjuaq.	274
Figure 31. Contribution of each barren-ground caribou subpopulation to the total barren-ground caribou population in the Northwest Territories.	276
Figure 32. Comparison of percent females by age class for the Bathurst subpopulation in 1992 ($n = 97$) and 2008 ($n = 37$). Data from CARMA (2014) and B. Elkin (pers. comm. 2012 in SARC 2017).	282
Figure 33. Population estimates for the Porcupine caribou subpopulation 1977-2024. Error bars are 95% confidence limits.	293

Figure 34. Population estimates for NWT caribou subpopulations east of the Mackenzie River, 1977-2024. Y-axis scales are different for each of the subpopulation. Error bars are 95% confidence limits. The Beverly subpopulation defined more recently as calving in the central and eastern Queen Maud Gulf (2011, 2018 and 2023 surveys) may not correspond exactly to the earlier inland-calving Beverly subpopulation, which is shown as grey bars in the population estimates figure (see Beverly subpopulation)..... 294

Figure 35. Demographic information available for the Porcupine barren-ground caribou subpopulation: population estimates based on post-calving aggregation surveys (top left), late winter calf:female ratios (top right), fall male:female ratios (center left), fall calf:female ratios (center right), and adult female survival rate (bottom left). Error bars show 95% confidence intervals..... 296

Figure 36. Demographic information available for the Tuktoyaktuk Peninsula barren-ground caribou subpopulation: population estimates based on post-calving aggregation surveys (top left), late winter calf:female ratios (top right) and fall male:female ratios (bottom left). Error bars show 95% confidence intervals. Late winter calf:female ratios and fall male:female ratio estimates include caribou from both the Tuktoyaktuk Peninsula and Cape Bathurst subpopulations. 297

Figure 37. Demographic information available for the Cape Bathurst barren-ground caribou subpopulation: population estimates based on post-calving aggregation surveys (top left), late winter calf:female ratios (top right) and fall male:female ratios (bottom left). Error bars show 95% confidence intervals. Late winter calf:female ratio estimates prior to 2000 are for the 'Bluenose' subpopulation, which included Cape Bathurst, Bluenose West and Bluenose East combined. Late winter calf:female ratio estimates from 2013 to 2019, and the 2015 fall male:female ratio include caribou from both the Tuktoyaktuk Peninsula and Cape Bathurst subpopulations. 299

Figure 38. Demographic information available for the Bluenose West barren-ground caribou subpopulation including: population estimates based on post-calving aggregation surveys (top left), late winter calf:female ratios (top right) and fall male:female ratios (bottom left). Error bars show 95% confidence intervals. Late winter calf:female ratio estimates prior to 2000 are for the 'Bluenose' subpopulation, which included Cape Bathurst, Bluenose West and Bluenose East combined.301

Figure 39. Demographic information available for the Bluenose East barren-ground caribou subpopulation including: population estimates based on calving surveys (top left), late winter calf:female ratios (top right), fall male:female ratios (center left), fall calf:female ratios (center right), % of females breeding (bottom left) and adult female survival rate (bottom right). Error bars show 95% confidence intervals. Late winter

calf:female ratio estimates prior to 2000 are for the 'Bluenose' subpopulation, which included Cape Bathurst, Bluenose West and Bluenose East combined. 304

Figure 40. Demographic information available for the Bathurst barren-ground caribou subpopulation including: population estimates based on calving surveys (top left), late winter calf:female ratios (top right), fall male:female ratios (center left), fall calf:female ratios (center right), % of females breeding (bottom left) and adult female survival rate (bottom right). Error bars show 95% confidence intervals.....307

Figure 41. Demographic information available for the Beverly barren-ground caribou subpopulation including: population estimates based on calving photo surveys (top left), late winter calf:female ratios (top right), fall male:female ratios (center left), fall calf:female ratios (center right), % of females breeding (bottom left) and adult female survival rate (bottom right). Surveys conducted in 1993 and 2009 are not shown (see text). The Beverly subpopulation defined more recently as calving in the central and eastern Queen Maud Gulf (2011, 2018 and 2023 surveys) may not correspond exactly to the earlier inland-calving Beverly subpopulation, which is shown as grey bars in the figures above (see text). Error bars show 95% confidence intervals. Adult female survival rates were visually estimated from Figure 51 in Campbell and Boulanger (2025a).310

Figure 42. Demographic information available for the Qamanirjuaq barren-ground caribou subpopulation including: population estimates based on calving photo surveys (top left), late winter calf:female ratios, fall male:female ratios (center left), fall calf:female ratios (center right), and % of females breeding (bottom left). Error bars show 95% confidence intervals.....312

Figure 43. Demographic information available for the Ahiak barren-ground caribou subpopulation including: population estimates based on calving photo surveys (top left), late winter calf:female ratios (top right), fall male:female ratios (center left), fall calf:female ratios (center right), and % of females breeding (bottom left). Error bars show 95% confidence intervals.....314

Figure 44. Demographic information available for the Wager Bay barren-ground caribou subpopulation including: population estimates based on calving surveys (left) and % of females breeding (right). Error bars show 95% confidence intervals.....315

Figure 45. Demographic information available for the Lorillard barren-ground caribou subpopulation including: population estimates based on calving surveys (left), and % of females breeding (right). Error bars show 95% confidence intervals.....316

Figure 46. Population change for barren-ground caribou subpopulation in the NWT 1980-2025. GNWT 2026 *in prep.*318

Figure 47. Human disturbance (footprints) within the range of the Porcupine caribou subpopulation. Linear features and industrial disturbance are not to scale. Provide a date to this map. And who made it.	323
Figure 48. Three future human development scenarios for the range of the Bathurst subpopulation (from left to right, showing the outcome of the scenario in 2040: declining development, continuing development, and increasing development). All three focus on different levels of mineral exploration and development activity, and their associated transportation infrastructure. They extend 24 years into the future and were developed based on proposed projects and transportation concepts either in assessment, planned, or with a reasonable likelihood of occurring (Clark <i>et al.</i> 2016).	326
Figure 49. Boundaries of the Wolf Harvest Incentive Area from 2018/19 to 2023/24.....	335
Figure 50. Areas providing habitat protection within the range of barren-ground caribou	343

PLACE NAMES

Figure 1 and 2 show communities, major water bodies, protected areas (existing and proposed), settled land claims, as well as major rivers, lakes and landmarks named in this report.

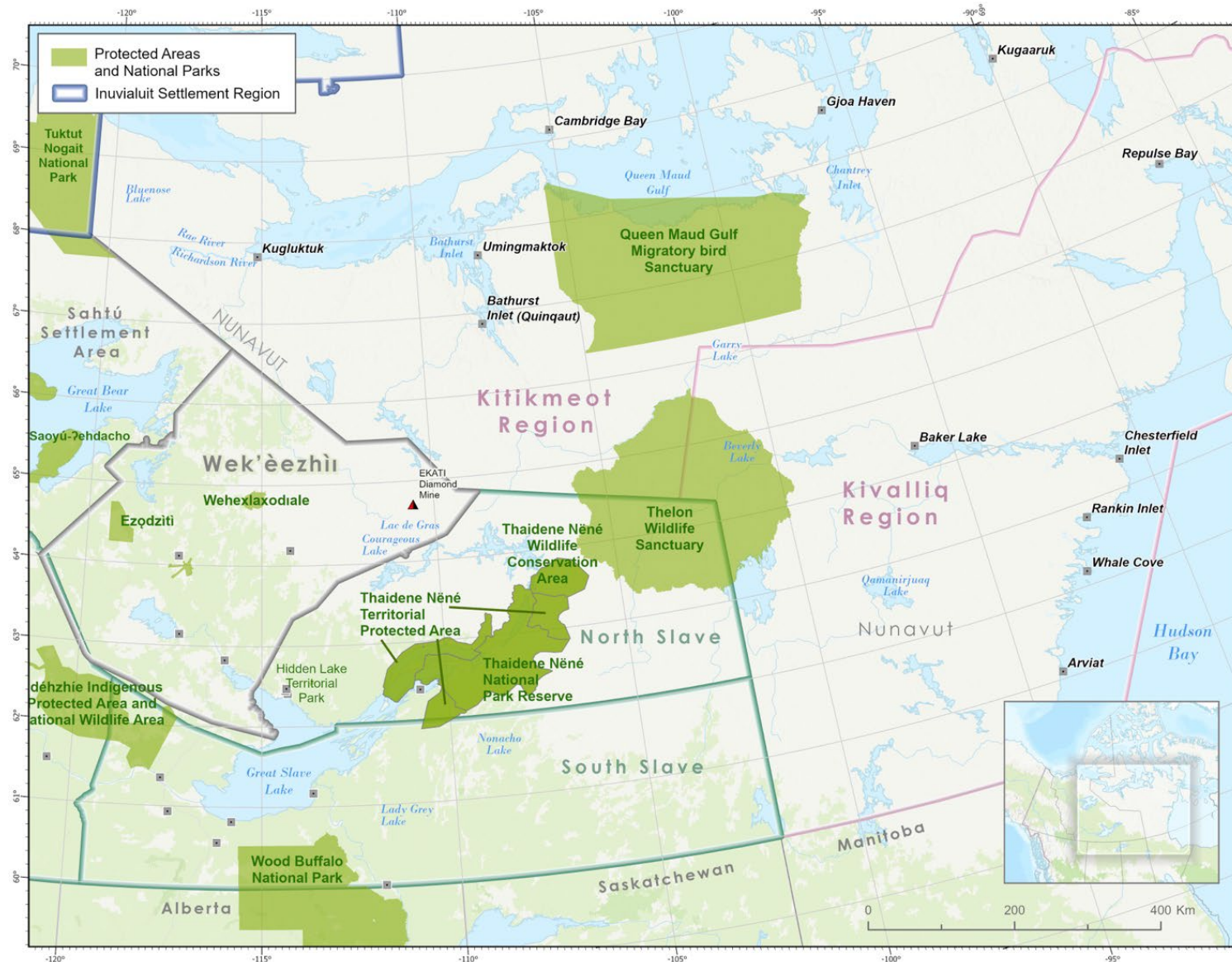


Figure 1. Map of Northwest Territories and Nunavut showing the regions mentioned in this report, communities, and protected areas (existing and proposed). Map courtesy of B. Fournier GNWT-ECC.

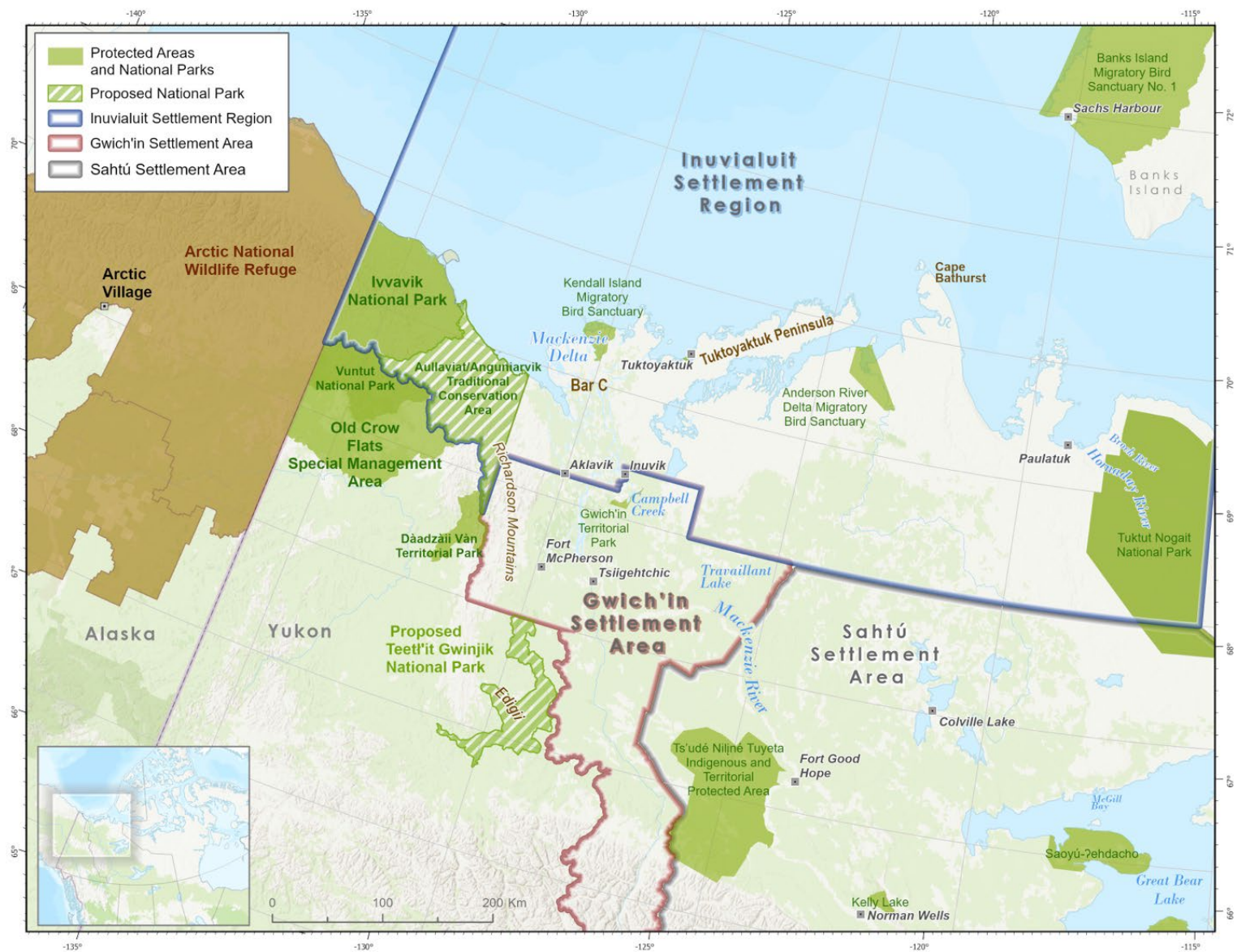


Figure 2. Map of Northwest Territories, Yukon, and Alaska showing the regions mentioned in this report, communities, and protected areas (existing and proposed). Map courtesy of B. Fournier GNWT-ECC.

INDIGENOUS AND COMMUNITY KNOWLEDGE COMPONENT

Preface

The consideration of Indigenous peoples' cultural histories, identities, languages, social organizations, and interactions with their environment is of vital importance for the accurate assessment of species status. While all reasonably available Indigenous and community knowledge was solicited for inclusion in this status report, limitations are acknowledged. First, in the completion of these reports, the Species at Risk Committee (SARC) is not able to conduct any primary research or information gathering activities (e.g., interviews). The transcription and verification of Indigenous and community knowledge is often complex and resource-intensive, not to mention sometimes controversial (Bayha 2012). It is often the case that only a small portion of the Indigenous and community knowledge that exists has been transcribed. This limits the completeness, and perhaps also the accuracy, of a status report. Second, it is important to recognize that the Indigenous knowledge transcribed and available for inclusion in this status report has been, in many respects, removed from the cultural, spiritual, linguistic, and ecological context in which it was intended to be heard (Berkes, Colding, and Folke 2000; Thorpe 2004; SENES Consultants Ltd. 2010; Tłıchq Research and Training Institute 2016). Translation, in particular, can result in generalizations and the loss of sometimes subtle descriptions of inter- and intra-specific variation, interactions, and patterns (Tłıchq Research and Training Institute 2016; Polfus *et al.* 2017). As noted by Polfus *et al.* (2017:17), "words are used in context and convey different meaning depending on who is speaking, what dialect is being used, what questions are being addressed, where on the land the speaker is located, and the dialect or background of the audience." Although Indigenous knowledge and its transmission is ultimately grounded in practice, language is integral to its interpretation (Bayha 2012; Polfus *et al.* 2016). Ultimately, understanding the environment (animals, plants, land, water, air, etc.)—that is, practicing one's culture—is essential to understanding the stories and legends.

"You can't really teach someone on a piece of paper, like theoretical. For that, you have to be more practical; you have to go out there and show them. They have to physically see what you are talking about, compared to reading it from a piece of paper. That's the teaching that I do. I bring them out there. I let them feel the ice. They can see the... different ice colours. Which is safe, which is good to go on, which is not safe, [where] it could be unstable. So, there are all these things about the ice. And you've got the currents, you've got the moon, you've got the wind direction. You can't teach a person in one week about all these changes that are happening, that you're

aware of, that you could see, you could hear and feel. But giving that knowledge takes time; say, two, three years just to absorb this information and keep seeing.” (PIN 158 [Paulatuk] in Joint Secretariat 2015)

Preamble

The information used in the report comes from numerous locations across northern Canada and the United States. Barren-ground caribou currently migrate through the traditional territories of Indigenous peoples in the Northwest Territories, Yukon, Nunavut, Alaska, and the northern portions of Saskatchewan and Manitoba. Indigenous knowledge relating to Porcupine Caribou is based in the Yukon, Northwest Territories, and Alaska, while information on Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose-West, Bluenose-East, Bathurst, Beverly, Ahik, and Qamanirjuaq herds is based in the Northwest Territories, Nunavut, northern Saskatchewan, and northern Manitoba. Additionally Indigenous and community knowledge exists in northern Alberta as barren-ground caribou historically migrated through that region. For the purposes of the Indigenous and Community Knowledge component of this report, nine herds of barren-ground caribou are recognized in the NWT including: Porcupine, Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose-West, Bluenose-East, Bathurst, Beverly, Ahik, and Qamanirjuaq. Note that the Porcupine caribou herd is a geographically distinct population and though information is presented in this status assessment report regarding Porcupine caribou, the herd will be assessed separately from the other eight herds.

Indigenous and community knowledge is not static; it continuously grows and evolves over time. In circumstances where it was appropriate, such as trying to understand present conditions, the report strives to utilize the most current information available. It should be noted that many excellent sources of information exist for barren-ground caribou that are over 20 years old and where appropriate these were also included.

The sources of information used in the report vary widely as there are numerous organizations and governments producing publicly available materials. The methodology and level of peer review from other knowledge holders varies with the source type. A major source of information includes the formal traditional knowledge studies focusing on barren-ground caribou (Thorpe *et al.* 2001; WMAC [North Slope] and Aklavik HTC 2009; Legat *et al.* 2014; Benson 2015; Tłı̨ch̓ Research and Training Institute 2016; Benson 2019). Important sources of information also include the public reports from the Tłı̨ch̓ Government research projects, and caribou monitoring programs (Tłı̨ch̓ Research and Training Institute 2016-24). The information gathered and presented during the annual meetings from the different caribou management plans was also utilized. The Advisory Committee for Cooperation on Wildlife Management annual status meeting reports provided information on the Cape Bathurst, Bluenose-West, Bluenose-

East herds, and occasionally the Tuktoyaktuk Peninsula herd (Advisory Committee for Cooperation on Wildlife Management 2014a; Advisory Committee for Cooperation on Wildlife Management 2024). The Bathurst Caribou Advisory Committee annual action plan meetings provided current information on conditions for the Bathurst herd (Bathurst Caribou Advisory Committee 2024). In addition to the annual meetings, information from the workshops and reports generated during the drafting of the plans is also included. Both the Porcupine Caribou Management Board, and Beverly Qamanirjuaq Caribou Management Boards and processes (ex: annual harvest reporting) were sources of information. Transcripts of hearings on caribou management proposals from the Wek'èezhìi Renewable Resources Board, and the public listening sessions held by the Sahtú Renewable Resources Board were also utilized (Sahtú Renewable Resources Board 2020; Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022; Norman Wells RRC and Sahtú Renewable Resources Board 2024). Community conservation plans from Délı̨nę, Colville Lake (proposed), and Łutsel K'e provided important community perspectives on stewardship, and respectful relationships with caribou and the land. The Bathurst Caribou Range Plan, and the materials generated in its development were also key sources of information (Thorpe and Barnaby 2016; Bathurst Caribou Range Plan 2017; Bathurst Caribou Range Plan 2018). Documents and reports resulting from environmental assessments and other regulatory processes were also utilized.

ABOUT THE SPECIES

Names and Classification

Common Name (English):	Barren-ground caribou; Caribou (Species at Risk Committee 2017)
Inuvialuktun/ Uummarmiutun	Tutu/Tuttu (<u>Inuvik Community Corporation, Tuktoyaktuk Community Corporation, and Aklavik Community Corporation 2006; Inuvialuit Cultural Resource Centre 2021</u>)
Inuvialuktun/Sallirmiutun	Tuktu/Tuktut (<u>Inuvik Community Corporation, Tuktoyaktuk Community Corporation, and Aklavik Community Corporation 2006; Advisory Committee for Cooperation on Wildlife Management 2021</u>)
Gwichya Gwich'in/ TeeTł'it Gwich'in	Vadzaih (Benson 2015; Benson 2019; Advisory Committee for Cooperation on Wildlife Management 2021)
Sahtú/ Délı̨ne	ʔekwé (Délı̨ne ʔekwé Working Group 2016)
Sahtú/ K'ásho Got'inę	ʔedə (Colville Lake RRC 2019)
Tłı̨chǫ Yatı̨ı	Hozı̨ı Ekwǫ̨; Ekwǫ̨ (Tłı̨chǫ Research and Training Institute 2023)
Dene Yatié/ KáTł'odehche dialect	Nódi (South Slave Divisional Education Council 2009)
Dënesų́łné/ Łutsël K'é and Denínu Kué	ʔetthën (South Slave Divisional Education Council 2012; South Slave Divisional Education Council 2014)
Cree	Atihk (LeClaire and Cardinal 1998)
Common name (French):	Caribou de la toundra (Species at Risk Committee 2017)
Scientific name:	<i>Rangifer tarandus groenlandicus</i>
Population/subpopulation:	Nine barren-ground caribou herds are recognized in the NWT: Porcupine, Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose-West, Bluenose-East, Bathurst, Beverly, Ahik, and Qamanirjuaq

Description

Barren-ground caribou are mid-sized terrestrial mammals (Figure 3). For the purposes of this report, nine herds of barren-ground caribou are recognized in the NWT including: Porcupine, Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose-West, Bluenose-East, Bathurst, Beverly, Ahik, and Qamanirjuaq. The Porcupine caribou herd is a

geographically distinct population and was assessed separately from the other eight herds. SARC (2016) considers geographically distinct populations to be populations that are 'naturally disjunct' (substantial portion of the range is separate and disconnected from the rest of their species or subspecies) or occupy a different ecological region than the rest of their species or subspecies. Knowledge holders note that it is possible to distinguish between Porcupine caribou and barren-ground caribou, with barren-ground caribou being smaller and darker than Porcupine caribou (Benson 2015).



Figure 3: Barren-ground caribou bull. Photo courtesy of P.E. Chaillon

Barren-ground caribou overlap in range with three other caribou species and sub-populations: woodland caribou (Boreal population), woodland caribou (Northern Mountain population), and Dolphin and Union caribou. Differences are noted among barren-ground caribou herds; Porcupine caribou are larger and lighter compared to the other herds (Benson 2015). Barren-ground caribou are slightly smaller and lighter in colour than the closely related boreal woodland caribou (Benson 2011; Legat *et al.* 2014; Polfus *et al.* 2016; Figure 4). They can be distinguished from mountain caribou, which are generally larger and more strongly associated with mountainous habitats, as well as from the Dolphin and Union caribou which are smaller and whiter in colour (Thorpe *et al.* 2001; Species at Risk Committee 2023; Figure 4). Additionally, the different types of caribou can

be differentiated by their tracks, and by the taste of their meat (Thorpe *et al.* 2001; Polfus *et al.* 2016; Species at Risk Committee 2023).



Figure 4: Generalized physical differences (relative size, colouring, antlers) between woodland and barren-ground caribou in the NWT. From left to right: bull boreal woodland caribou, bull mountain caribou, bull barren-ground caribou (Polfus *et al.* 2017). Illustrations by Jean Polfus. Used with permission.

Both male (bull) and female (cow) caribou share similarities in colour and form. They have lightly coloured tails, bellies, and necks (Figure 4 and 5). Bulls are slightly darker in colour, will have a longer beard, and most age classes of bulls will have larger antlers than cows (Benson 2019).

"...They look dark [in] colour as a bull...and white one - they're just like white colour, that's [a] cow. [Both have a tuft of hair, but]...the bull's is really long... [You can tell from] maybe one quarter of a mile, I guess. You can tell what they are if they're smaller and they're [a] lighter colour, but if you see bull they're dark...dark and bigger." (Gabe Andre [Tsiigehtchic] in Benson 2015:21)

Caribou can vocalize through a grunting sound, which has been characterized as a "moo," type sound (Benson 2019). When threatened and sensing danger, they can also make a growling sound (Benson 2019). Calves are very vocal when calling out to their mothers (Benson 2019; Figure 5). Bull and cow caribou make similar sounds (Benson 2015).

Knowledge holders frequently describe barren-ground caribou as intelligent sentient beings (Tłı̨chʔ Research and Training Institute 2013; Thorpe and Barnaby 2016; Tłı̨chʔ Research and Training Institute 2016; Bathurst Caribou Range Plan 2018; Benson 2019; Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022; Beverly and Qamanirjuaq Caribou Management Board 2024).



Figure 5: Barren-ground caribou cow and calf from the Beverly herd in September. Photo courtesy P. Jacobsen.

"My job is to get the view out that caribou is a person, something that needs to be respected. This used to be caribou habitat, right here. Need to think about caribou as intelligent, sentient beings. Treat the meat, the blood, and the bones with respect because caribou is a smart animal. Caribou will not come to us because it is a smart animal. Talking about it like a person to person. We as persons need to take that upon us. Feed the water, give back to the land. We have been reviving old trails where people used to go to get caribou; where people used to intersect with caribou." (Anonymous [Tłı̨chǫ community] in Thorpe and Barnaby 2016:17)

Caribou can remember areas of good forage and good habitat, location of good calving grounds, areas of disturbances, and areas of disrespect. They have an excellent memory and understanding of the land (Legat et al. 2014; Tłı̨chǫ Research and Training Institute 2016). Caribou use their memory and intelligence to make conscious choices about their lives, deciding where to go, what to eat, and what to avoid. Caribou have a collective memory; knowledge holders in the Tłı̨chǫ region use the term "ekwò wini`łhè zq lanì" to describe caribou as being of "one mind," (Tłı̨chǫ Research and Training Institute 2016). If herd numbers drop too low or leaders are removed from the herd, the collective memory can be disrupted, leading to behavioural changes such as a change in migration routes

or decreased use of a certain area (WMAC [North Slope] and Aklavik HTC 2009; Benson 2019; Beverly and Qamanirjuaq Caribou Management Board 2024).

“They really know the land. They live on the land all winter and feed and that’s why they know where their food is. They remember.” (Rosalie Drybones [Tłı̨ch̨ community] in Legat et al. 2014:47)

Relationship with People

Barren-ground caribou are a foundation for the people and culture of the NWT. This relationship between people and barren-ground caribou has existed and developed over thousands of years, since time immemorial (Tłı̨ch̨ Research and Training Institute 2016; Benson 2019; Łutsël K’édé Dene First Nation 2020; Beverly and Qamanirjuaq Caribou Management Board 2023).

“our ancestors have lived in this area for millennia and have relied extensively on caribou long before assertions of European sovereignty or control. Our members continue Denesoline harvesting traditions and practices in modern forms in this area today... For LKDFN, our relationships and responsibilities to the caribou are established in histories and accounts that go back thousands of years. These relationships and responsibilities are the underpinnings of Denesoline law and our traditional management systems.” (Łutsël K’édé Dene First Nation 2020:8)

Subsistence harvest of barren-ground and Porcupine caribou is a key part of self-determination, self-governance, and sovereignty (Benson 2019). Caribou are extremely important to Indigenous peoples across the NWT. The experiences of being on the land while harvesting caribou are equally important to culture as the harvest. The experience of hunting, preparing meat and hides, and sharing with community members are a foundation of the cultural identity and traditions of Indigenous peoples (Bathurst Caribou Range Plan 2018). Biological diversity and cultural diversity are intrinsically linked; access to barren-ground caribou is key to the preservation of Indigenous language, culture and ways of life (Hummel and Evans 2017). “Caribou herds are relied on for physical, cultural, linguistic, and spiritual sustenance,” (Łutsël K’édé Dene First Nation 2020:9).

The intrinsic link between biological and cultural diversity underscores the importance of access to barren-ground caribou for preserving Indigenous languages, traditions, and knowledge systems (Hummel and Evans 2017). As the Łutsël K’édé Dene First Nation (2020:9) explains, “Caribou herds are relied on for physical, cultural, linguistic, and spiritual sustenance.” These connections highlight the caribou’s essential role in maintaining the cultural fabric and well-being of Indigenous communities.

With scarcity of caribou being an issue across the NWT and adjacent regions (see *Changes in Distribution* and *Changes in Population Size*), many harvesters need to travel further to access caribou, or are unable to access them, impacting the ability to maintain

and practice important aspects of their culture (Beverly and Qamanirjuaq Caribou Management Board 2023).

“That anything to do with wildlife we would be involved because that -- that's what describes our language, culture, and way of life. It -- and -- and the more we practice the traditional way of hunting practices, it -- it's a way of passing on information to the next generation. And so what we have now is -- is a real threat -- a real threat to the method of transferring information to the -- to the next generations. And so we know that -- we know that just by natural knowledge and the way we observe things, that the -- that the caribou is very threatened”- (John B. Zoe [Behchokò] in Wek'èezhìi Renewable Resources Board 2016a:139)

“...That's the cultural that started to look at me and say, I'm proud of being Tłıchǫ. And taking -- taking that away from our young people and our youth is stopping the whole way of life. We're going backwards. I'm seeing all these young people here. And we were talking about it yesterday. What does our past look like? Who's going to stop from the caribou -- hunting the caribou and saying that we're going to stop you from killing and your culture and your way of life? (Tony Rabesca [Behchokò] in Wek'èezhìi Renewable Resources Board 2016a:150)

“Every fall and winter we go hunting on the land after freeze-up. This is the way my parents taught me, so I am teaching my boy the way I was taught. If it's not me, my brother and my son go out hunting... The caribou is not coming to our area any more. It's because of the industries that are all surrounding our communities. My son went hunting at Nonacho Lake, past Grey Lake. We go pretty close to where they have the hydro, and there is a lot of overflow on Nonacho Lake due to the hydro. This is where we all go because we are teaching our youth to use the land and to go hunting. If we lose our culture and our heritage we will be gone, and without the caribou we wouldn't know what to do.” (Terri Enzoe [Łutsel K'e] in Barnaby and Simmons 2013:10)

“We lost a lot of our traditional upbringing, our traditional way of life, the way that you respect an animal, the way that we make the caribou the most important animal in our life. And that's how I believe the caribou should be. That's how I believe our people, our young future generations need to know. And so the people of Wekweètì have all grew up on -- on eating wild meat from the caribou. When they don't get the meat, they feel very weak when they don't eat. And they don't eat that much fish, but it's mainly the diet of caribou that they grew up on. So whatever kind of food that you grew up eating is what makes you strong and that's what makes you a person that you are. And so in with our leadership, our people, our leadership are talking today about how we can help each other, how governments can collaborate with each other to help the caribou.” (Joseph Judas [Wekweètì] in Wek'èezhìi Renewable Resources Board 2016a:121)

Barren-ground caribou have not been as accessible in regions on the southwestern edge of their range. Barren-ground caribou are now absent or significantly less available in the following communities, where they were to varying degrees formerly readily harvested: Inuvik, Tsiigehtchic, Fort Good Hope, Délı̨ne, Wrigley, Gamètì, Whatì, Behchokò, Yellowknife, N'dilo, Dettah, Fort Resolution, and Fort Smith (Benson 2015; Bathurst Caribou Range Plan 2017; Bathurst Caribou Advisory Committee 2021; Bathurst Caribou Range Plan 2018; Bathurst Caribou Advisory Committee 2022; Beverly and Qamanirjuaq

Caribou Management Board 2023; Advisory Committee for Cooperation on Wildlife Management 2024; Beverly and Qamanirjuaq Caribou Management Board 2024).

Porcupine caribou remain more accessible in the NWT and portions of the Yukon where harvesters of the NWT travel to hunt them. Accessibility to harvest Porcupine caribou varies from year to year and from community to community, leading to years where needs may not be met in certain communities (Gwich'in Renewable Resources Board 2023; Gwich'in Renewable Resources Board 2024; Gwich'in Renewable Resources Board 2026). Though Porcupine caribou have been relatively accessible over the last 10 years, they were less accessible in 2025 to harvesters in the NWT, which would suggest that the population is stable or slightly decreasing following its peak in 2017 (Gwich'in Renewable Resources Board 2026; Inuvialuit Game Council 2026; Porcupine Caribou Management Board 2026).

Biology and Behaviour

Cows will reach maturity at two to three years of age (Gwich'in Elders 1997; Benson 2015; Benson 2019; Thorpe et al. 2001). Some sources say a cow may have a calf when they are as young as two years old (Gwich'in Elders 1997; Benson 2015; Benson 2019). Young bulls are sexually mature at age two; however, they will be unlikely to breed as they will be outcompeted by the large bulls in the best condition (Benson 2015). Knowledge holders note that conditions are important to the number of calves born. During years of good environmental conditions, cows may occasionally have twins, and during poor years cows may not calve at all; however, the majority of years, cows will give birth to a single calf (Advisory Committee for Cooperation on Wildlife Management 2014a; Benson 2015; Bathurst Caribou Range Plan 2018).

"Sometimes if ...[the] caribou [herd is] going to be increasing, they have lots... They have maybe two to each caribou, but if they're not going to increase, sometime they have one, sometime they have nothing." - (Gabe Andre [Tsiigehtchic] in Benson 2015:37)

"...If they don't feed, they don't put on weight which makes it difficult for them to get pregnant and have healthy calves." (Anonymous [NWTMN community] in Bathurst Caribou Range Plan 2018:72)

Calves are born between late May and early June (Gwich'in Elders 1997; Thorpe et al. 2001; WMAC [North Slope] and Aklavik HTC 2009; Kavik-Stantec 2012; Legat et al. 2014; Benson 2015; Benson 2019). There is a certain amount of variation in timing for when calves are born (WMAC [North Slope] and Aklavik HTC 2009).

"You can't tell really [if the timing of calving is the same] ... When they're born, it might be a bit different every year. It depends on the weather. They follow the weather." (Jack Goose [Aklavik] in WMAC [North Slope] and Aklavik HTC 2009:55)

A small number of calves may even be born early during the spring migration (Benson 2019). Across their range, barren-ground caribou gather in large groups on calving grounds near the arctic coast. Calving grounds are typically areas where there is good forage, safety from predators, a reliable source of wind to reduce harassment from biting insects, and little human disturbance (see: *Movement and Dispersal*; Thorpe et al. 2001; Bathurst Caribou Range Plan 2018). During the spring migration, bulls move northwards away from their winter habitat; however, they do not follow cows all the way to the calving grounds during the spring migration (Bathurst Caribou Range Plan 2017).

Shortly after birth, calves are quickly able to stand and follow their mother closely. Calves are bonded to their mothers and can locate each other through a distinctive call (Benson 2019). Calves will feed on their mother's milk until October (Gwich'in Elders 1997; Thorpe et al. 2001; Benson 2019; Tłı̨ch̓ Research and Training Institute 2023). Calves may begin to forage on plants in late summer and early fall, learning what to eat from their mothers (Legat et al. 2014).

“When the calf is about to go off milk, it will eat whatever its mother eats. Its mother will teach it.” (Jimmy Martin [Behchokò] in Legat et al. 2014:38)

Following calving, cows and calves will slowly make their way southwards towards their summer range (Thorpe et al. 2001; Tłı̨ch̓ Research and Training Institute 2016).

“The animals, after they come back from the calving ground area. Coming back this way [south], they are not rushing back into the tree line, while on the north side of Ek’atì [Lac de Gras]. ...But they don’t rush themselves because they just walk slowly and eat, stop, eat, stop, eat, stop all the way from the barrenlands. I don’t know how many times it goes like that. That’s when they start to get fat, in August, September.” (Joseph Judas [Wekweètì] in Tłı̨ch̓ Research and Training Institute 2016:35)

There used to be lots of caribou here, like lots of tracks around Be̱aiti (Winter lake), either going this way or going that way. That’s how we know that the caribou are coming back from the north. If it goes this way (northwest), we know that it’s going to come back right away because Barrenlands is not that far, but if its goes this way (southwest) the Barrenlands are pretty far that’s why it doesn’t come back right away. Always the elders was saying that. That’s why if there are caribou going by Be̱aiti that’s good, and we are so happy if we see caribou tracks here, like a whole bunch of them. Etle hagoo to, means the mud that caribou step their foot inside and make the trail. If there is a whole bunch of them like that on the channel here, between Be̱aiti and the river there. (Joseph Judas [Wekweètì] Tłı̨ch̓ Research and Training Institute 2016:34)

Calves will stay with their mothers until the rut in October, when they will be chased away by breeding bulls. During this time the calves and yearlings will stay nearby with dry cows (non-breeding cows) (Thorpe et al. 2001). Following the rut calves will rejoin their mothers and stay with them until the following spring calving season (Benson 2019).

During the mid-summer to early fall caribou spend most of their time foraging to put on as much fat as possible for the fall migration and rutting season. During the summer caribou antlers will be covered in velvet. By mid-September the bulls shed the velvet by scraping it off on trees and willows (Gwich'in Elders 1997; Benson 2019; Tłı̨chq Research and Training Institute 2023).

"... Caribou migrate into the tree line to remove the velvet off their antlers, and thus, people should not use and burn the trees that ekwò scrap their antlers on." (Louis Zoe [Tłı̨chq community] in Tłı̨chq Research and Training Institute 2023:35)

Barren-ground caribou begin to rut in early to late October (Gwich'in Elders 1997; Thorpe et al. 2001; Benson 2015; Benson 2019).

[The rut starts] Middle of October, towards the end of October that's when they really start. You could even smell them. Stink. You could tell they rutting. They start to shine. You know that thing [neck] they got, if they look towards the sun it shines." (George Selamio [Aklavik] in WMAC [North Slope] and Aklavik HTC 2009:48)

When [caribou] get to around this West Channel side, that's when they start, October, they start getting stink and October 10th, after that nobody can shoot caribou. Our Elders used to tell our young people, 'Don't bother to shoot caribou after the 10th of October, because then they get really stink, you can't eat it.'" (Annie Gordon [Aklavik] in WMAC [North Slope] and Aklavik HTC 2009:48)

During the rut, bulls will compete against each other, with the largest prime bulls often being those who breed (Benson 2015).

"The bulls, they fight for that right. And it's the biggest, or the toughest one, he's the one." (Tom Wright [Inuvik] in Benson 2015:38)

During the rut bulls will make snorting vocalisations and rub their antlers against willows (Gwich'in Elders 1997; Benson 2019). Bulls have an increase of hormones and expend large amounts of energy competing for cows or groups of cows during this time. Bulls are typically not harvested during and immediately following the rut as they are often in poor body condition as well as have poor-tasting meat from the presence of these hormones (Thorpe et al. 2001; WMAC [North Slope] and Aklavik HTC 2009; Soublière 2011; Wray 2011; Wray and Parlee 2013; Benson 2019).

Following the rut, barren-ground caribou continue their fall migration to their winter habitat towards the treeline. Bulls will shed their antlers in December (Benson 2019). On the winter range, barren-ground caribou cows and bulls will disperse into smaller groups (Benson 2015; Benson 2019).

"If you have a warm fall, they'll just take their time and feed... If it's lots of snow, they'll hurry up and get to their wintering ground. ...when they're going, they're moving pretty good. But then

once they hit the treeline, then they just slow right down, and just take their time and spread out.” (James Firth [Inuvik] in Benson 2015:33)

During the spring, the cows begin to migrate northwards towards their calving grounds. The timing of the spring migration is impacted by weather and snow conditions (Bathurst Caribou Range Plan 2017; Benson 2019). There is some variation in the timing of the start of the spring migration, which, depending on the region or the year, may begin from February to April (Benson 2015; Tłı̨ch̓ Research and Training Institute 2016; Benson 2019).

“Springtime, coming back to the north these animals travel all year round, they travel a long way in a day. They put their head down and they head to the north looking for food. They have traveled a lot in the winter looking for food. All these animals on the tree line move once the snow starts to melt, and then they move to the next place while it melts. They can’t just go straight to the calving grounds because it’s still all snow. So they take their time going up there. (Joseph Judas [Wekweètì] in Bathurst Caribou Range Plan 2017:16)

In spring, the bulls leave the treeline and follow the cows northwards onto the tundra, but do not travel all the way to the calving grounds.

The bulls don’t go all the way up to the calving grounds, they meet them after the calves are born and are bigger and they meet them on the way down again.” (Joseph Judas [Wekweètì] in Bathurst Caribou Range Plan 2017:16)

Barren-ground caribou cows will typically arrive on the calving grounds by late May to early June (Thorpe et al. 2001; Benson 2015; Benson 2019; Gwich’in Elders 1997; Legat et al. 2014). Calves that have survived to this point then become yearlings and pregnant cows will give birth to a calf, marking the start of a new seasonal cycle.

Diet and Feeding Behaviour

Barren-ground caribou can eat a large variety of plants. Typically, caribou consume lichens (both terrestrial and arboreal), rock tripe, grasses, mushrooms, shrubs (willows), cranberries and cranberry flowers, blueberry and blueberry leaves, mosses, and sedges (Legat et al. 2008; WMAC [North Slope] and Aklavik HTC 2009; Tłı̨ch̓ Research and Training Institute 2013; Legat et al. 2014; Benson 2015). They have also been known to eat aquatic plants, and even muskrat push-ups (Legat et al. 2014; Benson 2015).

“[push-ups are] all roots and plants, so that’s what [caribou] eat. I don’t think...they don’t eat the mud. But if you look at a rat house, it’s just all plants.” (James Firth [Inuvik] in Benson 2015:24)

Caribou diet varies across the seasons and range of barren-ground caribou. During the summer months, caribou have access to a greater variety of plant types on the tundra than during the winter months when they are near or below the treeline (WMAC [North Slope] and Aklavik HTC 2009; Tłı̨ch̓ Research and Training Institute 2016; Legat et al. 2008).

Summer is an important time for caribou to forage. From mid-summer (August and September) into the early fall caribou will feed extensively and put on as much fat as possible. Good quality forage is also important at this time of year for cows to provide milk for their recently born calves (Beverly and Qamanirjuaq Caribou Management Board 2024).

"Well, in the summertime, [grass,] that's all they eat. They don't eat moss. That's all they eat is grass. And that's why a lot of people don't really care for the caribou in the summer, because it tastes grassy. Come mid-August, from then on, they really try to put lots of fat on... And a lot of it is on the land, but a lot of it is in the lakes too." (James Firth [Inuvik] in Benson 2015:25)

Wet summers are known to improve the condition of forage for caribou. The wet conditions increase the availability and quality of their preferred foods (Thorpe et al. 2001; Dumond 2007; Legat et al. 2008; Advisory Committee for Cooperation on Wildlife Management 2014; Legat et al. 2014; Wek'èezhii Renewable Resources Board 2016). One of the ways drier conditions will reduce the quality of forage is by reducing the availability of mushrooms (Tłı̨chq Research and Training Institute 2023). Knowledge holders have explained that caribou often forage on dwarf willows in late August and that the high oil content helps them put on fat (Tłı̨chq Research and Training Institute 2023).

"on some occasions there's rain all winter or all summer long. You get good rain, you get good forage, you get -- but sometimes when it's so dry and it's, like, drought season it's very difficult for -- for the caribou to eat." (Joseph Judas [Wekweètì] in Wek'èezhii Renewable Resources Board 2016c:76–77)

"In the summer when there is bad weather the ground is kind of moist. The ʔadzii, especially ʔadziidegoo (white lichen) gets soft, that is what the ʔekwò really like. They get fat with it." (Adele Wedawin [Behchokò] in Legat et al. 2008:19)

"They grow on the land. They have got fat in them. That is what they are called. The caribou eat those as well. Sometimes there would be a lot of those on the land, what they call mushrooms. That is one of the types of food that they like." (Charlie Keyok [Kitikmeot community] in Thorpe et al. 2001:119)

During the winter, forage and diet are influenced by snow conditions. During the winter, caribou typically feed mostly on lichen, (Legat et al. 2014; Benson 2015). On the tundra, caribou often seek out ridges or hills where wind blows snow away to easier access the lichen. Caribou will seek out areas where snow conditions are soft and shallow enough to allow them to dig through to access the forage underneath.

"In winter, the ʔekwò eat Tł'o, especially Tł'odzii [type of grass/sedge] found on the shoreline." (Madeline Martin [Tłı̨chq community] in Legat et al. 2014:48)

"If there is nothing one place, they go look for it and they find it easy too. By winter time...the way they walk they could feel it...by their hooves. They know where is good grass on the lake too, they dig that out." (Gabe Andre [Tsiigehtchic] in Benson 2015:26)

"If they can't find food they have to walk and walk and walk. Sometimes they have hard time when there is lots of snow, they have to dig, dig out the snow until they find their feeding. That is hard work for them." (Joan Nazon [Tsiigehtchic] in Benson 2015:30)

"Some places, ah, caribou... don't hang around there all winter because it's, all, too snow drift, you know, and that kind of stuff. Hard snow, so they go in the hills where it's, mountains where it's soft snow and shallow snow and they get their food." (Stanley Njootli [Old Crow] in Katz 2010:39)

In addition to digging through snow for food, caribou will also eat arboreal lichens in the wintertime.

"The Ɂekwò also eat lichen-like vegetation, called dààghò that are on trees. ... There is a lot of this vegetation on the trees, they also eat this." (Robert Mackenzie [Tłı̨chʔ community] in Legat et al. 2014:48)

Icing caused by rain on snow events, or warm temperatures mid-winter can negatively impact the availability of winter forage by making it too difficult for caribou to dig through. In addition to this ice-crusting snow, snow that is too deep or hard-packed can also impact access to food (Thorpe et al. 2001; WMAC [North Slope] and Aklavik HTC 2009; Katz 2010; Jacobsen 2013; Advisory Committee for Cooperation on Wildlife Management 2014b; Benson 2015; Benson 2019; Łutsël K'è Dene First Nation 2020).

"It's all important, wherever they can find food. They gotta follow the food. If it rains in the fall time it's real bad—freeze-up. Under that snow it turns to ice. That's when the caribou starve. If it's good fall, not much rain or not too warm weather, they'll stay healthy." (Anonymous [Aklavik] in WMAC [North Slope] and Aklavik HTC 2009:29)

"One year, what time was this, in the fall time or the spring time when dad and I went down [Kaktovik] way with skidoo, when I said caribous just dropping all over the place. Fall time. Remember, in the fall time we stayed down there for one month and there was big rain and then big ice, everything just froze all over. The ground was full of ice and caribou, lots of caribou starved that year. We stayed down there for a month ... seven or eight years ago maybe." (Annie Gordon [Aklavik] in WMAC [North Slope] and Aklavik HTC 2009:90)

Adaptations to Environment

The long-distance migrations undertaken by barren-ground caribou are perhaps the species most iconic adaptation to the northern environment. From 2012 to 2023, the Beverly and Qamanirjuaq herds of barren-ground caribou migrated upwards of 800-850 km from their respective core calving grounds to the edge of their winter ranges (Beverly and Qamanirjuaq Caribou Management Board 2023). Caribou are well adapted to the northern landscape and can move very quickly across difficult terrain (Benson 2019).

These long-distance migrations are an adaptation to the availability of forage, and the avoidance of insects and predators across the seasons (Thorpe et al. 2001; Legat et al. 2001; WMAC [North Slope] and Aklavik HTC 2009; Bathurst Caribou Range Plan 2018). These large-scale migrations allow caribou to seek out forage if food sources are depleted or disturbed (Thorpe et al. 2001).

Caribou migrate to the coast or shorelines of lakes or to higher elevations in the summer to avoid insect harassment, for the good quality forage on the tundra, as well as for the open areas where predators are more visible (Thorpe et al. 2001; Inuvik Community Corporation, Tuktoyaktuk Community Corporation, and Aklavik Community Corporation 2006; Gwich'in Social & Cultural Institute 2009; Benson and Ernst 2017).

"In the spring or summer we try to get all our caribou from along the shore. When it's a lot of mosquitoes they always go, you know, towards the wind, from the ocean. That's where they always go. When it's hot too they can't stay up on the mountains, they always go towards the sea." (Barbara Allen [Aklavik] in WMAC [North Slope] and Aklavik HTC 2009:29)

During the winter, caribou migrate to seek out better snow and climate conditions for forage in or near the treeline (Legat et al. 2001; Gordon et al. 2008; Katz 2010; Benson 2019).

"If there is nothing one place, they go look for it and they find it easy too. By winter time...the way they walk they could feel it...by their hooves. They know where is good grass on the lake too, they dig that out." (Gabe Andre [Tsiigehtchic] in Benson 2015:26)

"In the boreal forest, even if it snows, the ekwò will kick away the snow and get the ground and that's how they eat till they have their fill." (Jimmy Martin [Tłı̨chǫ community] in Legat et al. 2001:31)

Barren-ground caribou are rarely seen as single animals and congregate in large groups as a defence mechanism against predators and insect harassment (Benson 2015; Benson 2019). Caribou rely on their large numbers to keep them safe. Knowledge holders note that caribou are less brave when they are in smaller groups and that this can impact their distribution (Bathurst Caribou Range Plan 2018). However, during the winter months when forage is less available, barren-ground caribou will split into smaller groups (Benson 2019).

Knowledge holders frequently describe how caribou rely on their knowledge of the land and excellent memory to decide where to travel and where to find areas of good food and habitat, as well as areas of disturbance to avoid (Legat et al. 2014; Thorpe and Barnaby 2016; Tłı̨chǫ Research and Training Institute 2016).

"Our parents used to tell us stories about how the Ɂekwò migrate and roam around on the land. First of all, we start when the Ɂekwò live on the tundra. Later, when it starts to freeze-up, they start to migrate into our land. It is said, the Ɂekwò have k'àowo [a leader, who is the mother of a large

bull]. When many Ɂekwò are migrating, she goes ahead of them and they follow her. That is the way they roam on the land. ... They feed on the land and go to wherever they remember a good feeding area. She goes ahead of them to these places. She goes ahead of the other Ɂekwò. That is what they do and that's how they travel to places where it is good for feeding. They really know the land." (Rosalie Drybones [Tłıchq community] in Legat et al. 2014:39)

"One of the assumptions we made was caribou come from the north and they migrate through the area but the Elders say they are blocked by the mines so instead they moved to the east and the west. So that's the assumption: if you destroy food in one area, what happens to the migration of caribou further away from them? . . . Caribou start to associate this noise with people and so they try to stay away. Where before caribou would see people and be happy, now they see people and run away. Now you have miners on the land so you create a different relationship. Habitat destruction but also they don't want to go towards people because of fear." (Anonymous [Tłıchq community] in Thorpe and Barnaby 2016:12)

As noted in *Threats and Limiting Factors*, barren-ground caribou migrate across a vast range, making them vulnerable to a variety of negative influences, including habitat loss and the cumulative effects of multiple stressors (Beverly and Qamanirjuaq Caribou Management Board 2023). Caribou are sensitive to noise and tend to avoid areas of human disturbances including: mining, mining exploration, roads, hydro lines, communities, work camps, low flying aircraft, oil and gas developments, pipelines, and seismic exploration (Kavik-Stantec 2012; Benson 2015; Thorpe and Barnaby 2016; Tłıchq Research and Training Institute 2016; Bathurst Caribou Range Plan 2018; Benson 2019; Government of the Northwest Territories 2019; Łutsël K'é Dene First Nation 2020).

"There used to be quite a bit of seismic work out there [with Colt]. And because of all that noise, they just kept away. You wouldn't see them around there..." (James Firth [Inuvik] in Benson 2015:49)

"You see, around the mine site, I went there yesterday, walked around and I didn't see, not really any trails around there, not since a long time ago. That's why now [caribou] are way out from the mine, about thirty kilometers away from the mine. Then we see lots of trails, lots of trails. I think the mines make too much noise, so [caribou] go out a little ways. [Caribou] make a new trail a little ways out from the mine. Looks like he made a new trail." (Albert Boucher [Tłıchq community] in Tłıchq Research and Training Institute 2013:39)

Caribou are well adapted to cold temperatures and winter conditions; they can move rapidly even at -40°C to -45°C (Jacobsen 2013; Benson 2019).

"it's different now. In older days when it was colder, the animals liked it when it was cold because that's what they are built for." (Francis Simpson [Whati] in Jacobsen 2013:12)

Caribou can travel quickly in soft snow conditions. Under these conditions, caribou can outrun wolves; however, on hard, crusted snow, wolves have the advantage (Benson 2015; Benson 2019).

"...sometimes, [if there's] lots of snow and all them caribou, they've got to follow each other... Sometimes [the wolves] have it easier, and sometimes they don't because they can't go on that soft snow. Once it's hard, then they can run, catch them." (Tom Wright [Inuvik] in Benson 2015:40)

Relationship Within and Among Species

Indigenous and community knowledge holders often speak of the interconnected nature of all parts of the land (Benson 2019). Barren-ground caribou are thought of holistically and are fundamentally connected to and interact with numerous other species across their range (Legat et al. 2001). In the source material, there are several key relationships between species that knowledge holders mention frequently. The most frequently discussed relationships are those between barren-ground caribou and their predators. Barren-ground caribou are preyed upon by a variety of species, primarily by wolves, grizzly bears, and, occasionally by wolverines, eagles, and, on rare occasions, by lynx. Knowledge holders will also note the relationships and interactions between barren-ground caribou herds as well as between caribou and other competitors such as muskox, boreal caribou, moose, reindeer, and wood bison.

Wolves

Found across their range, wolves are the primary predator of barren-ground caribou (Katz 2010; Benson 2015; Thorpe and Barnaby 2016; Bathurst Caribou Range Plan 2018; Benson 2019).

"Predators are the most that are killing off the caribou. Too many wolves and grizzly bears back home.....In the past I always tell people that we control wolverines, wolves and grizzly bears through use of furs." (Anonymous [Bay Chimo/Bathurst Inlet] in Bathurst Caribou Range Plan 2018:60)

Wolves and caribou have shared the landscape for thousands of years; as such, wolves are well adapted to hunt caribou and are efficient and effective predators. Wolves hunt in groups, using strategy to overcome the natural speed advantage of caribou (Benson 2015; Benson 2019; Gwich'in Elders 1997). When chasing caribou, wolves will work in shifts, and when the lead wolf gets tired, another wolf takes its place at the front. They will bite at the hind legs of caribou until eventually the caribou slows enough from its injuries to be killed (Gwich'in Elders 1997; Benson 2015).

"Wolves are very smart. They strategize. They know how to hunt. Just a little nip, a little blood, and they follow and follow and follow until they get them. I've seen so many trails and so many wolf kills, mile at a time, that you could tell that all they do is just run. And if they know it's like a good bite, then eventually, the caribou is going to lay down and stiffen up, and they can't get up. So they just follow and take their time and they're there. Yeah, they're a smart animal, that, very smart. There's the place up... Caribou Creek, on the Dempster. Traditionally, that's where the wolves would chase the caribou into these little narrows, and there's like an ambush there. They

plan it. And then they don't try to kill them right away. Well, of course, if you get the chance, you do. But all they do is just bite them, bite their tendons ...and there's so many of them sometimes." (James Firth [Inuvik] in Benson 2015:39)

Community members describe two types of wolves based on their caribou hunting strategies: migratory wolves, which follow caribou along their migration routes, and stationary wolves, which maintain a defined home range that caribou pass through during their annual migrations (Katz 2010; Winbourne and Benson 2021).

"...There used to be wolfs around and bears. October and November the bears and wolves are gone. They know the caribou are gone so they go too..." (Joseph Judas [Wekweètì] in Bathurst Caribou Range Plan 2017:9)

Numerous sources describe how wolves are important to the overall health of barren-ground caribou as they remove the sick and injured (Łutsel K'e Dene First Nation 2002; Advisory Committee for Cooperation on Wildlife Management 2014a; Benson 2019). Wolves also influence caribou by removing the individuals who are considered less prime from the populations (Katz 2010). Wolves however do not only prey upon weaker animals; they are capable of killing healthy prime adults as well (Thorpe et al. 2001; Katz 2010; Advisory Committee for Cooperation on Wildlife Management 2014a; Benson 2019).

"They say wolves only go after the lame and the sick...They more or less will go after that cow caribou and they'll look for good caribou too, you know... They're smart animals. They're not going to look at that old caribou, they want good meat too." (Freddy Frost [Old Crow] in Katz 2010:33)

Wolves and caribou are deeply connected and balance each other in a variety of ways (Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022). Wolves are nearly always found along with barren-ground caribou. Wolf abundance is closely linked with caribou abundance, typically when the population of one increases, so does the other (Tłı̨chq̃ Government 2007b; Nesbitt and Adamczewski 2009; Soublière 2011; Wek'èezhı̨ Renewable Resources Board 2016a; Bathurst Caribou Range Plan 2017; Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022).

"...we're having hard time, caribou is going down and it's because of wolves. And -- and they're blaming the wolves now, and the caribou, it's not gonna go away. Caribou, wolves, too, they have to survive. They go hunting. My grandfather used to say when we go hunting in the bush when there's caribou and moose in winter and where there's wolf tracks, my grandfather didn't like it because wolves they can hunt and they don't -- they can just -- but us people it's hard for us since -- I talk about my grandfathers in the past. They -- long ago, they talk about wolves -- when they -- when there's lot of wolves, then they -- people don't like it. We don't hunt it. They're animals. So they have their own lives and they're their own ɁeɁa. When an animal is their own boss, then goghq̃ máhsi sı̨ nı̨wegha because they take care of themselves. And so when they take care of

themselves, then we don't have problems with them. If it's -- it's been like that since from the past, and they said there's a lot of wolves so we need to kill some. We think that if we get rid of the wolves, then we're going to get lots of caribou back. It's not like that. We don't believe that. There's always been wolves, and there's lots of animals, always been animals. They're on this land. They take care of themselves. We don't want them to change. Wolves, when there's wolves, then it's -- the land is healthy. When there's lots of wolves, it's too many -- then the animals have a good life just like they keep an eye on the land and the animals and the -- we don't -- if we want to get rid of some wolves, it's no good for us. We don't like it. And Aboriginal people once on the land is all for us. It keeps us strong. We want to be strong again. It's from the Creator. And we -- we respect animals. That's why we -- we have a good life. That's what we think. We don't -- not only -- not only wolves hunt caribou. We hunt too. When there's lot of caribou, then there's -- there's eagles and fox and wolverine, and they live and they hunt caribou too. There's just not one boss in the animals. They all share. If -- if we don't get rid of the wolves, then it's good for the caribou in the future.” (Walter Bezha [Déliṇḡ] in Sahtú Renewable Resources Board and Déliṇḡ Got’iṇḡ Government 2022:43–44)

Numerous sources suggest that wolf predation on caribou is occurring at elevated levels, potentially contributing to population declines (Bathurst Caribou Advisory Committee 2022; Thorpe and Barnaby 2016; Wek’èezhì Renewable Resources Board 2016a). The increase in the number of wolves has largely been attributed by knowledge holders to the reduction in trapping and harvest of predators on the range of barren-ground caribou (Benson 2015; Thorpe and Barnaby 2016; Bathurst Caribou Range Plan 2017; Beverly and Qamanirjuaq Caribou Management Board 2023). Though not specifically tied to the reduction of the numbers of trappers present, harvesters have noted wolf numbers as either stable or increasing in the range of the Porcupine caribou herd (Benson 2019).

“Trapping in the 70’s our main source of food was caribou. We always had caribou. When we were trapping we weren’t the only ones, other people were trapping as well. We were there trapping many animals at that time. We maintained the balance of the caribou and predators and there were more young calves. Since 1990 the fur auction crashed. My fur that was worth \$40,000 now was worth \$2000. In those days your skidoo was worth \$3000 now they are worth the same as a vehicle. So now we don’t have the equipment we need to go get our furs. Over time the wildlife came back because no one was keeping the balance any more... No one is trapping in the barren lands anymore so the wolf population is going up. The grizzly bears are now protected and they are continuing to kill the calves.” (Fred Sangris [N’dilo] in Bathurst Caribou Range Plan 2017:15)

“Long ago there were a lot of trappers out on the land. They could make a good living trapping. Today there is nobody out there, so all those predators are growing, especially the wolves. They are really migrating. I don’t like saying that but it is true. And the wolves, they are bad for caribou and moose too.” (Anonymous [Tsiigehtchic] in Benson 2015:51)

Wolves primarily impact caribou populations by reducing the survival rates of both adults and calves (Bathurst Caribou Advisory Committee 2022; Behrens 2024). Calves are

particularly vulnerable to predation from wolves (Thorpe et al. 2001; Benson 2015; Wek'èezhii Renewable Resources Board 2016a; Bathurst Caribou Advisory Committee 2022).

"The caribou are part of the food chain and if the wolves didn't take down a caribou, they didn't eat. So wherever you see a caribou, you will see a pack of wolves, my dad use to tell me that and so did Chief Jimmy Bruneau." (Jimmy Martin [Tłı̨chǫ community] in "Day 1 Transcript- Tłı̨chǫ Government Caribou Workshop" 2007:12)

"Lots of wolves and bears... they follow calves, and cows when they're going to have young ones. They kill lots of them too." (Gabe Andre [Tsiigehtchic] in Benson 2015:40)

"...I'm really concerned about the calving ground. In that area of the calving ground it's all Nunavut jurisdiction. And so in the -- in the calving grounds area, all the grizzly bears, wolves, are predation that kill the calves..." (Joseph Judas [Wekweètì] in Wek'èezhii Renewable Resources Board 2016a:115–16)

Grizzly Bears

Found on the tundra, alpine, and near the treeline portions of their spring, summer, and fall range grizzly bears are one of the primary predators of barren-ground caribou (Thorpe et al. 2001; Advisory Committee for Cooperation on Wildlife Management 2014a; Benson 2014a; Benson 2015; Bathurst Caribou Range Plan 2017).

"We were watching calving grounds, a grizzly came down and shook a calf and killed it but didn't eat it. Then it went to another one and killed it but also didn't eat it. So I was going to go and shoot the grizzly but the biologist that was with me said that was illegal and I said if I don't do it who will? You are a biologist and you are seeing this and not doing anything about it." (Fred Sangris [N'dilo] in Bathurst Caribou Range Plan 2017:12)

Throughout their range, numerous sources indicate an increase in the abundance of grizzly bears and highlight their growing impact as predators of caribou (Bathurst Caribou Range Plan 2017; Sahtú Renewable Resources Board 2020; Advisory Committee for Cooperation on Wildlife Management 2022; Bathurst Caribou Advisory Committee 2022; Advisory Committee for Cooperation on Wildlife Management 2023; Advisory Committee for Cooperation on Wildlife Management 2024).

"... up in our area, we -- back in the '60s and that, we didn't have very many grizzly bears. Now we have more grizzly bears than probably all of Alberta and BC...those animals are doing good, but they're -- they weren't in our area, and those animals are predators and preying on our -- our other -- our food." (Jim Elias [Inuvialuit community] in Sahtú Renewable Resources Board 2020:181)

Caribou are an important part of the diet for bears that live in their range. Grizzly bears frequently scavenge on caribou carcasses from wolf kills, or caribou killed by other causes such as drowning or starvation (Benson 2014a). Grizzly bears are very capable hunters

and can kill healthy adult caribou of both sexes (Benson 2014a). Caribou use their speed advantage over grizzlies as a defence mechanism; as such, grizzly bears often use an ambush strategy to surprise caribou at water crossings or in tall willows and prey on them (Benson 2014a; Benson 2019).

Grizzly bears impact caribou survival by preying upon numerous caribou calves on the calving grounds (Benson 2015; Advisory Committee for Cooperation on Wildlife Management 2023; Advisory Committee for Cooperation on Wildlife Management 2022; Advisory Committee for Cooperation on Wildlife Management 2024).

“Lots of wolves and bears... they follow calves, and cows when they're going to have young ones. They kill lots of them too.” (Gabe Andre [Gwich'in community] in Benson 2015:40)

“Sometimes the survival of the calves are -- are very limited, and -- and so -- and so these are the stories that we're hearing. And so what is it that we can do? The people who are in there -- maybe there's other people in other jurisdiction, in other areas. Maybe if other people in other jurisdiction are here with us, because the calving ground is happening in -- in the -- in their jurisdiction, maybe we have to ask them if we're going to help predation. We may have to get grizzly bears, wolves in their area, and so we have to talk to that government.” (Joseph Judas [Wekweètì] in Wek'èezhì Renewable Resources Board 2016a:117)

Wolverines

Knowledge holders frequently include wolverines when listing predators of barren-ground caribou (Thorpe et al. 2001; Benson 2014b; Benson 2015; Thorpe and Barnaby 2016; Benson 2019; Advisory Committee for Cooperation on Wildlife Management 2024; Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022).

Wolverines are powerful for their size and are capable of preying upon caribou (Benson 2014b). Wolverines typically hunt calves, but they can ambush adults. Wolverines prey upon adult caribou by hiding in trees and jumping on them and biting the back of their head and neck (Benson 2014b).

“I was hunting caribou one time. I shot a caribou and the caribou went in the bush. I hit it, [and] I was going to take my snowshoes and go after it, but I thought there was another lake on the other side, so I thought caribou might come out on that lake. I went over to the other lake and there was nothing, I didn't see nothing so [after some time passed] I went back to ...where he went in the bush. When I got in the bush the caribou was on the lake and wolverine was trying to kill him. [The wolverine] was jumping on, on the caribou and [chewing its back]. I went over there with a ski-doo, and when he heard the ski-doo coming he went running in the bush.... A caribou is a lot bigger than a wolverine. But I guess they smell the blood you know and, and [have] that determination to kill that caribou.” (William Modeste [Inuvik] in Benson 2014b:31)

Wolverines are well adapted to hunting in winter conditions, and can stay on top of the snowpack when hunting in soft snow conditions where caribou may fall through (Benson 2014b).

“Wolverine [in]mid-winter, they could stay on top the snow and [they] don’t break right through. It’s not like caribou, caribou break through.” (Walter Alexie [Fort McPherson] in Benson 2014b:32)

Wolverines are resourceful scavengers and are known to feed upon the remains of caribou carcasses left behind from other predators such as wolves, grizzlies, and hunters (Benson 2014b; Benson 2019).

Wolverines both scavenge and prey upon caribou; it is not known the degree to which they scavenge versus prey upon them. Publicly available Indigenous and community knowledge sources do not detail the rate or impact of caribou predation by wolverines.

Eagles

Knowledge holders commonly list eagles (bald eagles and golden eagles) as infrequent predators of barren-ground caribou (Gwich’in Elders 1997; Advisory Committee for Cooperation on Wildlife Management 2014a; Benson 2015; Benson 2019; Bathurst Caribou Advisory Committee 2022; Sahtú Renewable Resources Board and Délı̨nę Got’ı̨nę Government 2022). Eagles largely prey upon young calves. Eagles will use their considerable strength to lift lighter-bodied calves into the air and then drop them (Gwich’in Elders 1997; Benson 2019).

“Especially when they’re little, the wolves get them, the bears get them, the eagles. So, they’re very vulnerable that first little bit, [but] boy, they can really go.”(Tom Wright [Inuvik] in Benson 2015:37)

“They are seeing a lot of bald eagles and golden eagles in the summer in the Contwoyto area since the nineties. Some would harvest calves if they could.” (Randy Hinanik [Kugluktuk] in Bathurst Caribou Advisory Committee 2022:18)

“So when that -- if it goes back to the barrenland and goes to calving area, if it’s such a small -- such a small ones, it’s very vulnerable to the -- to the prey. Even -- even with the eagle that’s around, it takes these new calves, even the wolves. All the different predators takes, take these small caribous.”(Louis Zoe [Gamètı] in Sahtú Renewable Resources Board and Délı̨nę Got’ı̨nę Government 2022:247)

There is no evidence to suggest that eagles prey on adult caribou. Additionally, publicly available Indigenous and community knowledge does not provide information on the rate or impact of eagle predation on caribou calves.

Lynx

Though infrequent, lynx are known to prey upon barren-ground caribou (Gwich’in Elders 1997; Soublière 2011; Benson 2015; Benson 2019). Based on the infrequency that

knowledge holders describe lynx predation, we can infer that the amount of predation by lynx is minimal.

“Lynx, he jump on top the caribou, and he chew behind the head...the big sinew here, he chew that one...caribou will get paralyzed...fall down... [Lynx will kill] anything they get, whatever they can grab first.” (Anonymous [Tsiigehtchic] in Benson 2015:41)

Other herds of Barren-ground Caribou and Dolphin and Union Caribou

As described in *Distribution* barren-ground caribou predominantly return to the same calving grounds each year to give birth to their calves. These calving grounds are used by biologists and some Indigenous and community members to describe individual herds.

It is well known that many of the barren-ground caribou herds of the NWT overlap between the late summer and spring (Wek’èezhii Renewable Resources Board 2010c; Wek’èezhii Renewable Resources Board 2010e; Bathurst Caribou Advisory Committee 2022). The mixing of herds and immigration of individuals from one herd to another is frequently mentioned as a potential factor in the change in abundance (Thorpe et al. 2001; Advisory Committee for Cooperation on Wildlife Management 2014a; Benson 2015; Thorpe and Barnaby 2016; Wek’èezhii Renewable Resources Board 2016b; Bathurst Caribou Range Plan 2018). However, the extent of immigration from one herd to another is less well understood.

“The caribou are not declining. They will come back and migrate again. They are not disappearing they are going to other areas to have food to eat and join other caribou. This is what caribou people know. That is how the caribou are travelling, they migrate all over and return again.” (Anonymous [Lutsel K’e] in Thorpe and Barnaby 2016:20)

Porcupine caribou and the other herds of barren-ground caribou have the potential to overlap on the winter range in the region near Fort McPherson and the Mackenzie Delta. However, this is quite rare as neither the Porcupine caribou or the Bluenose-West caribou tend to cross the Mackenzie River (Benson 2015; Benson 2019).

“They [Bluenose west] never cross Mackenzie – there are [only a] very few [that] cross, but they always go back too.” (Gabe Andre [Tsiigehtchic] in Benson 2015:32)

Dolphin and Union caribou migrate between the mainland NWT and Nunavut in the winter, and Victoria Island in the summer. The Dolphin and Union caribou range overlaps with several barren-ground caribou herds, including the Bluenose-East, Bathurst, and Beverly herds (Bathurst Caribou Range Plan 2018; Species at Risk Committee 2023). Indigenous and community knowledge holders have documented movement between the mainland barren-ground caribou and the Dolphin and Union caribou (Thorpe et al. 2001). Though some movement occurs between Dolphin and Union caribou and barren-ground caribou herds, the extent of immigration between herds is unknown.

In the publicly available sources of Indigenous and community knowledge, there are no accounts or descriptions of herds of barren-ground caribou being negatively impacted by Dolphin and Union caribou. Nor are these other types of caribou thought to compete with barren-ground caribou for forage, habitat, or any other aspects of their lives.

Woodland Caribou (Boreal population & Northern Mountain population)

Both populations of woodland caribou (northern mountain caribou and boreal caribou) interact with barren-ground caribou on their winter ranges (Benson 2011; Advisory Committee for Cooperation on Wildlife Management 2021). The northern extent of the northern mountain caribou population shares a portion of its range with both the Porcupine caribou herd and the boreal caribou. In contrast, boreal caribou tends to overlap more with the barren-ground caribou herds in the southwestern portion of their (barren-ground caribou) range (the North Slave, Dehcho, and the Inuvialuit Settlement regions, Wek'èezhìi, the GSA, and SSA) (Department of Environment and Natural Resources, GNWT 1996; Katz 2010; Benson 2011; Dehcho First Nations 2011; Legat et al. 2018; Species at Risk Committee 2022).

“But [woodland caribou] are in here and they mingle; because on the surveys we’ve seen woodland caribou and Bluenose caribou in the same herd, just feeding at that particular time.” (Willard Hagen [Inuvik] in Benson 2011:24)

There is some disagreement in the publicly available Indigenous and community knowledge regarding the nature of the interaction between woodland caribou and barren-ground caribou. Some knowledge holders describe the two as generally avoiding each other while their ranges overlap (Legat et al. 2018). Other sources suggest that woodland caribou and barren-ground caribou can co-exist and can intermingle and share the same habitat without issue (Benson 2011; Benson 2015). Woodland caribou have also been known to join a herd and follow barren-ground caribou to the tundra during their seasonal migrations (Legat et al. 2018; Advisory Committee for Cooperation on Wildlife Management 2014).

“We all know where t̥d̥z̥i [woodland caribou] lives around this whole area [south and west of Whati]. When ɤekw̥ [barren-ground caribou] migrate back to us, the two kinds of caribou live near each other in the winter, but sometimes during spring migration maybe one or two t̥d̥z̥i will follow them back to the tundra. A few years ago, we went for a trip to ɤekw̥ birthing ground. We saw a whole herd of ɤekw̥. There were so many ɤekw̥. We were using a helicopter. We landed on top of an esker where we could see. I saw a caribou that was bigger than the others in the herd. I suggested we take a closer look at the one bigger caribou, so we got close. I looked at its head and the legs, [realizing] it was a t̥d̥z̥i. That is how the animals roam on this land; not lots but maybe one or two will follow ɤekw̥.” (Jimmy Rabesca [Tł̥ch̥q̥ community] in Legat et al. 2018:26)

"In the summer woodland caribou come up as far north as Husky Lakes. I've seen them with barren-ground [caribou] running around in the barrens." (Anonymous [Inuvik] in Advisory Committee for Cooperation on Wildlife Management 2014a:26)

An information gap exists in the publicly available information regarding any negative influence between boreal caribou and barren-ground caribou, and there is no information detailing competition between these two caribou species.

Muskox

Muskox are found throughout much of the yearly range of barren-ground caribou, and in portions of the range of Porcupine caribou. They are found in the western portions of the GSA, and the ISR, in the Sahtú, the northeastern portion of Wek'èezhìi, and the eastern portions of the North and South Slave regions (Winbourne and Benson 2021).

Over the last couple of decades muskox have expanded their range. In the central and eastern portions of the NWT the range expanded southwards (Winbourne and Benson 2021).

"Too many wolves and grizzly bears back home. Muskox populations are really south now from our areas." (Anonymous [Bay Chimo/Bathurst Inlet] in Thorpe and Barnaby 2016:15)

"I just want to talk about history. I can tell you actual stories from our Elders even back to 1913, 1912, stuff like that. I heard from our grandparents. And the one thing about muskox, 1982 is the first time I ever seen muskox in the treeline." (Wilbert Kochon [Colville Lake] in Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022:304)

Muskox that were reintroduced on the Alaskan north slope in the 1980s have expanded eastward throughout the range of Porcupine caribou as far as the Richardson Mountains in the western portions of the GSA and ISR (Advisory Committee for Cooperation on Wildlife Management 2014a; Benson 2019).

"A lot of us used to go around the island – go to the mainland and count the caribou when the park [Ivvavik National Park] was opened. Muskox herds are coming from Alaska – caribou don't like muskox. One year there were muskox on the island and there were no caribou there. We need to bring this traditional knowledge from the land and give it to ENR." (Anonymous [Aklavik] in Advisory Committee for Cooperation on Wildlife Management 2014a:54)

Knowledge holders also describe a shift in range of muskox onto the winter range of the Bluenose-West caribou herd, and throughout the Sahtú (Benson 2015; Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022).

"What changes are happening with respect to caribou relationships with muskoxen. We have noticed an increased number in sightings in and around Norman Wells." (Lisa McDonald [Norman Wells] in Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022:145)

"We do not know of there ever being muskox around here in the past... We don't know why the muskox have come this way when they never used to." (Daniel Jackson [Fort Good Hope] in Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022:183–84)

"We've got to make sure that we're always thinking about what we're doing. A lot of -- the government made a lot of decisions in the past that we're living with right now. They outlaw muskox. Now there's really lots and they're getting in the way." (David Codzi [Colville Lake] in Sahtú Renewable Resources Board 2020:283)

Knowledge holders describe the impact on caribou in several ways, and to varying degrees of severity. There is not currently a consensus among knowledge holders regarding the overall impact of the interaction between muskoxen and caribou. The interactions between muskoxen and caribou can be grouped into several categories: competition for forage, damage to habitat, muskoxen displacing caribou, and the potential to influence predator populations.

Muskoxen are known to eat similar plants to those consumed by caribou, and as such they compete for forage (WMAC [North Slope] and Aklavik HTC 2009; Advisory Committee for Cooperation on Wildlife Management 2014a; Benson 2015; Bathurst Caribou Range Plan 2017; Benson 2019; Winbourne and Benson 2021; Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022).

"The muskox have taken over the old calving grounds eating all the food. Muskox are along the coast now." (Jayko Palongayak [Kugluktuk] in Bathurst Caribou Range Plan 2017:16)

"Food seems to be shared more than we thought as muskox eats lichen, willows, sedges, brushes, and grasses. Caribou eat lichen, dried sedges and small shrubs in the winter, and in the summer, they eat the leaves, the willows, sedges, flowering tundra plants, and mushrooms." (Lisa McDonald [Norman Wells] in Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022:145)

Muskoxen can damage the vegetation consumed by caribou by dislodging it at the root, additionally they are heavy bodied animals that may disturb soils and damage more delicate vegetation such as lichen (Advisory Committee for Cooperation on Wildlife Management 2014a; Winbourne and Benson 2021). Muskoxen can consume a wider variety of plant species than caribou, allowing them to remain in one area for longer periods and compete with caribou for space (Winbourne and Benson 2021).

"We have to come back to the muskox problem. We are told by the Elders that the muskox are supposed to be on the tundra. The caribou eat the food, the lichen, down to the ground. But the muskox they paw it right through to the ground so nothing grows back. Maybe you should be paying for muskox like you do for wolves." (Anonymous [Tulı́t'a] in Advisory Committee for Cooperation on Wildlife Management 2014a:55)

One of the ways in which muskox have a negative influence described in the publicly available knowledge is that caribou are afraid of them (Winbourne and Benson 2021; Sahtú Renewable Resources Board and Délı̨́nę Got'ı̨́nę Government 2022). The fear of muskox is described in several ways. It is thought that muskoxen look similar to a grizzly bear (Inuvik Community Corporation, Tuktoyaktuk Community Corporation, and Aklavik Community Corporation 2006). Muskoxen have also been known to be aggressive and chase away caribou from their home territories (Benson 2019; Sahtú Renewable Resources Board and Délı̨́nę Got'ı̨́nę Government 2022).

“So moose and the muskox are really on the lands that, at the barrenlands. So how it's going to affect our animals down the road with that. So what I'm trying to say is that we probably -- I was thinking that maybe because of that and the caribou are getting really less because they're scared of these big -- too big stuff on the land. I know that because of the muskox, it's not really people hunt for it a lot. So the population is started to be growing because within the last three whatever number of years, Wekweèti received -- I saw myself, in Wekweèti, I seen over 50 to 60 muskox in between the Wekweèti and Round Rock Channel there. So those are the kind of stuff are getting more population up. That's why maybe the caribou is not going close to those because it's a -- they're big, they're strong, and also I said that muskox have a pointed antlers. You know, by stories on our histories, I know that the one -- the old people that talk about it saying that one person have been killed by muskox. Maybe a couple of years or a year later they saw the bones of the people on the muskox they find. So this is how dangerous it is. In fall time, that's when they start to be going and fighting each other. If it does it, you know, how's the caribou going to be affected that way.” (Joseph Judas [Wekweèti] in Sahtú Renewable Resources Board and Délı̨́nę Got'ı̨́nę Government 2022:324–25)

Knowledge holders have also noted that the sound of muskoxen contributes to caribou actively avoiding them (Sahtú Renewable Resources Board and Délı̨́nę Got'ı̨́nę Government 2022).

It is thought that barren-ground caribou avoid muskox and do not like how they smell (Advisory Committee for Cooperation on Wildlife Management 2014a; Benson 2015; Winbourne and Benson 2021). The negative impact of scent is also described as caribou avoiding areas and forage contaminated by muskox urine (Benson 2019; Sahtú Renewable Resources Board and Délı̨́nę Got'ı̨́nę Government 2022).

“There are a lot of muskoxen in that area. Last year in North Bay all I saw was herds and herds of muskoxen. They are pretty stinky animals – you can smell them even a week after they have gone by and maybe that's keeping caribou away.” (Anonymous [Fort Good Hope] in Advisory Committee for Cooperation on Wildlife Management 2014a:55)

“With so many muskox around, we think that's related to why there aren't any caribou. The caribou don't like to be where the muskoxen are and the muskox make too much noise and eat all of the lichen so it doesn't come back for a long time. And the muskox smell. The caribou do not like the smell when the muskox pee everywhere. We don't know why the muskox have come this

way when they never used to.” (Daniel Jackson [Fort Good Hope] in Sahtú Renewable Resources Board and Délı̨nę Got’ı̨nę Government 2022:182)

There is some uncertainty in the publicly available information on the influence muskoxen have on caribou predators. Most sources describe the relationship as one where it increases the number of caribou predators, or provides an alternate prey species when caribou numbers are low thus keeping predator numbers higher (Advisory Committee for Cooperation on Wildlife Management 2014a; Winbourne and Benson 2021; Sahtú Renewable Resources Board and Délı̨nę Got’ı̨nę Government 2022). Other sources describe that caribou predators are not as likely to prey on muskox (Sahtú Renewable Resources Board and Délı̨nę Got’ı̨nę Government 2022).

“We don’t see the wolves killing the muskox. We’ve asked our Elders and some of our Elders have told us there is something in the hair in muskoxen, that there’s something in there like sand. When the wolf bites, wolves bite into it, it doesn’t like it so they leave the muskox alone. We don’t see the wolves killing the muskox around.” (Daniel Jackson [Fort Good Hope] in Sahtú Renewable Resources Board and Délı̨nę Got’ı̨nę Government 2022:182)

“...when I was travelling, I was hunting and ran into a whole bunch of wolves and they were living right along where the muskox was, so they were hunting that muskox... so that’s what I was talking about when I said the muskox, when we saw the wolf tracks and then we thought it was caribou but it was muskox. And I guess they’re living around the muskox and killing -- living off that.” (Wilbert Kochon [Colville Lake] in Sahtú Renewable Resources Board and Délı̨nę Got’ı̨nę Government 2022:362)

The expansion of muskoxen has led to changes in grizzly bears, which has influenced caribou populations (Winbourne and Benson 2021).

“Around Délı̨nę they used to have a lot of caribou. The muskox are coming in, and now there are a lot of wolves and caribou are not coming close anymore.” (Anonymous [Tulı́t’a] in Advisory Committee for Cooperation on Wildlife Management 2014a:55)

Numerous knowledge holders have observed that caribou tend to avoid areas occupied by muskox, even in the absence of a clearly identified mechanism (WMAC [North Slope] and Aklavik HTC 2009; Advisory Committee for Cooperation on Wildlife Management 2014a).

“Right across from Bella Arey’s camp is that big hill. Caribous used to be right on top there, but after the muskox start hanging around there, they go further and further back. You don’t see them along there.” (Annie Gordon [Aklavik] in WMAC [North Slope] and Aklavik HTC 2009:35)

“Another issue is muskox – no one talks about it. You have areas where there are caribou, the muskox comes in and then the caribou are gone.” (Anonymous [Tulı́t’a] in Advisory Committee for Cooperation on Wildlife Management 2014a:55)

There remains uncertainty about whether muskox will negatively affect caribou. Muskox populations occur locally across the range of barren-ground caribou. A data gap exists surrounding the level of severity of the impact. There is variation in the publicly available indigenous and community knowledge, knowledge holders in certain areas with recently established communities of muskox, such as the Sahtú, have higher levels of concern, while in other regions where muskox have overlapped with caribou range for longer time periods the concern exists however it is lower (Bathurst Caribou Range Plan 2017; Benson 2019; Sahtú Renewable Resources Board 2020; Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022; Norman Wells RRC and Sahtú Renewable Resources Board 2024).

Moose

Moose are commonly found throughout the taiga, boreal forest, and portions of the tundra; as such, they overlap with much of the range of barren-ground caribou. Knowledge holders note that moose have begun to expand their range further into the tundra areas (Advisory Committee for Cooperation on Wildlife Management 2014a; Bathurst Caribou Range Plan 2018; Tłı̨chǫ Research and Training Institute 2020; Advisory Committee for Cooperation on Wildlife Management 2022; Advisory Committee for Cooperation on Wildlife Management 2023; Advisory Committee for Cooperation on Wildlife Management 2024). This expansion northward of moose is sometimes attributed a sign of the changing climate and increased presence of shrubs on the tundra (Advisory Committee for Cooperation on Wildlife Management 2024).

"...At the same time moose and caribou are moving out to the barrenland. Four years ago we saw moose, beaver and muskrat at Courageous Lake. Never seen that before." (Anonymous [Tłı̨chǫ] in Bathurst Caribou Range Plan 2018:14)

Moose live side by side with caribou and are known to peacefully coexist (Benson 2015; Advisory Committee for Cooperation on Wildlife Management 2023; Advisory Committee for Cooperation on Wildlife Management 2024).

"I've seen moose and caribou 20 feet apart. One is eating willows, and one is eating grass. So I see that, they don't mind each other." (James Firth [Gwich'in community] in Benson 2015:42)

"Bluenose been living with moose for a long time..." (Julie-Ann Andre [Tsiigehtchic] in Benson 2015:42)

Some sources in the range of the Porcupine caribou describe how moose would avoid areas with caribou due to noise (Gwich'in Elders 1997; Benson 2019). Other sources describe that caribou avoid areas where moose have encroached on their range, but without describing a mechanism (Bathurst Caribou Range Plan 2018).

Knowledge holders often speak to the interconnectedness of all aspects of the land. Part of this interconnected nature of the land is the role moose have on one of the primary

predators of caribou, the wolf. As moose themselves are a prey species of wolves, the presence of moose in an area can allow wolves to survive when caribou are absent (Benson 2019).

Moose may impact barren-ground caribou through disease transmission. With the frequency of moose coming into contact with barren-ground caribou increasing, there is concern that they may transmit new or novel diseases into the barren-ground caribou populations (Bathurst Caribou Range Plan 2018).

“...Also we are getting moose way up on the tundra, and these moose have different diseases and we don’t know how the caribou will deal with these.” (Anonymous [Northwest Territories Métis Nation community] in Bathurst Caribou Range Plan 2018:16)

Reindeer

Reindeer herds were introduced into the Mackenzie Delta region beginning in the mid-1930s (Benson 2015). Currently barren-ground caribou overlap with one herd of reindeer in the area around the Mackenzie Delta. The barren-ground caribou herds most likely to share ranges with reindeer include the Cape Bathurst, Tuktoyaktuk Peninsula, and Bluenose-West herds. Porcupine caribou have also been observed overlapping with reindeer (WMAC [North Slope] and Aklavik HTC 2009). Numerous reports exist of individuals or small groups of barren-ground caribou mixed into the reindeer herds and vice versa (WMAC [North Slope] and Aklavik HTC 2009; Benson 2015; Advisory Committee for Cooperation on Wildlife Management 2021; Advisory Committee for Cooperation on Wildlife Management 2022; Advisory Committee for Cooperation on Wildlife Management 2023).

“Bluenose or barren land [caribou], about ten years ago, [some] crossed towards Aklavik side, might have been reindeer mixed with barren land and [they] crossed quite a bit around Bar C and went right across the Delta towards Aklavik.” (Albert Frost [Inuvik] in Benson 2015:35)

As a domesticated form of caribou, reindeer interact with and influence barren-ground caribou in various ways. Reindeer and caribou share identical forage and habitat requirements, leading to competition between the two species for these resources (Advisory Committee for Cooperation on Wildlife Management 2014a; Advisory Committee for Cooperation on Wildlife Management 2021).

“Reindeer are eating all the caribou food. There is nothing for them to eat when they go to those areas.” (Anonymous [Inuvik] in Advisory Committee for Cooperation on Wildlife Management 2014a:54)

An extreme example of the competition for habitat occurred on the Tuktoyaktuk Peninsula, where community members noted that after reindeer were removed from the peninsula, barren-ground caribou began to return (Advisory Committee for Cooperation on Wildlife Management 2014a).

"The Tuk Peninsula caribou herd returned after the reindeer was removed from the peninsula. Now that the caribou have come back to the peninsula, the other caribou have spread out." (Anonymous [Tuktoyaktuk] in Advisory Committee for Cooperation on Wildlife Management 2014a:23)

Interbreeding between barren-ground caribou and reindeer has been observed by knowledge holders in the ISR and GSA (Inuvik Community Corporation, Tuktoyaktuk Community Corporation, and Aklavik Community Corporation 2006; Community of Paulatuk, WMAC (NWT), and Joint Secretariat 2008; Benson 2015; Advisory Committee for Cooperation on Wildlife Management 2022; Advisory Committee for Cooperation on Wildlife Management 2023). There is little information available in the publicly available materials describing the extent or mechanism of this as a potential negative effect on barren-ground caribou. Reindeer breed and calve approximately a month early, which may give them a competitive advantage for forage (WMAC [NWT] in Species at Risk Committee 2017:29).

"Another time, there was some [Bluenose caribou on a small lake near] Campbell Creek... on that lake there, was just full of caribou. Yeah, we shot 32 caribou. In the fall... That'd be in the late '80s... But probably some of [them were] reindeer, because there was one there who was kind of spotted, kind of grayish. And we were trying to get him, me and Buster [McLeod], and we couldn't get him... But that was Bluenose and probably reindeer mixed, I guess, because they used to do [the reindeer] slaughtering around there, very close to the airport... [reindeer have shorter noses and] shorter legs, I think. Yeah, a little shorter, not too much. ...But we couldn't get them, though, that one [obvious reindeer] there. Probably other ones were part reindeer, too. But supposed to be mixed, mixed in with Bluenose." (Richard Ross [Tsiigehtchic] in Benson 2015:42–43)

"...because of the reindeer, there's a lot of mixtures. And the old-timers say they even breed together now." (James Firth [Inuvik] in Benson 2015:45)

"[The rut is] usually the same time of year, but there was one summer, one August that I got a caribou, couple of caribou. [I] skinned it out and put it away, but when I started cooking it, it was stink. It really stunk up the kitchen and it was too strong to eat. So I give it to the ENR [Environment and Natural Resources] guy and they sent it out and told me it was, with the DNA work that they done, they said it was half reindeer. And reindeer rut in August. So that's what they were telling me." (Jack Goose [Aklavik] in WMAC [North Slope] and Aklavik HTC 2009:49)

Wood Bison

The ranges of wood bison and barren-ground caribou overlap in a limited portion of their respective ranges. Wood bison have expanded their range northwards around the communities of Behchok̓ and Whatì (Tł̓ch̓ Research and Training Institute 2015; Thorpe and Barnaby 2016; Sahtú Renewable Resources Board and Délı̨ę Got'ı̨ę Government 2022). This is in the historic range for the Bathurst herd of barren-ground caribou. Though individuals note that wood bison are expanding their range and that they may encounter barren-ground caribou, there are no records of bison and barren-ground caribou directly

interacting in the available material. Range expansion of wood bison has the potential to introduce disease, increase predator populations, and competition for forage (Species at Risk Committee 2017).

"We talk about animal and caribou and also the muskox and now today we have different animals that come into our area. Animal that come from the south, they are coming to our area. And we do know that we hear the people normally where the animal, some animal that come into our land are coming all different regions. And I'll say even to the enforcement people that work at the mine, it even goes over into the area over there, there are two kinds of -- there's two kinds of -- of animal. That's a muskox and the buffalo. As for that animal just went in the treeline, Wekweèti, we get close to the treeline. I don't know where the caribou might have gone to. But because of the heat and the climate change, maybe it has -- has pushed the animal further to our land. What I want to know is how -- how does -- how does the animal feels, how is it, as you know, as you know even the buffalos and muskox, it has different life." (Joseph Judas [Wekweèti] in Sahtú Renewable Resources Board and Déliné Got'İnē Government 2022:321)

"Another thing, talking about buffalo. This range that is moving slowly to the north. At the same time moose and caribou are moving out to the barrenland. Four years ago we saw moose, beaver and muskrat at Courageous Lake. Never seen that before. All these buffalo are moving after them. Not only buffalo, but there are porcupines in my community. They are scary animals. Porcupine quills got into dogs last summer. These animals in the south are coming way north because of warming. What will happen with animals we live with? Abandoned mines and exploration camps on the barrenlands, there are a whole bunch of them. Caribou coming down they start to see the things that were not there before." (Anonymous [Tłı̨chǫ community] in Thorpe and Barnaby 2016:14)

Snow and Ross's Geese

Barren-ground caribou and hyperabundant light geese (Snow and Ross's Geese) breeding colonies share forage and occupy the same areas during the summer (geese) breeding season. Both light geese and caribou forage on grasses and berries found near waterbodies (Benson 2015; Benson 2019; Carter et al. 2025). Knowledge holders describe that caribou and light geese impact each other through changes to forage availability and potentially through transmission of disease as caribou eat vegetation that has been defecated on by geese (Carter et al. 2025).

PLACE

Distribution

Barren-ground caribou are found throughout circumpolar North America. The available Indigenous and community knowledge indicates that when caribou populations were at historic highs the range of barren-ground caribou once covered much of the NWT and Nunavut, and the northern portions of the Yukon, Manitoba, Saskatchewan, and Alberta (Figure 66).



Figure 6: Historic maximum barren-ground caribou and porcupine caribou range compiled based on spatial data and written descriptions of range (1890s-2023). It is important to note that this represents the maximum range, as the available data indicates a current contraction of the southern portion of their range. Map courtesy of B. Fournier & N. Wilson GNWT-ECC (Thorpe *et al.* 2001; Parlee and Manseau 2005; Inuvik Community Corporation, Tuktoyaktuk Community Corporation, and Aklavik Community Corporation 2006; Dumond 2007; Community of Aklavik, WMAC (NWT), and Joint Secretariat 2008; Community of Paulatuk, WMAC (NWT), and Joint Secretariat 2008; Beaulieu 2012; Advisory Committee for Cooperation on Wildlife Management 2014a; Benson 2015; Bathurst Caribou Range Plan 2018; Beverly and Qamanirjuaq Caribou Management Board 2023)

Barren-ground caribou range has been considerably more widespread in the past (Bathurst Caribou Range Plan 2018; Beverly and Qamanirjuaq Caribou Management Board 2023; Advisory Committee for Cooperation on Wildlife Management 2024). Accounts from Fort Chipewyan in northeastern Alberta indicate the presence of caribou regularly in the 1940s-50s (Athabasca Chipewyan First Nation Elders *et al.* 2003; Athabasca Chipewyan First Nation Elders, Tanner, and Rigney 2003). In addition to the area around northeastern Alberta other migratory caribou across Canada such as the George River and Leaf River Eastern migratory caribou in Québec and Labrador are experiencing population declines and range contractions from their historic maximums (Taillon, Brodeur, and Rivard 2016; Cunsolo *et al.* 2020). In the NWT, this range contraction has resulted in barren-ground caribou no longer being found in the southern portions of their range in the Sahtú, Wek'èezhìi, North Slave, and South Slave regions of the NWT (Bathurst Caribou Range Plan 2018; Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022; Beverly and Qamanirjuaq Caribou Management Board 2023).

"...you know, one of the difference between Colville Lake and Délı̨nę is that we're not hunting caribou. We haven't hunted caribou for two years. We hunted more moose. We can probably tell you more about moose and muskox and woodland caribou than anything else. We can tell you a story about the hunting that we do. We got moose. We got muskox, and we got woodland caribou. In fact, we got lots of woodland caribou this year. But Délı̨nę hasn't hunted any Bluenose-East caribou in almost two years... So we don't have anything. We don't really have any.." (Walter Bezha [Délı̨nę] in Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022:79–80)

The Porcupine caribou range has contracted slightly with animals avoiding close proximity to communities and ranging slightly further west in the NWT (Benson 2019).

"Today Aklavik is still there and it's still good for fishing but the caribou...children did not know too much about how to treat animals with respect. It was not respected so now they change their route rather than going in their old trails they change their trails to more further to the west. They used to go south closer to Aklavik on the mountains. Now they have a trail more far...to the west. It will be hard for them to take their old trail up again. They are afraid to return to their old trail because of the disrespect shown to them by young people who don't know how to hunt for food. They do not respect the animals that they kill for food. But we are still hoping that they will take up their old trail again." (Mary Kendi [Aklavik] in Benson 2019:108)

Barren-ground caribou are no longer found in northeastern Alberta, and their range has contracted in northern Saskatchewan and Manitoba (Bathurst Caribou Range Plan 2017; Bathurst Caribou Range Plan 2018; Bathurst Caribou Advisory Committee 2022; Beverly and Qamanirjuaq Caribou Management Board 2023; Earl Evans, pers. comm. 2024).

"Another thing about the caribou that is moving towards the east, 1 [one] we have to look at the hydro line too. There was a mine, Uranium City Mine, there was no hydro line then, in 83 or 84

when the mines shut down, and then there were 3 mines there and they started putting in the hydro line 85- 87. Before that the caribou would always come down, since the hydro line, we had 1 pass through. Every year caribou come about 40 miles from that line then go east. Have only had one caribou migrate past Fond du Lac in 30 yrs. They come down to the line and then start moving east. I noticed that since 85, since the hydro line was being put in that's when they started moving east. I think the power lines also affect the caribou's migration." (Lawrence Adam [Athabasca Nuhenéné community] in Bathurst Caribou Range Plan 2017:15)

As described in *Biology and Behaviour and Adaptations to Environment*, barren-ground caribou undertake large-scale migrations of several hundred kilometres from their calving grounds to their winter ranges. This migration typically follows a north south route, with the calving grounds in the north near the coast and the winter range further south towards the treeline.

"The herds in these areas would have traveled in a south and southwesterly direction across the barrens to the boreal forest during the fall time and then returned in a north and northeasterly direction across the barrens in late March." (Anonymous [Northwest Territories Métis Nation community] in Northwest Territory Métis Nation 2012:3)

These large-scale migrations result in caribou being either present or completely unavailable, depending on the season. Barren-ground caribou are found in a near continuous distribution across the northern portion of the NWT. Though barren-ground caribou form somewhat distinct groups on the calving grounds, there is often overlap between adjacent herds during the rest of their seasonal cycle. The winter ranges of several barren-ground caribou herds show significant overlap. For example, the Bathurst and Beverly herds share portions of their late summer-winter habitat (Bathurst Caribou Advisory Committee 2022; Tłı̨ch̓ Research and Training Institute 2023). While the Cape Bathurst and Bluenose-West herds overlap on portions of their winter range (Advisory Committee for Cooperation on Wildlife Management 2024).

"We haven't seen a lot [Bathurst] because the herd went southeast towards Ekati and got mixed up with the other herds." (Roy Judas [Wekweètı̨] in Bathurst Caribou Advisory Committee 2022:15)

Similarly, the Tuktoyaktuk Peninsula and Cape Bathurst (Environmental Impact Review Board 2013), Bluenose-West and Bluenose-East herds (Advisory Committee for Cooperation on Wildlife Management 2014b), and the Bluenose-East and Bathurst herds occupy overlapping areas during the winter months (Barnaby and Simmons 2013; Wek'èezhı̨ Renewable Resources Board 2016a; Advisory Committee for Cooperation on Wildlife Management 2024). Additionally, the Beverly, Ahiak, and Qamanirjuaq herds also share parts of their winter ranges (Łutsël K'é Dene First Nation 2020). This overlapping distribution highlights the complexity of habitat use among these herds during the non-calving portion of their annual cycle.

As the different herds overlap during portions of the year, individuals will switch groups and join other herds on their migration (Thorpe et al. 2001; Barnaby and Simmons 2013; Thorpe and Barnaby 2016). Though these shifts are frequently mentioned in the available information, the extent of their occurrence is not detailed.

"The caribou are not declining. They will come back and migrate again. They are not disappearing they are going to other areas to have food to eat and join other caribou. This is what caribou people know. That is how the caribou are travelling, they migrate all over and return again." (Anonymous [Łutsel K'e] in Thorpe and Barnaby 2016:20)

There is no consensus amongst knowledge holders that caribou form distinct populations based on herds. Many individuals and communities assert that barren-ground caribou form larger, more intermixed populations (Thorpe et al. 2001; Beaulieu 2012; Barnaby and Simmons 2013; Thorpe and Barnaby 2016; Wek'èezhìi Renewable Resources Board 2016a; Łutsël K'é Dene First Nation 2020).

"Our members view caribou as one meta-population. They're not genetically, behaviourally or spatially distinct, and they should be managed as a meta-population." (Sheryl Grieve [North Slave Métis Alliance Community] in "Wek'èezhìi Renewable Resources Board 2010e)

"Ever since the people start talking about the decline of the Bathurst herd... I always ask that question. Where did the new herds come from? Where did the Bluenose Herds come from? And then there was the Ahiak Herd. I haven't got an answer yet. To us they are all one herd." (Sam Kapolak [Bathurst Inlet] in Barnaby and Simmons 2013:14)

However, barren-ground caribou and Porcupine caribou are often distinguished as separate groups and managed based on their respective calving grounds. Although closely related (see *Description*), Porcupine caribou and barren-ground caribou are distinct groups, with minimal to no movement of individuals between them (Benson 2015; Benson 2019). As mentioned previously, there is no consensus on this categorization and management approach for barren-ground caribou in available Indigenous and community knowledge. However, more regions and communities have adopted using the calving ground definition as an approach for management. Where possible, the locations of the calving grounds of each individual herd are described below using the available information.

"When we talk about the Bathurst area, we're talking about that Bath -- Bathurst caribou. We want to know what the situation is. How is it that we can manage to help the numbers increase. That's why we're here. There's also other herds, like Ahiak, Bluenose East. If we talk about those in with the Bathurst, it -- it confuses us, so the reason why I'm saying it is because the Bathurst is the one that we're trying to focus on. It -- it calves in the fall time, and then it -- it lives back in the wintering grounds, and then in the spring time goes back north for calving to the calving ground. And so that's the kind of movement that we'd like to see. As well, we also may be able to have photographs that we can have. But if we talk about other -- other caribou herds, and it --

we're talking about too many herds. So we just need to -- we don't want to confuse other people. We know there's lots of caribou, other caribou herds and they'll think, Oh there's lots of other herds around. They'll think like that. So let's do this in a very practical, and very slow, precautionary manner. Maybe if we can help each other somewhere here and there, it's very good that we can because we always live on caribou. How is it that we can help each other help the caribou -- the caribou in the Bathurst area? Also there's Bathurst in the Bluenose East. The Bluenose East travel to our lands, and so when -- when they -- when they are going back to the calving grounds, they separate. The -- the two herds separate, and then they go to their respective calving grounds.” (Joseph Judas [Wekweètì] in Wek’èezhìi Renewable Resources Board 2016a:113–14)

Porcupine Caribou

Though the precise location may change from year to year, Porcupine caribou are considered to calve together, typically on the coastal plain of northeastern Alaska and the north slope of the Yukon (Community of Aklavik, WMAC (NWT), and Joint Secretariat 2008; WMAC [North Slope] and Aklavik HTC 2009; Katz 2010; Benson 2019). Porcupine caribou have also been known to calve in suitable habitat in the mountains; some knowledge holders have noted Porcupine caribou have calved at Edigii [Near the headwaters of the Caribou River in the Peel Watershed] (Katz 2010).

“We call it Caribou Mountain. Edigii it means ‘young calf’ hill. They [caribou] used to calve on there many moons ago...a lot of wind there all the time... That’s why.” (Robert Alexie Sr. [Fort McPherson] in Katz 2010:28)

Barren-ground Caribou (Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose-West, Bluenose-East, Bathurst, Beverly, Ahlak, Qamanirjuaq)

There are caribou from eight different calving grounds that range into the NWT. From west to east, they include: Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose-West, Bluenose-East, Bathurst, Beverly, Ahlak, and Qamanirjuaq. The locations, as described in the available information for each, are provided below.

Tuktoyaktuk Peninsula

In the source material available, the calving grounds for the Tuktoyaktuk Peninsula herd were described as being located on the northeast portion of the peninsula (Community of Tuktoyaktuk, WMAC (NWT), and Joint Secretariat 2008).

Cape Bathurst

The Cape Bathurst herd calves on the Cape Bathurst Peninsula between the communities of Tuktoyaktuk and Paulatuk (Community of Paulatuk, WMAC (NWT), and Joint Secretariat 2008; Advisory Committee for Cooperation on Wildlife Management 2014a; Advisory Committee for Cooperation on Wildlife Management 2021).

Bluenose-West

The Bluenose-West calving grounds are located east of Paulatuk and northeast of Colville Lake largely around the Hornaday and Brock River areas inside and adjacent to Tuktoyaktuk National Park (Community of Paulatuk, WMAC (NWT), and Joint Secretariat 2008; Advisory Committee for Cooperation on Wildlife Management 2021).

Bluenose-East

The Bluenose-East herd's calving grounds are located in Nunavut west of the community of Kugluktuk near Bluenose Lake, the Richardson River, and Rae River (Dumond 2007; Tłıchq Government 2013; Advisory Committee for Cooperation on Wildlife Management 2024; Advisory Committee for Cooperation on Wildlife Management 2023; Advisory Committee for Cooperation on Wildlife Management 2025).

Bathurst

The Bathurst herd's calving grounds are located in Nunavut, near the community of Qinqaut, they vary in their precise location from year to year and are generally west of Bathurst Inlet (Thorpe et al. 2001; Tłıchq Research and Training Institute 2016; Bathurst Caribou Range Plan 2017; Bathurst Caribou Range Plan 2018).

"The Bathurst herd used to calve northeast of us [of Bathurst Inlet]. Every May we would look over the hills looking and one year they didn't come and then one year we heard they were calving southeast of us. Then I got curious about why they moved their calving ground. This is where they calved before they went to the northeast of us. They calve here for many years they eat everything, then they move to another area." (Sam Kapolak [Bathurst Inlet] in Bathurst Caribou Range Plan 2017:6)

Ahiak

Describing the location of the calving ground for the Ahiak herd is complicated by the limited available information and the variances in herd nomenclature within the communities that interact with the herd (Ljubicic et al. 2018). The information describing the location of their calving grounds (Thorpe et al. 2001) does not distinguish between the three herds of Bathurst, Beverly, and Ahiak (Ahiarmiut caribou). However, a single reference was found that notes their calving grounds to be in the area near Queen Maud Gulf south of Gjoa Haven (Ljubicic et al. 2018).

"What I know is where they came from is somewhere in that Garry Lake south and [they] move up [toward Queen Maud Gulf] to do calving..." (Akkikungnaq P. [Gjoa Haven] in Ljubicic et al. 2018:323)

Beverly

The Beverly herd's calving grounds have undergone significant changes in the last 25 years. Before the early 2000s, the Beverly herd primarily calved in the Beverly Lake area

of Nunavut, west of the community of Baker Lake. Since then, however, the herd's calving grounds have mostly shifted northward, closer to the northern coast in the Kitikmeot region between Bathurst Inlet and Chantrey Inlet (Beverly and Qamanirjuaq Caribou Management Board 2023; Beverly and Qamanirjuaq Caribou Management Board 2014a).

Qamanirjuaq

The Qamanirjuaq herd's calving ground is found in the Kivalliq region west of Rankin Inlet, Nunavut. The calving grounds of the herd have recently shifted. Previously, they were centered around Qamanirjuaq Lake and areas inland from Hudson Bay (Beverly and Qamanirjuaq Caribou Management Board 2014b; Beverly and Qamanirjuaq Caribou Management Board 2014a). They are now located farther northeast, closer to the coast (Beverly and Qamanirjuaq Caribou Management Board 2023).

Movement and Dispersal

As described in *Description and Biology and Behaviour* barren-ground caribou undertake large-scale annual migrations of up to 850 km from their late spring calving grounds in the north to their winter ranges near the treeline.

Migration is led by older, experienced animals in the group based upon their excellent memories and sense of smell (Kendrick, Lyver, and Łutsel K'e Dene First Nation 2005; Padilla and Kofinas 2010; Soublière 2011; Benson 2015; Tłıchq Research and Training Institute 2016; Wek'èezhì Renewable Resources Board 2016c; Benson 2019).

"There's caribou leaders, there's a number of caribou leaders. Dazhoo tsoo is one of the leaders, he's a leader but yet he travels behind so dazhoo tsoo is a very important part of the caribou herd, vadzai njoo' that's the older women vadzai njoo' is one of the main caribou leaders, it's like an old woman wants the caribou start and all the caribou start moving. So, those are the two leaders that the Elders talk to me about a long time ago, so dazhoo tsoo and vadzai njoo' because they understand the migrate[ion] they go ahead, they go ahead of the herd and they just make trail. They know where to go according to the weather and the rain so those two are really important." (Anonymous [Old Crow] in Padilla and Kofinas 2010:15–16)

"And here I listen to you guys talking about scientists, collar and all that stuff. Sometime it does happen. It moves. And I -- I talked to my dad about it. And I asked him, Why do those happen? Well, it's the leader, he says, the caribou leader. If he's going to go this way, that's where all the herd's going to go." (Joe Rabesca [Tłıchq community] in Wek'èezhì Renewable Resources Board 2016c:56)

The migration routes are guided by the landscape and over time caribou trails are etched into the land. Caribou can smell these trails and use this sense to help guide them (Padilla and Kofinas 2010). In areas with large numbers of lakes, the migration routes follow more

concentrated paths guided by water bodies and terrain. These important migration routes between the large water bodies and guided by the landscape are known as Tataà (land bridges) in the Tłı̨chǫ region (Tłı̨chǫ Research and Training Institute 2013; Thorpe and Barnaby 2016; Tłı̨chǫ Research and Training Institute 2016). In addition to these land bridges, there are also narrows and water crossings, called nooke where caribou consistently swim across large water bodies (Tłı̨chǫ Research and Training Institute 2013; Tłı̨chǫ Research and Training Institute 2016; Bathurst Caribou Range Plan 2018; Government of the Northwest Territories 2019). Some of these water crossings and land bridges are used repeatedly by barren-ground caribou (Gwich'in Elders 1997; Legat *et al.* 2001; Parlee and Manseau 2005), some have been in use for thousands of years (Bathurst Caribou Range Plan 2018). In the range of the Porcupine caribou there are certain mountain passes which serve as corridors which are consistently used by caribou to migrate across the landscape (Gwich'in Social & Cultural Institute 2009).

The fidelity of barren-ground caribou to certain areas and migration routes appears to vary depending on the time scale of observation. Although they may not return to the same locations each year and may occasionally display unexpected movements (Bayha 2012; Benson 2015; Polfus *et al.* 2016), over longer timeframes and broader spatial scales, they consistently demonstrate fidelity to a larger regional landscape (Legat *et al.* 2001; Kendrick 2003; WMAC [North Slope] and Aklavik HTC 2009; Benson 2019; Tłı̨chǫ Research and Training Institute 2023). Certain communities such as Wekweètì and Fort McPherson were established in the NWT precisely because of the reliability of barren-ground caribou to migrate to these areas (Tłı̨chǫ Research and Training Institute 2016; Benson 2019).

“Those of us living here [in Wekweètì] are thought of as the people living among the caribou.” (Joseph Judas [Wekweètì] in Tłı̨chǫ Research and Training Institute 2016:51)

“They are coming back to their old trails - they never forget them... They always come back.” (Joe Zoe [Gamètì] in Tłı̨chǫ Research and Training Institute 2023:30)

The relationship between caribou and people impacts the migration routes. Barren-ground caribou are sentient beings capable of making their own choices as to where to travel. Caribou will avoid areas of human disturbance (see *Threats and Limiting Factors*), altering their migration routes. These barriers to dispersal combined with natural terrain features (such as large water bodies) can change migration routes dramatically (Bathurst Caribou Range Plan 2017). Knowledge holders in Wekweètì have referred to these barriers as a “dam” that prevents caribou from migrating to their region (Tłı̨chǫ Research and Training Institute 2016).

“The migration goes far north [of us], to the tree line right now. For me, for the Elders who tell the story. Everything [the mines] are blocking, they are making a “dam” so hardly any caribou go

across. So that's why they call it ɛʔe`gehtsɪ. They extended a "dam" so the caribou can't go over it. The caribou don't go come to us. Just imagine all the mines. If there was no mines you would see a lot of caribou right here by now. There's hardly anything. So if the [caribou] go over here [Wekweèti] and come this way, just quite a few like, five, four, and three [animals]. We talk about protecting our land but our land is suffering around us. We have thirty-nine [square kilometers] of land and there are many mines on it. They are building dams for us, so that no caribou can come to us. It is like we are blocked in. It is very bad." (Joe Dryneck [Wekweèti] in Tłı̨cḥ Research and Training Institute 2016:36)

"...and then there were 3 mines there and they started putting in the hydro line 85-87. Before that the caribou would always come down, since the hydro line, we had 1 pass through. Every year caribou come about 40 miles from that line then go east." (Lawrence Adam [Athabasca Nuhenéné community] in Bathurst Caribou Range Plan 2017:15)

Caribou distribution and movement is heavily linked to forage conditions (Benson 2015; Benson 2019). Caribou forage, particularly lichens, is severely affected by wildfires, leading caribou to avoid burned areas for many years (Inuvik Community Corporation, Tuktoyaktuk Community Corporation, and Aklavik Community Corporation 2006; Jacobsen 2013; Benson 2019). The slow recovery of forage, combined with the frequent and widespread occurrence of wildfires, disrupts habitat connectivity and may prevent caribou from returning to these areas once regrowth occurs (Athabasca Chipewyan First Nation Elders, Tanner, and Rigney 2003; Inuvik Community Corporation, Tuktoyaktuk Community Corporation, and Aklavik Community Corporation 2006; Bathurst Caribou Range Plan 2018; Benson 2019; Advisory Committee for Cooperation on Wildlife Management 2024; Beverly and Qamanirjuaq Caribou Management Board 2024).

"the caribou used to go straight towards the area around Whatì but it didn't happen this year because this area was burned. That's why the caribou didn't even come close to Whatì at all" (Joseph Moosenose [Whatì] in Jacobsen 2013:15)

"The caribou used to be really plentiful around Travaillant Lake when I was growing up as a kid, but since then, there was a fire that burnt just north of Rat Lake and east to Big Lake and all through this whole section ... And since that time, the caribou, because all of their food supply had burned in this area, they move...they travel just a little bit north of the lake. But ...I've noticed since 1986, as the vegetation is growing back, the caribou are starting to come back down through here, because we see their trails and their tracks and so on. But they don't stay for as long as they used to. They usually just make their way through, and then they travel further north, and then they're going across east—or west, to Inuvik." (Dan Andre [Tsiigehtchic] in Benson 2015:44)

Caribou movement is also influenced by weather and climate conditions such as snow conditions and ice thickness. Barriers and dangers faced on their migrations include thin ice and, in the Porcupine caribou range avalanches (Jacobsen 2013; Benson 2019; Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022).

"And some caribou, when it come early in November when the ice-- when it's not too cold and the ice not too thick, we heard lot of people go trapping, they said they seen lots of caribou go through the ice." (Joseph Moosenose [Whati] in Sahtú Renewable Resources Board and Délı̨́nê Got'ı̨́nê Government 2022:69)

"Back in the days used to be wind, so the snow wasn't that deep because the wind would blow the snow away, so it is harder for caribou to eat now, snow is now four feet deep. Back in the days, people can walk on the hard snow, now people will fall in, because it is not so hard. That is why it's harder for caribou to travel because they fall through the snow." (Charlie Zoe [Tłı̨́chô community] in Jacobsen 2013:13)

Changes in Distribution

Across their range, barren-ground caribou distribution has undergone a significant contraction from their historic maximum in the 1890s, as described by Beaulieu (2012), and undergone a general shift northward (or northeastward perpendicular to the treeline) in the NWT (Figure 7) (Katz 2010; Beaulieu 2012; North Slave Metis Alliance 2012; Bathurst Caribou Range Plan 2017; Bathurst Caribou Range Plan 2018; Bathurst Caribou Advisory Committee 2021; Bathurst Caribou Advisory Committee 2022; Sahtú Renewable Resources Board and Délı̨́nê Got'ı̨́nê Government 2022; Advisory Committee for Cooperation on Wildlife Management 2023; Beverly and Qamanirjuaq Caribou Management Board 2023; Advisory Committee for Cooperation on Wildlife Management 2024; Beverly and Qamanirjuaq Caribou Management Board 2024).

There is some variation across the range and between herds for when the contractions in distribution took place. The extreme southwestern end of the range into northeastern Alberta contracted in the 1950s and 1960s following significant wildfires and population declines (Athabasca Chipewyan First Nation Elders et al. 2003; Athabasca Chipewyan First Nation Elders, Tanner, and Rigney 2003; Beaulieu 2012). Barren-ground caribou have yet to return to this portion of their range.

"Athabasca Chipewyan First Nation [ACFN] Elders have noted that after the early 1950s, the caribou stopped migrating south of Lake Athabasca in large numbers as a result of the devastating forest fires in the area that destroyed their food supplies. Even though the lichen has grown back, the caribou have not migrated through this old route." (Athabasca Chipewyan First Nation Elders, Tanner, and Rigney 2003:32)

In the late 1980s, Bluenose-West caribou had shifted their distribution to the east much further away from the Gwich'in communities (Benson 2015). This was in response to wildfires, changes in forage availability, and harvest pressure (Benson 2015).

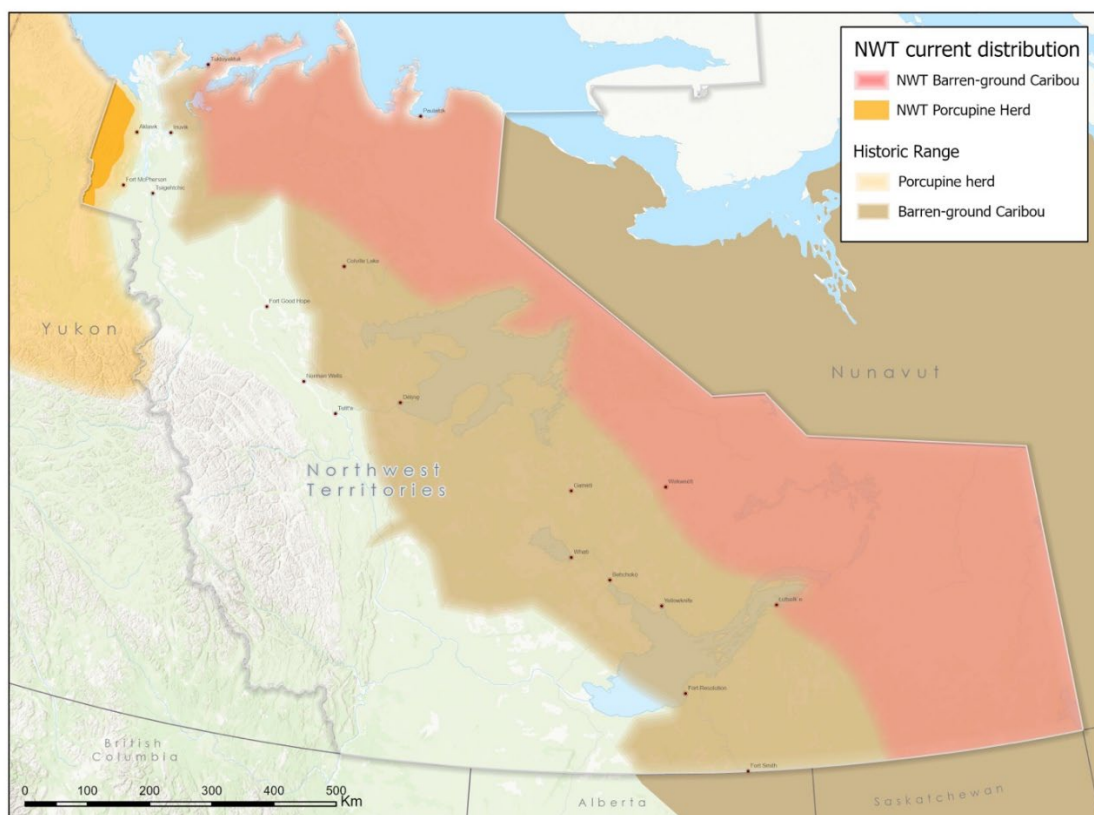


Figure 7: Current distribution versus historic maximum (circa 1890s) range of Porcupine and barren-ground caribou in the NWT. It is important to note that this figure is based on the written and verbal descriptions from the following sources where caribou were described to be found or harvested in the NWT, as such the boundaries should be seen as an approximate representation. Map courtesy of B. Fournier & N. Wilson GNWT-ECC (Katz 2010; Beaulieu 2012; North Slave Metis Alliance 2012; Bathurst Caribou Range Plan 2017; Bathurst Caribou Range Plan 2018; Bathurst Caribou Advisory Committee 2021; Bathurst Caribou Advisory Committee 2022; Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022; Advisory Committee for Cooperation on Wildlife Management 2023; Beverly and Qamanirjuaq Caribou Management Board 2023; Advisory Committee for Cooperation on Wildlife Management 2024; Beverly and Qamanirjuaq Caribou Management Board 2024; Gwich'in Renewable Resources Board 2024).

"[Before about 40-50 years ago] you see them right from Campbell Creek basically all the way to Tsiigehtchic and further east to Travaillant, and right to the edge of the reindeer reserve. ...That's how far they migrated... There's nothing that comes into our area anymore. Nothing. I just think there's not enough of them anymore to make it this far, you know... It just seems like they're just trying to survive now, and not having to expend too much energy or something." (James Firth [Inuvik] in Benson 2015:43)

Beginning in the late 1990s, barren-ground caribou distribution in the South Slave region began to further contract towards the northeast (Beverly and Qamanirjuaq Caribou Management Board 2024; Earl Evans pers. comm. 2024). The shift in distribution is multifactorial and has been linked by community members to wildfire, developments, and climate change, (Łutsël K'é Dene First Nation 2020; Beverly and Qamanirjuaq Caribou

Management Board 2024). Barren-ground caribou have yet to return to their former range in these areas.

Beginning in the early to mid-2000s caribou distribution in the North Slave Region and Wek'èezhii region began to generally shift northeastward (Tłı̄ch̄ Research and Training Institute 2016; Bathurst Caribou Range Plan 2018; Bathurst Caribou Advisory Committee 2021; Bathurst Caribou Advisory Committee 2022).

"Currently no caribou comes into our area (Whati); if they open another mine it might stop them altogether, we are concerned for this." (Dora Nitsiza [Whati] in Tłı̄ch̄ Government 2012:27)

With a certain amount of variation, barren-ground caribou began to shift their distribution in the Sahtù eastwards, shifting away from Fort Good Hope, and later Délı̄nę in the mid to late 2000s (Advisory Committee for Cooperation on Wildlife Management 2014a).

"...one of the difference between Colville Lake and Délı̄nę is that we're not hunting caribou. We haven't hunted caribou for two years. We hunted more moose. We can probably tell you more about moose and muskox and woodland caribou than anything else. We can tell you a story about the hunting that we do. We got moose. We got muskox, and we got woodland caribou. In fact, we got lots of woodland caribou this year. But Délı̄nę hasn't hunted any Bluenose-East caribou in almost two years unless the five that we got in McGill Bay..." (Walter Bezha [Délı̄nę] in Sahtú Renewable Resources Board and Délı̄nę Got'ı̄nę Government 2022:79–80)

The Inuvik to Tuktoyaktuk Highway officially opened in 2017. The construction of this highway has influenced the distribution of the Tuktoyaktuk Peninsula and Cape Bathurst herds. The highway acts somewhat as a barrier, causing caribou to avoid areas to the west of the highway (Advisory Committee for Cooperation on Wildlife Management 2022).

The range contraction of barren-ground caribou has resulted in the species becoming unavailable in many communities and regions where it was once more accessible. Notably, barren-ground caribou are now absent or significantly less available in the following communities, where they were to varying degrees formerly readily harvested: Inuvik, Tsiigehtchic, Fort Good Hope, Délı̄nę, Wrigley, Gamètı, Whati, Behchok̄, Yellowknife, N'dilo, Dettah, Fort Resolution, and Fort Smith (Benson 2015; Bathurst Caribou Range Plan 2017; Bathurst Caribou Advisory Committee 2021; Bathurst Caribou Range Plan 2018; Bathurst Caribou Advisory Committee 2022; Beverly and Qamanirjuaq Caribou Management Board 2023; Advisory Committee for Cooperation on Wildlife Management 2024; Beverly and Qamanirjuaq Caribou Management Board 2024).

As described above in *Movement and Dispersal* when viewed over longer timeframes and broader spatial scales, barren-ground caribou consistently demonstrate loyalty to a larger regional landscape. When viewed over long periods of time caribou distribution

undergoes expansion and contraction on a cycle of several decades, ranging from 30-60 years (Beaulieu 2012; Benson 2015; Bathurst Caribou Range Plan 2018; Advisory Committee for Cooperation on Wildlife Management 2021). Barren-ground caribou distribution is closely linked to population size (Beaulieu 2012).

"From 1984 to 2004 The caribou didn't go as far south as they did in the 1950s. I don't know the reason for it, because we didn't fly around and count. I think when the numbers are lower they just don't go as far. Some people say it's because of forest fires. Whatever the case, the range extended that far south (into southern Saskatchewan) the last time the population size was high." (Danny Beaulieu [Fort Providence] in Beaulieu 2012:64)

"I know a time when there was no caribou around Snare Lake. I know sometime in 1970, somewhere around there, there's three Elders that are still around yet. Since there's no caribou, the leaders at Snare Lake had to send three young people. They were young then. They are probably seventy-five (75) years old now. They had to go to Rae [Behchokò]. And one passed away.... And we all had to go to Snowdrift [Łutsel K'e], because there was no caribou around Snare Lake, Rae Lakes, nothing. And we were using dogs. No skidoo then. I went, too. Everybody in Snare Lake, they went. We all went by dogs. And earlier when we used -- started using skidoo again, Joseph had to fly into Snowdrift to get his caribou. There's no caribou then. So sometime it happens to -- I -- I know two occasion it did happen. And I asked the Elders, Why did this happen?" - (Joe Rabesca [Wekweètì] in Wek'èezhìi Renewable Resources Board 2016c:55-56)

There are a very limited number of sources that speak specifically to distribution cycles, as knowledge holders do not generally distinguish between distribution and abundance. Cycles are difficult to predict and are known to be variable (Bathurst Caribou Range Plan 2018; Advisory Committee for Cooperation on Wildlife Management 2021). Caribou cycles are influenced by a variety of factors, including forage and habitat availability and quality, wildfires, development, climate, predator populations, human disturbance, harvest, competitors, and insect disturbance (Bathurst Caribou Range Plan 2017; Łutsël K'é Dene First Nation 2020).

"I think we want to maintain the ability of the range to support caribou. I don't think that we can say it is specifically one thing, this way it is left open and kept broad. We want to maintain the ability of the range to support caribou in its broadest terms. Don't have the ability to assign a specific cause for the decline. Promote the multi-factor nature of decline in the absence of having a specific reason why we need to be fairly wide open on the goal." (Adrian D'hont [Yellowknife] in Bathurst Caribou Range Plan 2017:12)

"Łutsël K'é Denesoline knowledge holders stated that the decline of the Bathurst ʔetthën herd is the result of cumulative impacts from human-caused climate change causing more fires, reducing food availability, changing snow and ice conditions, and increasing pest exposure; mineral resource exploration and extraction is causing disruptions along ʔetthën migration routes and causing additional stress to the ʔetthën from noise, smell, dust, and emissions from the mines; the ice road that serves the exploration camps and mines is causing disruptions along ʔetthën migration routes, and is increasing hunting pressure on the Bathurst ʔetthën herd; big game nálze

(hunting) in the Northwest Territories in the past and ongoing big game nálze (hunting) in Nunavut; and, in some instances, disrespectful nálze (hunting) practices are some of the causes for the decline in ʔetthën herd populations.” (Łutsël K’édene First Nation 2020:24)

The available information can give us insight into the distribution of barren-ground caribou into the past. Over the last 130 years (since the 1890s), barren-ground caribou have gone through several cycles, lasting approximately 30 years each (Beaulieu 2012). Each peak in the cycle appears to have a slightly smaller maximum distribution. During the peak in the 1950s, barren-ground caribou were found very close to Fort Chipewyan, Fort Smith, Fort Resolution, and stretched to the southwest into the Dehcho. During the following peak in the 1980s-1990s, caribou were absent from the area around Fort Chipewyan and did not extend as far southwest into the Dehcho or the South Slave regions (Athabasca Chipewyan First Nation Elders et al. 2003; Athabasca Chipewyan First Nation Elders, Tanner, and Rigney 2003; Beaulieu 2012).

Cycles are no longer following the natural patterns from the past (Wek’èezhii Renewable Resources Board 2016a; Bathurst Caribou Range Plan 2018). As described in the Bathurst Caribou Advisory Committee (2021) caribou populations are no longer following the 30-year cycles predicted (Beaulieu 2012). Based on the 30-year cycle, caribou distribution (and population size) should have started to expand in the 2010s (Bathurst Caribou Advisory Committee 2021).

“I know however, that sometimes there would be no caribou in the area. Elders understood this to be a time when the caribou had to go elsewhere to find its food. This was natural earth balance and replenishment, and it is all part of Mother Earths work. But lately the changes that [have] been happening has nothing to do the natural process. There are changes in behavior and movement of the caribou. Compared to the past the caribou has evidently changed.” (Anonymous [Athabasca Nuhenéné community] in Bathurst Caribou Range Plan 2018:34)

“This time is different, I don’t think the cycle will come back like it used to because of the other things going on. When I first started there were 430,000 caribou and it was going down, then one year we lost 200,000 they said that they died.” (Arthur Beck [Fort Resolution] in Bathurst Caribou Range Plan 2017:9)

“But we also know that there was natural declines. But after taking its course, being in that natural environment, they -- it kind of recovered itself. But the challenges today is not natural. It’s global. It’s got a lot to do with a lot of different factors that didn’t exist at the time. So the challenges are great.” (John B Zoe [Behchokò] in Wek’èezhii Renewable Resources Board 2016a:138)

A high level of concern exists around the inaccessibility of barren-ground caribou. This concern is particularly present in the communities that are found on the southern and western edge of the range for Bluenose-East, Bathurst, and the Beverly herds, where caribou have become difficult to access. This concern is especially acute for the Bathurst herd (Thorpe and Barnaby 2016; Tłıchq Research and Training Institute 2016; Wek’èezhii

Renewable Resources Board 2016a; Bathurst Caribou Range Plan 2017; Bathurst Caribou Range Plan 2018; Łutsël K'é Dene First Nation 2020).

"Before all these [mining and outfitting activities] happening, there used to be, over there used to be lots. With Chief Jimmy Bruneau, when I was boy seven or ten years old, at Beᑭaiti, where we camp, somewhere around September that's when we got there, then October, November and all to December. That's the time when the big herd came through by there. Ever lots of caribou. So everybody start to go hunting and bring lots of meat to survive for the whole year, make a lot of dry meat. That was really tasty meat and really fine meat that people eat, even the small animals or the big bulls, because it's the fall time so the big bulls are all fat. That's what they have been using all these big bulls they got fat about this big sometimes, maybe bigger than that sometimes, all the way from the back, on the backstrap. There was a whole bunch like that and the caribou was really healthy, and it was fine meat too. It wasn't no scars, nothing like that inside the lungs or inside their stomachs. But we don't hardly see things like that before. But since after all these [developments] happening, people start to see things like that, plus all the meat and less fat. All the females are supposed to be having a baby but some of them are not like that, they have no babies. They are supposed to have it but it didn't happen. But before those [mines] being established, almost all the females used to have babies to go back to the Barrenlands. So in that case it's a really big change from those times till today." (Joseph Judas [Wekweèti] in Tłıchq Research and Training Institute 2016:48)

"It was our tradition. All our trails are starting to disappear as the caribou trails are disappearing. And so today let's help each other with the caribou. And so as I speak today, I wonder how can I help my people. How can I help future generations, my future grandchildren, their grandchildren, to -- to how far -- how far into the future can we make plans for them." (Joseph Judas [Wekweèti] in Wek'èezhii Renewable Resources Board 2016a:115)

Search Effort and Harvest Patterns

Barren-ground caribou are harvested by many communities across the NWT. Many communities were established in the NWT based on the reliable seasonal presence of caribou. It cannot be understated the degree to which culture and caribou are linked. The distribution of caribou is well known, and is evidenced by the extensive network of trails across the land (Auld and Kershaw 2005; Inuvik Community Corporation, Tuktoyaktuk Community Corporation, and Aklavik Community Corporation 2006; Tłıchq Government 2013; Advisory Committee for Cooperation on Wildlife Management 2014a; Benson 2015; Tłıchq Research and Training Institute 2016; Gwich'in Land Use Planning Board 2018).

"The Dechj Laagot'ij have lived in the exact same area, walked the same hills, and paddled the same lakes and rivers for millennia, while studying the exact same phenomenon: the yearly movement of the barren-ground caribou. Since knowledge of the movement is passed between the generations, modern-day Tłıchq know the exact locations where they most likely will meet the caribou during their fall and spring migrations." (Tłıchq Research and Training Institute 2016:34)

Harvest patterns vary depending on local conditions, accessibility, distance to caribou, community conservation plans and harvest protocols, local hunting regulations (total allowable harvest systems and wildlife management zones), and the seasonal timing of when caribou are present in the respective communities.

As described in *Changes in Distribution*, barren-ground caribou have undergone a contraction in their distribution. This range contraction has meant barren-ground caribou are now absent or significantly less available in the following communities, where they were to varying degrees formerly readily harvested: Inuvik, Tsiigehtchic, Fort Good Hope, Délı̨nę, Wrigley, Gamètì, Whatì, Behchokò, Yellowknife, N'dilo, Dettah, Fort Resolution, and Fort Smith (Benson 2015; Bathurst Caribou Range Plan 2017; Bathurst Caribou Advisory Committee 2021; Bathurst Caribou Range Plan 2018; Bathurst Caribou Advisory Committee 2022; Beverly and Qamanirjuaq Caribou Management Board 2023; Advisory Committee for Cooperation on Wildlife Management 2024; Beverly and Qamanirjuaq Caribou Management Board 2024).

Access for harvest has changed for hunters in many of these communities. Due to strict harvesting restrictions on Bluenose-East and Bathurst herds, and as caribou no longer migrate close to their communities, many harvesters, access barren-ground caribou via the Tibbitt to Contwoyto winter road to harvest the Beverly herd (Legat et al. 2001; Northwest Territory Métis Nation 2012; Bathurst Caribou Range Plan 2017; Łutsël K'é Dene First Nation 2020; Bathurst Caribou Advisory Committee 2022).

"In the past we used to hunt them all over the place in the southern end of the range. Now that the numbers are way down, we only see them during the winter hunt on the winter road." (Earl Evans [Fort Smith] in Bathurst Caribou Advisory Committee 2022:19)

"The road was put there for the mines (not easy hunting). Comes down to certain important things. Listening to everyone - most important is access. The mine road is a major problem. The road is owned by the mines and you could stop people going out, even with s. 35. To protect caribou we need to stop using the hauling road. Aboriginal people have to agree to that. I personally would stop hunting caribou with a truck. I would like to see the haul road stop being used for meat." (Arthur Beck [Fort Resolution] in Bathurst Caribou Range Plan 2017:9)

The harvest in the Sahtú communities of Délı̨nę and Fort Good Hope has decreased dramatically as they have either had to travel much greater distances, or travel to other communities (such as Colville Lake) outside of their areas to harvest caribou (Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022; Sahtú Renewable Resources Board 2020; Advisory Committee for Cooperation on Wildlife Management 2023; Advisory Committee for Cooperation on Wildlife Management 2024).

"Colville Lake hunts -- they hunt caribou all the time. So they got a lot of information that we don't have. We don't have caribou. We haven't hunted caribou for two years. So until one day that happens again, and I would say from the way things are going right now, another five years,

maybe you'll have even ten years before we see caribou again.” (Walter Bezha [Déliṇḡ] in Sahtú Renewable Resources Board and Déliṇḡ Got’iṇḡ Government 2022:82)

The communities in the GSA primarily harvest Porcupine caribou. However, in years when Porcupine caribou are unavailable, community members will increase harvest of the Bluenose-West herd (Advisory Committee for Cooperation on Wildlife Management 2024). Porcupine caribou populations have been stable and recently decreasing from their 2017 peak but have remained relatively accessible via the Dempster Highway and other traditional routes to harvesters during the 2020s. This has contributed to reduced harvesting pressure on other barren-ground caribou herds. However, annual variations in migration patterns mean that Porcupine caribou are less available to harvesters in certain years (Advisory Committee for Cooperation on Wildlife Management 2022; Advisory Committee for Cooperation on Wildlife Management 2023; Advisory Committee for Cooperation on Wildlife Management 2024; Porcupine Caribou Management Board 2024; Gwich’in Renewable Resources Board 2024; Gwich’in Renewable Resources Board 2026).

As described in *Changes in Distribution*, the construction of the Inuvik to Tuktoyaktuk Highway in 2017 has influenced an increase in access to harvest in the range of the Cape Bathurst and Bluenose-West herds (Advisory Committee for Cooperation on Wildlife Management 2018).

Key Habitats

Habitat Requirements

Barren-ground caribou utilize a variety of different habitats across their seasonal migrations. Barren-ground caribou range is extensive and must be considered as a whole, rather than the sum of its individual parts. For a description of their forage requirements and seasonal migrations, see *Diet and Feeding Behaviour, Adaptations to Environment, and Movement and Dispersal*. Good barren-ground caribou habitat is often considered holistically and can be described as the combination of high-quality forage, good snow, ice, and climatic conditions, low levels of predators, insect harassment, and human disturbance across a large regional landscape (Thorpe *et al.* 2001; Legat *et al.* 2001; Bathurst Caribou Range Plan 2018).

Barren-ground caribou will move seasonally in search of the optimal conditions on the land, which in turn are guided by the combination of the above factors. This migration ensures they can meet their needs for food, safety, and suitable calving or wintering areas. Caribou are sentient and highly mobile, so when the habitat conditions are unsuitable, they will move to seek favourable conditions (Benson 2015; Thorpe and Barnaby 2016; Benson 2019).

"If they can't find food they have to walk and walk and walk." (Joan Nazon [Tsiigehtchic] in Benson 2015:30)

Though barren-ground caribou rely on different parts of their range at different times of year (calving, post-calving, and summer, fall, and winter ranges), the entirety of their range is considered by knowledge holders as key to their survival, with the calving grounds, and site specific areas such as land bridges and water crossings holding particular significance (Thorpe *et al.* 2001; Bathurst Caribou Range Plan 2018; Tłı̨chǫ Research and Training Institute 2013; Tłı̨chǫ Research and Training Institute 2014b; Tłı̨chǫ Research and Training Institute 2016).

Calving Grounds

As described in *Adaptations to Environment*, caribou migrate to the coast or move to higher elevations or lake shores (e.g., Beverly Lake) in the summer to avoid insect harassment, for the good quality forage on the tundra, as well as for the open areas where predators are more visible, and caribou are safer to calve (Thorpe *et al.* 2001; Inuvik Community Corporation, Tuktoyaktuk Community Corporation, and Aklavik Community Corporation 2006; Gwich'in Social & Cultural Institute 2009; Benson and Ernst 2017). The location of each herd's calving grounds can be found in *Distribution* (see also Figure 9 and Figure 10). Calving grounds are extremely sensitive and important areas for barren-ground caribou. Knowledge holders emphasize that respecting calving grounds and ensuring that they remain undisturbed is fundamental to protecting the caribou population (Kendrick, Lyver, and Łutsel K'e Dene First Nation 2005; Beverly and Qamanirjuaq Caribou Management Board 2014a; Thorpe and Barnaby 2016; Bathurst Caribou Range Plan 2017; Hummel and Evans 2017; Benson 2019; Government of the Northwest Territories 2019).

"It's nice and clean, it's nice and quiet, there's special plants, there's special habitat. Our Elders and local people have always told us to keep the land clean. Don't build cabins, houses, even set up tents in that area, because it's special." (Alex Ishalook [Arviat] in Hummel and Evans 2017:57)

"Also in Nunavut we strongly feel about protecting the calving area. The hunters and trappers organization, the Inuit Regional office in the Kitikmeot region, tourism, exploration camps, supporting us and Nunavut [Wildlife] Management Board is supporting us. We have to work together and it takes hard work to get to that goal but we cannot give up it is our main food." (Anonymous [Kitikmeot community] in Bathurst Caribou Range Plan 2017:16)

"They are smart animals. On calving grounds, there should not be mining and exploration. Calving grounds should be kept the way it is. Nothing should be built, no mining or roads. (Anonymous [Tłı̨chǫ community] in Bathurst Caribou Range Plan 2017:17)

Barren-ground caribou are known to periodically shift their calving grounds (Thorpe *et al.* 2001; Benson 2019; Beverly and Qamanirjuaq Caribou Management Board 2023).

These shifts may be related to forage availability, changes to areas that are snow and ice free, insect harassment, disturbance, and predators (Thorpe et al. 2001; Beverly and Qamanirjuaq Caribou Management Board 2024). The Bathurst herd calving grounds moved from the eastern side of the inlet to the western side in the mid-1990s (Thorpe et al. 2001). Additionally, the calving grounds of the Beverly herd underwent a significant change in the early 2000s, when animals from the herd began to calve near the coast in the Queen Maud Gulf Migratory Bird Sanctuary southwest of Gjoa Haven (Beverly and Qamanirjuaq Caribou Management Board 2024).

“...The calving ground will shift again, but where will it go, and will we be limiting where they can go?” (Adrian D’hont [Yellowknife] in Bathurst Caribou Range Plan 2017:10)

“Caribou tend to prefer these areas for calving grounds, because of this year’s or last year’s plants. It’s not this year’s plants; it is from years before plants. That’s why they go there. If they don’t find plants they might move to a different area, to a different calving area, it might be past Bathurst. Sometimes they would be on the east side of Bathurst Inlet and sometimes on the west side, all along there, and anywhere, all the way down to James Bay area” (Kitikmeot Inuit Association in Bathurst Caribou Range Plan 2018:46)

Post-Calving and Summer Habitat

Following calving, barren-ground caribou will seek areas of good forage, areas where predators can be seen and more easily avoided, lower human disturbance, and less insect harassment (Thorpe et al. 2001). These post-calving habitats have prime vegetation which is important for cows to forage while undisturbed to produce high-quality milk. Barren-ground caribou are particularly sensitive to disturbance during this time, as cows must forage constantly to provide milk and regain their own energy (Beverly and Qamanirjuaq Caribou Management Board 2023). If disturbed during this time, cows may abandon their calves (Beverly and Qamanirjuaq Caribou Management Board 2023).

“The caribou stay put after they calve, but then it rains and gets warmer, and they scatter all over the place as there are lots of mosquitos.” (Joe Zoe [Gamètì] in Bathurst Caribou Advisory Committee 2022:20)

Caribou can expend large amount of energy avoiding insects, they are known to run themselves to exhaustion trying to escape (Bathurst Caribou Range Plan 2018). During the summer months insect harassment and avoidance is linked to habitat use. Caribou will often seek coastal, hilltops, or other areas with high winds and cooler temperatures, such as areas with remaining snow, to get relief from biting insects (Thorpe et al. 2001; WMAC [North Slope] and Aklavik HTC 2009).

“Some years it’s so hot down there, the caribou go along the coast and eat in the bays and stuff like that. They go to the cooler places rather than staying in the Delta, and then they migrate back in the fall time.” (Donald Avuigana [Aklavik] in WMAC [North Slope] and Aklavik HTC 2009:29)

"I've seen caribou that's pretty thin and I've seen caribou as pretty fat. They're pretty thin in the summer, caribou. Real skinny, caribou in the summer. So much mosquitoes down the coastline, you know. They're driving them nuts, mosquitoes—so thick now." (Jerry Arey [Aklavik] in WMAC [North Slope] and Aklavik HTC 2009:88)

Following the post-calving period, groups of cows and calves begin to migrate southwards to join bulls forming larger herds. As the ranges of the western herds (Tuktoyaktuk Peninsula and Cape Bathurst) are smaller from north to south, these summer areas may still be relatively near the coast. Whereas the eastern herds (Bluenose-west, Bluenose-East, Bathurst, Beverly, Ahik, and Qamanirjuaq) have ranges that stretch across more latitude, these summer areas tend to be further from the coast. For example, the summer range of the Bathurst herd is in a large area around Contwoyto Lake, Fry Inlet and south to Point Lake and Lac de Gras (Bathurst Caribou Range Plan 2018). These summer areas are also areas of prime forage, allowing for caribou to feed and put on fat for the fall migration, rutting season, and winter (Tłı̨ch̓ Research and Training Institute 2023).

"When ... [the calf] is about to go off its mother's milk, ... the month of July ... is when they start moving again. They are moving in this direction [southwest]... The young calves were really small. They looked like they still nursed from their mothers, but they walked after their mother." (Jimmy Martin [Tłı̨ch̓ community] in Legat et al. 2001:33)

Cool and wet summers allow good growth of vegetation and there are fewer insects, as such, they are prime conditions for caribou (Advisory Committee for Cooperation on Wildlife Management 2014a; Bathurst Caribou Range Plan 2018; Bathurst Caribou Advisory Committee 2022). As described above significant amounts of energy are spent avoiding insects. The amount of energy used avoiding insects balanced against the amount and quality of the forage is one of the main determining factors for body condition (Bathurst Caribou Range Plan 2018).

"They can't stay quiet. They just got to go, go, go, go. That's how come they stay in the open around the coast where there's lots of water. It's by the wind." (John Jerome [Gwich'in community] in Benson 2015:27)

Fall Range

Fall range for barren-ground caribou is variable and may be found on the tundra, near the treeline, or below the treeline. Caribou continue to forage and put on fat for the upcoming winter as well as enter the fall rutting season (Legat et al. 2001; WMAC [North Slope] and Aklavik HTC 2009).

"[Herd health] depends on the lichens and stuff like that. Migration in the fall time, when vegetations freeze up when it's green, it's a good sign they eat good on the vegetation. Grass and stuff like that, when it's green like that it's a good year. But when they're dry, not good for them."

I mean for any animal, rabbits and muskrat that eat off the ground. Always watch that in the fall time ... Vegetation is still green it's good food for animals." (Donald Avuigana [Aklavik] in WMAC [North Slope] and Aklavik HTC 2009:87)

"Since it's their land [barrenlands], that's where they roamed around in that area until fall time. Just when they become wedziaa (small bull barrenland caribou) and fat, they roamed back into the bush. They do that every year and that's what they do with themselves. They don't roamed in this area only, they roamed all over to Łutsel K'e." (Joe Zoe Fish [Tłı̨chǫ community] in Legat et al. 2001:40)

Snow and ice conditions play a role in the quality of the late fall range. Ice on snow events from late-season rain or warm periods can cover the forage in ice, making it more difficult for barren-ground caribou to feed (WMAC [North Slope] and Aklavik HTC 2009).

"It's all important, wherever they can find food. They gotta follow the food. If it rains in the fall time it's real bad—freeze-up. Under that snow it turns to ice. That's when the caribou starve. If it's good fall, not much rain or not too warm weather, they'll stay healthy." (Anonymous [Aklavik] in WMAC [North Slope] and Aklavik HTC 2009:29)

Winter Range

Winter range for barren-ground caribou is typically below the treeline in the mature forests of the boreal and taiga regions of the Yukon, NWT, Nunavut, Saskatchewan, and Manitoba (WMAC [North Slope] and Aklavik HTC 2009; Bathurst Caribou Range Plan 2018; Benson 2019). Caribou move to these mature forests below the treeline to find suitable climate conditions that allow them to dig through the snow cover to reach their preferred forage of lichen (Lyver 2005; Gordon et al. 2008; Katz 2010; Jacobsen 2013; Benson 2019). Barren-ground caribou will avoid areas where snow is either too deep, or too ice-crusted to effectively dig through. Caribou will often spread out into smaller groups at this time as the forage is less concentrated (Benson 2019). Barren-ground caribou are increasingly utilising areas above the treeline for winter habitat (Katz 2010; Bathurst Caribou Range Plan 2017; Bathurst Caribou Advisory Committee 2021; Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022).

"Some places, ah, caribou... don't hang around there all winter because it's, all, too snow drift, you know, and that kind of stuff. Hard snow, so they go in the hills where it's, mountains where it's soft snow and shallow snow and they get their food." (Stanley Njootli [Old Crow] in Katz 2010:39)

"Then two years ago hardly any animals came down to Wekweèti and the tree line because it wasn't that cold and the fires had burned everything. They are just like humans and tell each other." (Joseph Judas [Wekweèti] in Bathurst Caribou Range Plan 2017:9)

Key Habitat Areas

Other site-specific areas of key habitat include the corridors such as land bridges or water crossings that allow caribou to move across and around a landscape and terrain filled

with large water bodies (Tłı̨chq Research and Training Institute 2014; Tłı̨chq Research and Training Institute 2016; Benson 2019; Tłı̨chq Government 2025).

"It's not like before when we traveled over here, it's not the same. Before caribou had their way of travel but when the mines were built they went a different way. It's not like they go straight through but now they go around [the mines]. Before when we travel for the caribou hunting season we usually go to a certain place, now we go to a different place cause of the mines. From Ɂek'atı to Wekweèti the caribou migrates, but now we don't see any caribou in Wekweèti." (Joseph Judas [Wekweèti] in Tłı̨chq Research and Training Institute 2016:44)

"I wanted to say a few words on the protected areas. All the crossings they are really important to these animals, what I am trying to say is that all the areas that we have pointed out are important and we want these animals to be protected. Maybe someday we should try to take the cameras and get pictures and see where the animals go. Maybe someday we should try to work with Nunavut those calving grounds are like a hospital for them, it should be protected. What I am trying to say is that area where all the babies are born should be protected. They know that animals come out and then go back, they knew that. There used to be wolfs around and bears. October and November the bears and wolves are gone. They know the caribou are gone so they go too." (Joseph Judas [Wekweèti] in Bathurst Caribou Range Plan 2017:9)

"Buildings have permanent smell and, as the caribou come past they smell that. And they don't get too used to that, they don't like that. So now they might cross somewhere else." (Stanley Njootli [Old Crow] in Katz 2010:43)

Habitat Trends and Fragmentation

Habitat Trends

Knowledge holders frequently describe a loss of suitable habitat for barren-ground caribou. The primary drivers of habitat loss include climate change, wildfires, human disturbance, and overgrazing (Legat et al. 2001; Katz 2010; Soublière 2011).

During times of high population numbers, knowledge holders often describe caribou as able to manage their own habitat. When areas of forage become overused, barren-ground caribou will avoid that area until the vegetation has regrown (Legat et al. 2001; Benson 2015). Though this has been an issue in the past, with many of the populations in the lower end of their cycles, overgrazing is not a concern that is mentioned frequently in the current available information.

"Caribou manage their habitat. The caribou move to other areas and then move back to that area." (Anonymous [Tsiigehtchic] in Benson 2015:30)

"Their feed will affect them. All the lichens... those take a long time to grow, so if they overuse certain areas, then the caribou move." (Anonymous [Tsiigehtchic] in Benson 2015:30)

Warmer winters and changing snow conditions are influencing caribou habitat and, in certain circumstances, are causing them to stay above the treeline in the winter months (Katz 2010; Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022).

"The caribou... all of a sudden they're not, you know, for some reason they're not going to their wintering range down in the head of Ogilvie, or spend one winter in Hart River, you know? So their winter range some of the Porcupine they don't go there some years, and [but] the wolverine expect that [they do]. So they [the wolverines]... down there and, then the caribou don't go down there, right now, two, second year in a row they're up in Arctic Village. So that has an effect on the wolverine and might have a good effect on the caribou because then, they're healthy... and then from there they don't have too far to go to the calving ground." (Stanley Njootli [Old Crow] in Katz 2010:39)

Warming climate is also linked to habitat changes on the tundra. Increasing temperatures are leading to increased growth of willows and shrubs on the tundra (Katz 2010; Benson 2015; Délı̨nę Ƴekwé Working Group 2016).

"There just seems to be willows growing all over the place, even on some lakes that used to be grassy. Now you see willows growing on them." (Wally Tyrrel [Aklavik] in Benson 2015:53)

Changing climate and warming temperatures is also linked to increased insect harassment, in the form of new insects and the increase in those already present. Harvesters in Kugluktuk have noted the presence of new insects such as horseflies in recent years (Bathurst Caribou Range Plan 2018). Some knowledge holders have suggested that mosquitoes were largely absent from the coastal areas of the Porcupine caribou range prior to the late 1980s (WMAC [North Slope] and Aklavik HTC 2009). From a habitat perspective, barren-ground caribou and Porcupine caribou have a small number of options to seek refuge from insects. They can either move to higher elevations or latitudes, or to the edge of large water bodies to seek cooler weather and windy conditions (Thorpe et al. 2001; WMAC [North Slope] and Aklavik HTC 2009; Benson 2015; Benson 2019). Unfortunately, the quality of suitable habitat has and will decrease; barren-ground caribou are limited in their search for cooler climates and insect-free conditions as the Arctic Ocean prevents them from moving any further north, and unlike Porcupine caribou, they do not have mountainous areas in their range to use elevation gain as an insect avoidance strategy.

"With the hotter summers that we're having now, that must be hard for them. Because of that, there's a lot more mosquitoes. So I think that really affects them... I think we used to get more rain. It seems like we don't get as much as we used to, the last few years, anyway. You talk about climate change. ... It never used to be that way." (James Firth [Inuvik] in Benson 2015:52)

Knowledge holders describe wildfire on the winter range as one of the primary drivers in the loss of suitable habitat for barren-ground caribou (Athabasca Chipewyan First Nation Elders et al. 2003; Athabasca Chipewyan First Nation Elders, Tanner, and Rigney 2003;

Advisory Committee for Cooperation on Wildlife Management 2014a; Benson 2015; Délı̄nę ʔekwé Working Group 2016; Bathurst Caribou Range Plan 2017; Bathurst Caribou Range Plan 2018; Benson 2019; Beverly and Qamanirjuaq Caribou Management Board 2023; Beverly and Qamanirjuaq Caribou Management Board 2024). As described in *Diet and Feeding Behaviour*, the winter barren-ground caribou primarily feed on the lichen in mature forests. The loss of suitable habitat is driven by the amount of time it takes this lichen to regenerate following a fire. There is some discrepancy in the available information about the time required for caribou (and the lichen) to return following a wildfire. Depending on conditions and fire severity, knowledge holders describe it taking from anywhere between 10-40 years for caribou to return following a fire (Inuvik Community Corporation, Tuktoyaktuk Community Corporation, and Aklavik Community Corporation 2006; Jacobsen 2013; Benson 2015), with some individuals saying upwards of 50 years (Thorpe and Barnaby 2016). With increasing temperatures from a changing climate, wildfires are burning regularly, more severely, and over increasingly large areas, leading to the loss of more habitat in the winter range than under past conditions (Kendrick 2003; Bathurst Caribou Range Plan 2018).

"...When lichen is destroyed in forest fires, it takes many years to grow back to a level where caribou will eat it again This can affect where caribou may go to feed. They do not live in one area but migrate seasonally—often taking different routes— to give the land a chance to replenish itself." (Anonymous [Inuvialuit community] in Inuvik Community Corporation, Tuktoyaktuk Community Corporation, and Aklavik Community Corporation 2006:45)

"the caribou used to go straight towards the area around Whatı̄ but it didn't happen this year because this area was burned. That's why the caribou didn't even come close to Whatı̄ at all" (Joseph Moosenose [Whatı̄] in Jacobsen 2013:15)

Knowledge holders frequently attribute increased wildfire to a change in government policies around fire suppression (Athabasca Chipewyan First Nation Elders et al. 2003; Jacobsen 2013; Thorpe and Barnaby 2016; Bathurst Caribou Range Plan 2017). Current policies are based around protecting individual values at risk such as cabins and other infrastructure, versus habitat.

"Part of this is because of the fires. They are protecting cabins but not the trap lines. What are they going to do with a cabin that is burnt all around it? Save the trap lines! I can build another cabin." (Arthur Beck [Fort Resolution] in Bathurst Caribou Range Plan 2017:11)

"In 1979, I fought fire and this whole country is all burnt [South Slave]. Lichen takes 50 years to mature before the caribou stomach can digest that. Now in the 2000's and late nineties this whole area burned in North Slave. Caribou moved away because all that food is burnt." (Anonymous [Tłı̄chǫ community] in Thorpe and Barnaby 2016:10)

"back in the days they would fight fires right away and not let them burn. So there was lots of caribou food, and lots of caribou around here [Whati]" (Francis Simpson [Whati] in Jacobsen 2013:17)

A large amount of the winter range for barren-ground caribou has been subject to wildfire (Figure 8). As described in *Changes in Distribution*, following the widespread burning in their southern winter habitat barren-ground caribou have yet to return to the southern extent of their maximum range. Though mentioned across the range of barren-ground caribou this effect is mentioned as a leading cause of habitat loss in the ranges of the Beverly, Qamanirjuaq, and Bathurst herds in the North Slave and South Slave Regions (Wek'èezhìi Renewable Resources Board 2010b; Wek'èezhìi Renewable Resources Board 2010c; Benson 2015; Thorpe and Barnaby 2016; Bathurst Caribou Range Plan 2017; Bathurst Caribou Range Plan 2018).

"The caribou probably don't come south anymore because they let the North Country burn. In Saskatchewan they don't fight fires enough. Otherwise, it would have been good caribou habitat. Earlier the caribou came down every year. In 1947 they came to Fort Chipewyan. They would be so close we could shoot them with a shotgun." (Rene Bruno [Fort Chipewyan] in Athabasca Chipewyan First Nation Elders et al. 2003:100)

"They let the forest fire burn our land. When I speak, I recall the sixty (60) years of my life, the best part of sixty (60) years, I recall, I have seen many areas, I've never seen where there was forest fire in the area although I have travelled many – great distance on the land with my dog team. Today, much of our land is all burnt." (Phillip Dryneck [Tłı̨chʔ community] in Wek'èezhìi Renewable Resources Board Public 2010b:221)

"When you take -- when you take a look at this, this is Behchokò area. This is the Behchokò. You see all the area that's burned out with -- from forest fire? You see, when the caribou start roaming, migrate to our area, so they can't bypass this -- this burned area, so they find different routes. So most caribou we don't see, it goes to the south. Some are coming to us. A portion have come to us. In November, this is the area where the caribou, they migrate to, this area. It was getting -- it was a bit warm at that time. For the past fifty (50) years, how many forest fires have destroyed our land? When you take a look at this, in the past, the area – if you -- if you pull -- pull this all together for the past fifty (50) years, it will determine how the -- the animal migrates, if we took all the data for fifty (50) years past." (Leon Laffery [Tłı̨chʔ community] in Wek'èezhìi Renewable Resources Board 2010c:254)

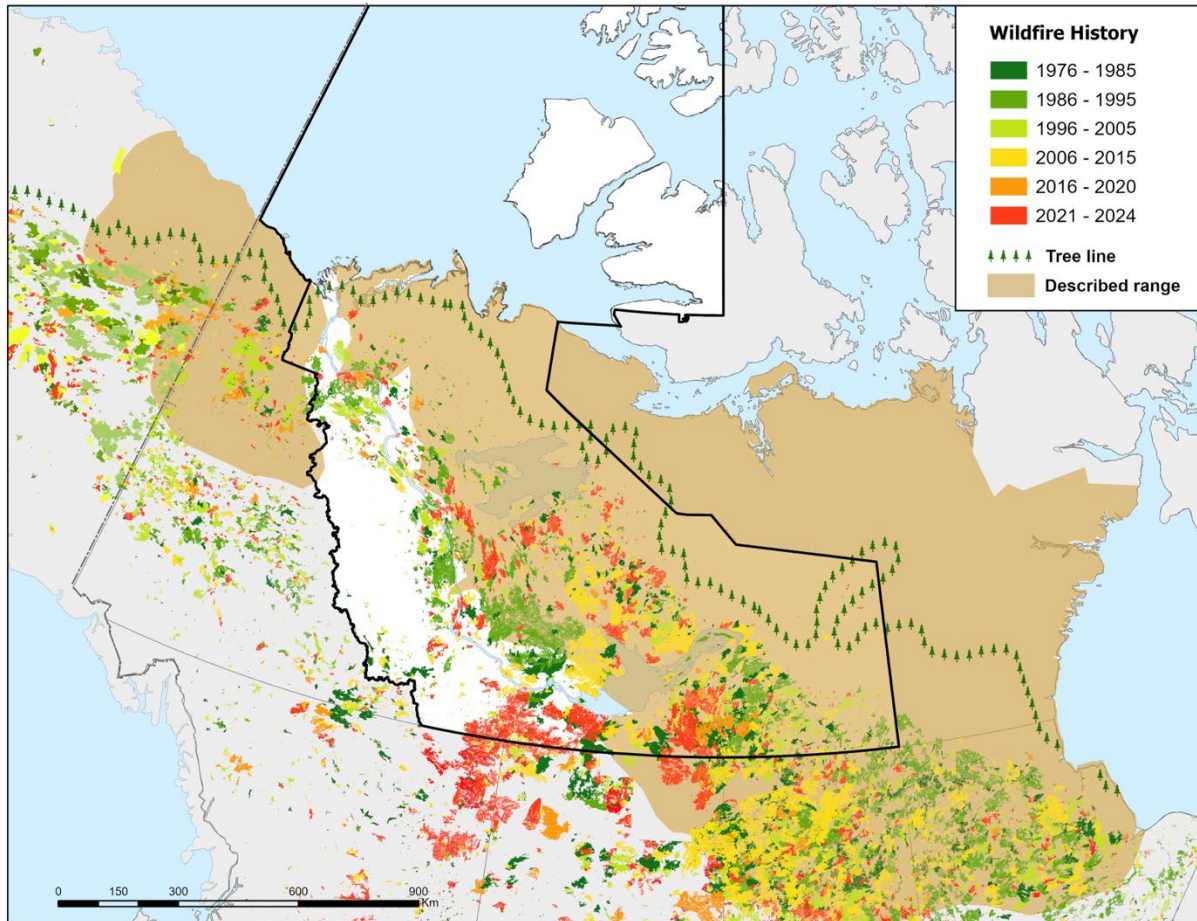


Figure 8: Wildfire history (1975-2024) across the maximum historic range of barren-ground caribou. Map courtesy of B. Fournier & N. Wilson GNWT-ECC.

In addition to the environmental effects impacting habitat availability an increased level of human disturbance has also been attributed to a loss of and decrease in the quality of suitable habitat. Knowledge holders typically describe human disturbance as either a disrespectful relationship between humans and caribou, or as industrial development (Benson 2015; Délı̨nę ʔekwé Working Group 2016; Tłı̨chǫ Research and Training Institute 2016; Bathurst Caribou Range Plan 2018; Łutsël K'é Dene First Nation 2020; Bathurst Caribou Advisory Committee 2021; Bathurst Caribou Advisory Committee 2022; Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022; Beverly and Qamanirjuaq Caribou Management Board 2024).

“There are many threats to the future of caribou and wildlife in general, such as the changing environment from climate change, wildfires, changing weather, introduction of new invasive species, et cetera; poor hunting practices, harvesting of mega bulls, taking too many cows, overharvesting of caribou and other wildlife, no awareness and respect for Dene - Métis hunting laws. There's been increased motorized access, noise and disturbance at some traditional hunting

areas, lack of implementation in regards to overlap issues.”(Lisa McDonald [Norman Wells] in Sahtú Renewable Resources Board and Délı̨nę Got’ı̨nę Government 2022:139)

Many knowledge holders speak about a change in the relationship between caribou and people. Increasingly they see a lack of respect for caribou, and that this lack of respect is causing caribou to avoid people and areas where they once were plentiful (Kendrick, Lyver, and Łutsel K’e Dene First Nation 2005; Legat et al. 2014; Thorpe and Barnaby 2016; Tłı̨chǫ Research and Training Institute 2016). Respect between humans and barren-ground caribou is seen as essential for the survival of caribou and their continued use of the land (Legat et al. 2014).

“If you throw the bones away, a caribou talks about how they treated his remains. When the world was new it was believed that all the animals had supernatural spirits. That is why it is said that the caribou said, “Those people do not take good care of our bones. They just walk all over our bones.” That is what they communicate to their spirits. The animals said, “If [people] don’t take care of your bones, don’t go to them.” That is what the animals say to each other, they say. That is why they would not throw away caribou bones just anywhere. They would take good care of the remains. It is true that they have to be discarded but still they would make a rack for it. Even the hairs on the hide are collected and discarded together. In the past the old people do not want their campsite left littered with scraps of caribou. (Robert Mackenzie [Wekweètı̨] in Tłı̨chǫ Research and Training Institute 2016:42)

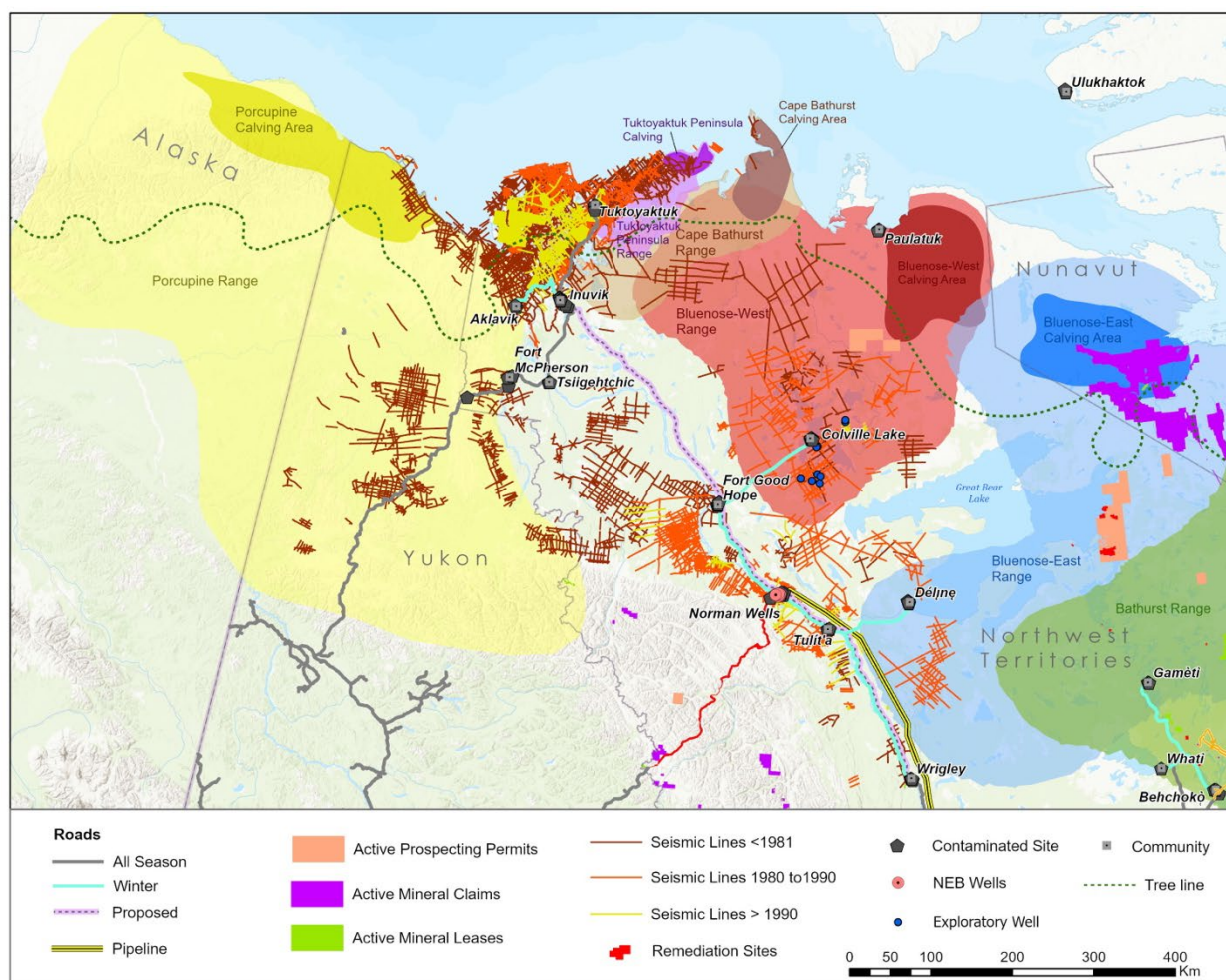
The lack of respect between humans and caribou is shown in many ways including: not recovering wounded animals, harvesting more than you can bring back, not using all of the animal, improper disposal of bones on the land, lack of knowledge about caribou, lack of respect for caribou habitat (Legat et al. 2001; Benson 2015; Wek’èezhı̨ Renewable Resources Board 2016c).

“We should talk about what vision our Elders had in the past. ʔekwé are free to roam wherever they want. As Dene, we’re also free to roam wherever we want, just like ʔekwé, and there is a relationship between us. We want to continue that good relationship to take care of each other. If we know that ʔekwé are declining, how are we going to fix the problems?”(Walter Bayha [Délı̨nę] in Délı̨nę ʔekwé Working Group 2016:2)

“We are talking about how to heal the relationship between people and caribou but I also think we need to heal the relationship between the land and the people. If you look at the map there is stuff all over the place and you see that we haven’t respected the land in a way that will sustain caribou. The Athabasca Dene are caribou people, that’s who they are, I know there are other communities that are as well. So everyone suffers when the caribou suffer.”(Anonymous [Athabasca Nuhenéné community] in Thorpe and Barnaby 2016:6)

Increasingly a large range of industrial and infrastructure developments are occurring in the range of barren-ground caribou. The type and amount of development varies by

region in the NWT, with some herds (Bluenose-West, Bluenose-East) having little to no industrial development, while others (Bathurst) are heavily impacted.



“The accessibility of the ITH, more hunters from Inuvik, more poaching. Six caribou all butchered and left behind, abandoned as they may have thought we were ECC.” (WMAC NWT in Advisory Committee for Cooperation on Wildlife Management 2023:25)

The Bluenose-West and Bluenose-East herds have no operating mines and few large-scale infrastructure projects developed in their range. Developments impacting these two herds are largely limited to active and abandoned mineral exploration camps, and the winter road to Colville Lake and winter road to Gameti and Wekweètì (Advisory Committee for Cooperation on Wildlife Management 2022; Advisory Committee for Cooperation on Wildlife Management 2023; Tłıchq Research and Training Institute 2023).

Knowledge holders frequently describe how abandoned exploration camps disturb caribou. It is thought that caribou avoid either the persistent smell of the camps or are disturbed by the sight of them, causing them to avoid the area (Legat et al. 2001; Tłıchq Research and Training Institute 2016).

"Buildings have permanent smell and, as the caribou come past they smell that. And they don't get too used to that, they don't like that. So now they might cross somewhere else." (Stanley Njootli [Old Crow] in Katz 2010:43)

Most of the development impacting barren-ground caribou habitat in the NWT occurs primarily on the summer and winter range of the Bathurst and Beverly herds, and to a more limited extent on the NWT portion of the Qamanirjuaq range (Figure 10) (Bathurst Caribou Range Plan 2017; Beverly and Qamanirjuaq Caribou Management Board 2023). The disturbances include several operating mines, abandoned mineral exploration camps, abandoned mines, abandoned or unused outfitter camps, and the mine access ice roads (Bathurst Caribou Range Plan 2017; Bathurst Caribou Range Plan 2018).

"It's not balanced right now, too much industry, too many roads, too quick too fast. But they are blaming the bears, wolves and Aboriginals but it's the mines and we need to change their diets, you have to put filters on the chimneys." (Arthur Beck [Fort Resolution] in Bathurst Caribou Range Plan 2017:13)

"Less mine activity at one time. This is our home, where we live. In my community we have two people working at the mine, the impact of the mines is great but the benefit for us is low. Right now if you look at the world market they are trying to hold the market so the price goes up. I have never seen anyone eat a diamond, or drink oil. But I can eat caribou and drink water, but we aren't looking after those. Less mine activity happening at the same time – how many do you need? The NWT is our homeland. In Fort Resolution we have two people working at the mines. Impact is great but we don't benefit. Why do we need so many mines? Employing mostly people from other provinces and people from NWT are suffering." (Arthur Beck [Fort Resolution] in Bathurst Caribou Range Plan 2017:14)

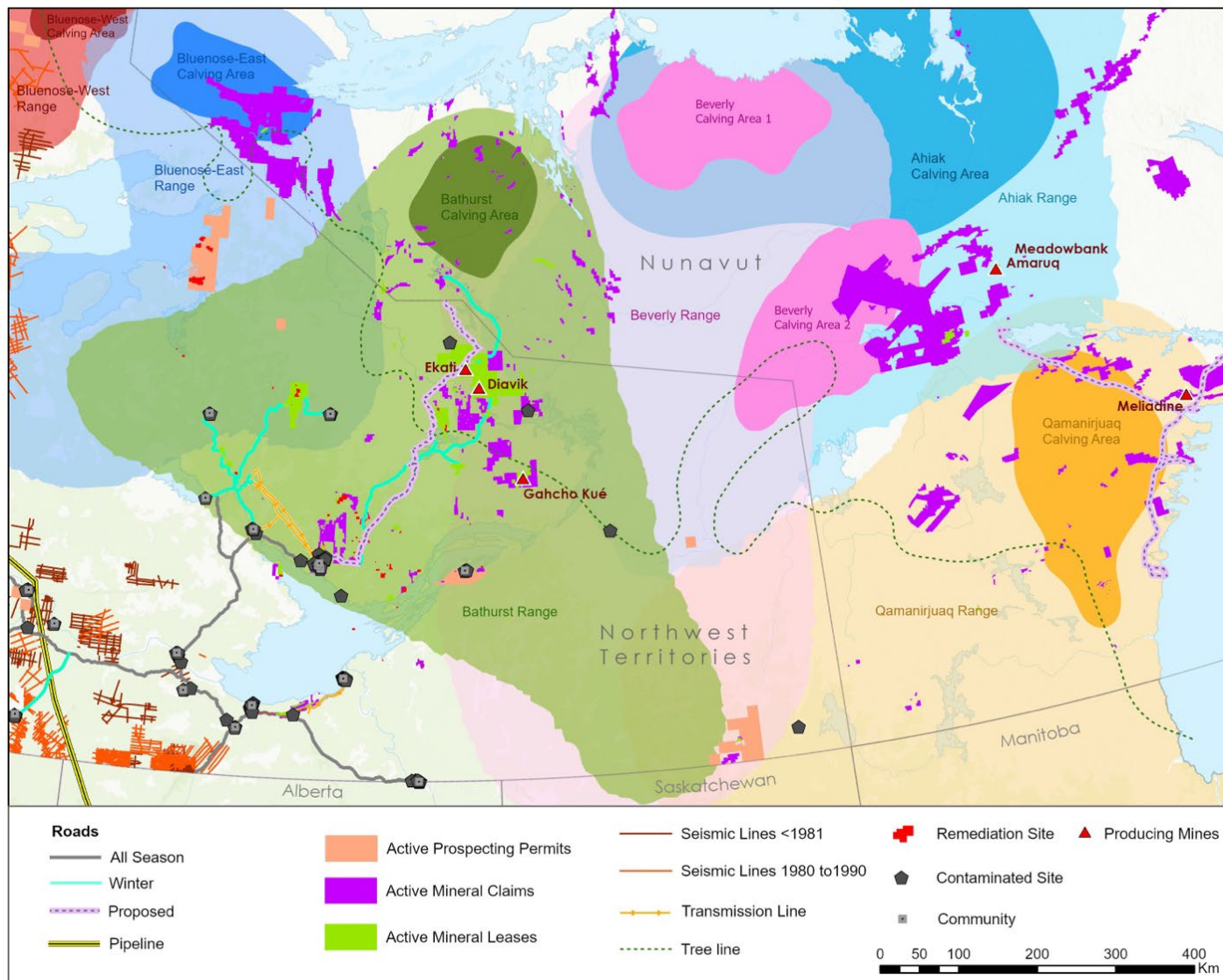


Figure 10: Industrial and infrastructure development in the range of barren-ground caribou in the southern NWT (Bluenose-East, Bathurst, Beverly, Ahlak, and Qamanirjuaq herds). Map courtesy of B. Fournier & N. Wilson GNWT-ECC.

As with exploration camps, barren-ground caribou will avoid the areas around mine sites. Active development sites disturb caribou in several ways. Caribou are disturbed by the sounds and smells of the sites and will avoid these areas (Legat et al. 2001; Tłı̨ch̓ Research and Training Institute 2013; Tłı̨ch̓ Research and Training Institute 2016; Bathurst Caribou Range Plan 2018). Caribou are particularly vulnerable to these disturbances when in smaller groups.

"You see, around the mine site, I went there yesterday, walked around and I didn't see, not really any trails around there, not since a long time ago. That's why now [caribou] are way out from the mine, about thirty kilometers away from the mine. Then we see lots of trails, lots of trails. I think the mines make too much noise, so [caribou] go out a little ways. [Caribou] make a new trail a little ways out from the mine. Looks like he made a new trail." (Albert Boucher [Tłı̨ch̓ community] in Tłı̨ch̓ Research and Training Institute 2013:39)

"I know that, I never say it or I never talk about it, but I know these two mines since these two mines [Diavik and Ekati] have been established we have had problems. Plus all these [outfitter] camps that they put in there for hunters, plus all these staking and all these exploration camps, hardly any [caribou]." (Anonymous [Tłı̨ch̓ community] in Tłı̨ch̓ Research and Training Institute 2016:30)

The roads constructed on the mine sites create barriers to movement (Kendrick 2003; Kendrick, Lyver, and Łutsel K'e Dene First Nation 2005; De Beers Canada Inc. 2010; Northwest Territory Métis Nation 2012; Tłı̨ch̓ Research and Training Institute 2023).

"When they first started [mining operations] it was good, with lots of caribou around. Sometimes caribou crossed the road. But caribou know this area, so they have changed their route." (Anonymous [Tłı̨ch̓ community] in Tłı̨ch̓ Research and Training Institute 2023:41)

The increased amount of dust impacts the forage in the areas surrounding the mines (Tłı̨ch̓ Research and Training Institute 2023).

"Dust fly all over and get spread out thinly over the area. Nothing, no trees, to stop the dust spreading." (Joe Zoe [Gameti] in Tłı̨ch̓ Research and Training Institute 2023:42)

Mining and mineral exploration frequently involves the use of helicopters and small aircraft. Many knowledge holders describe how these low-level flights cause disturbance to caribou by causing them to become stressed, and that they are prone to run and expend energy, as well as occasionally injuring themselves (Inuvik Community Corporation, Tuktoyaktuk Community Corporation, and Aklavik Community Corporation 2006; Bathurst Caribou Range Plan 2018; Benson 2019; Tłı̨ch̓ Research and Training Institute 2023).

"One animal observed as lame the day after the team observed the caribou running away in the same area from a low flying helicopter from Diavik." (Tłı̨ch̓ Research and Training Institute 2023:22)

“Planes and helicopters are flying too low and scaring the caribou. They are unable to rest and eat properly. They are very sensitive to the noise. This is especially an issue with the magnetometer surveys. They fly at 250 metres and the grids are really tight. This disturbs the caribou when they attempt to feed. This especially impacts the cows. If they don’t feed, they don’t put on weight which makes it difficult for them to get pregnant and have healthy calves.” (Anonymous [Northwest Territories Métis Nation community] in Bathurst Caribou Range Plan 2018:2)

As described in *Movement and Dispersal*, caribou will utilize a series of land bridges and water crossings to navigate the terrain as they migrate across the land. When mines or other developments are positioned near these land bridges or water crossings, it can cause caribou to change their routes around these water bodies, ultimately causing major changes in where caribou will migrate (Tłıchq Government 2012; Thorpe and Barnaby 2016; Tłıchq Research and Training Institute 2016).

“Ever since the caribou migration stopped coming to this area caribou no longer swim across from Nàgotsaà to the water flow which goes into Beati (Winter Lake). So now the caribou come from over there to Weyburn Lake going north and they retrace their trails this way. The migration seems to be going further north so the caribou do not come close to us anymore. Because there are so many mines, the caribou are frightened so they don’t eat. They don’t like their feeding areas because of the dust from explosions. Maybe they have gone somewhere else, no one knows. So they say the caribou have declined. They do not like their feeding areas and have gone somewhere else.” (Joseph Judas [Wekweèti] in Tłıchq Research and Training Institute 2016:31)

“Our experience . . . surrounded by . . . mines, they have seen a whole lot of changes to the environment, changes to caribou behavior, and the whole migration doesn’t go south like it used to. You hear time and again industry coming into communities telling you all this and industry saying well our monitoring doesn’t show any impact to the caribou or the environment. It’s kind of a slap in the face of all this knowledge. I think in a situation like this, our recommendation to industry would be to take it, listen to our knowledge.” (Anonymous [Northwest Territories Métis Nation community] in Thorpe and Barnaby 2016:21)

As described in *Biology and Behaviour*, barren-ground caribou are sentient beings, and they are known to remember previous experiences of disturbance and will choose to avoid them in the future (Tłıchq Research and Training Institute 2013). Many knowledge holders observe that the cumulative effects of developments in the region have significantly impacted caribou habitat and that the decline of the Bathurst herd coincides with the establishment of mines in the early 2000s within their range (Tłıchq Research and Training Institute 2016). The loss and decline in quality of suitable habitat in the Bathurst and Beverly range from mining and its associated activities is frequently noted (Thorpe and Barnaby 2016; Łutsël K’é Dene First Nation 2020; Beverly and Qamanirjuaq Caribou Management Board 2024). This avoidance of their previous habitats from the impacts associated with mining development has been described by the Tłıchq Research and

Training Institute (2016) as “Inò dè ɔ̀ògoèhshì” that the caribou “caribou have thrown that land away.”

“At that time there was no mine at Ek’atì, so the meat of the animals and the water was very good around there at Ek’atì. I went hunting there twice by plane with some people. The berries grew well and the water was good. Since the mine opened at ʔewaànit’itì (Courageous Lake) the water has changed and the land is polluted. The smoke and fumes go up into the air and the wind blows it down onto the ground. It affects the animals that eat from it. So now when the young men go hunting they find white things in the meat and the hide linings are not so good. In my opinion they are reporting the truth because in my experience it was not like that in the past.” (Phillip Dryneck [Wekweèti] in Tłı̨ch̓ Research and Training Institute 2016:31)

“If you look at it right from the Bathurst Inlet there’s a fence. The caribou come down here, this whole country is burnt here, the whole lot of it. It is just like a fence lined up so the caribou follow it but don’t cross it, they come here then they change direction, they move on. You change or destroy their food on them and they move away. There is too much activity [so] they move. . . . So you really have to watch caribou you can’t disturb them too much. The mines are lined up like a fence and the caribou follow the fence, they get deterred and now they are gone way down to Northern Saskatchewan. The food was burned and changed, then you add the fence which is the barriers created by mining.” (Anonymous [Northwest Territories Métis Nation community] in Thorpe and Barnaby 2016:12)

A network of ice roads exists in the North Slave Region to provide access to the diamond mines (Ekati, Diavik, and Gahcho Kué). The roads are operated seasonally and coincide with the use of the area in the winter by primarily the Bathurst and Beverly herds. The access roads begin at the end of the all-season section of the Ingraham Trail (Yellowknife) and extend approximately 400 km to the Ekati mine at Lac de Gras. An additional road of approximately 120 km is built, branching off from the main ice road at MacKay Lake to the Gahcho Kué mine at Kennady Lake. Knowledge holders directly equate these ice roads to a decline in the quality and availability of habitat and interference with caribou seasonal migration (Kendrick, Lyver, and Łutsel K’e Dene First Nation 2005; Soublière 2011; Beverly and Qamanirjuaq Caribou Management Board 2014a; Bathurst Caribou Range Plan 2017; Łutsel K’e Dene First Nation 2020; Beverly and Qamanirjuaq Caribou Management Board 2024). Ice roads affect habitat availability in multiple ways, largely through the constant traffic of industrial trucks and increased access to harvesters. This increased access has led to a rise in the number of harvesters, along with instances of overharvesting and disrespectful harvesting practices associated with this increased activity (Bathurst Caribou Advisory Committee 2022). Industrial traffic and the increased harvesting activities contribute to increased stress on barren-ground caribou (Bathurst Caribou Advisory Committee 2022).

“There are people waiting for the road to be developed so they can go hunting out there easier. If you are trying to revive the herd, then we need to really stop hunting, and we can do that but I think trucks and roads are really hard on the herds. I think if you go by dog sled and snow machine it’s not as hard on the herds. I understand what they are trying to do to bring back the herds. I think the roads make it too easy [to hunt].” (Archie Catholique [Łutsel K’e] in Bathurst Caribou Range Plan 2017:11)

Ice roads create a visual barrier, and caribou are less likely to cross them, influencing their seasonal migration pattern and habitat use. As large caribou herds congregate alongside the ice road, unable to cross, numerous wolves are attracted to area to feed on gut piles along the road and prey on caribou along the road, subsequently the ice road creates cumulative impacts of increased predation by wolves and increased access for caribou harvesters (Tlicho Government, unpublished 2025; Kendrick, Lyver, and Łutsel K’e Dene First Nation 2005; Northwest Territory Métis Nation 2012).

“Now that there are mines with roads and high snow drifts on the sides, the caribou won’t cross and their migration route is disrupted. The old people said if you pile up snow into drifts, the caribou would not cross them. They just move alongside of it. This is what is happening with the winter roads. They don’t teach kids about this anymore. The white man does not know this. The way the caribou migrate has been disrupted. The roads bisect the migration routes and disrupt the natural behaviour of the caribou.” (Liza Enzoe [Łutsel K’e] in Kendrick, Lyver, and Łutsel K’e Dene First Nation 2005:9)

Habitat Fragmentation

As described in *Changes in Distribution and Habitat Trends*, barren-ground caribou currently do not migrate throughout their historic range, and there is a loss of suitable habitat in the NWT. Combined with information on where knowledge holders are finding caribou (*Harvest Patterns*), we can begin to see that there are changes in patterns of their use resulting from habitat fragmentation.

There are three areas where habitat fragmentation appears to be impacting barren-ground caribou, including wildfire impacts on the winter range in the North and South Slave, industrial development on the Bathurst and Beverly range, and, to a limited extent, the Inuvik to Tuktoyaktuk Highway.

As described in *Habitat Trends*, wildfires from the 1950s and 1960s, and from the large burns occurred in 2014 and 2023, have reduced the suitable winter range of the Bluenose-East, Bathurst, Beverly, and Qamanirjuaq herds in northern Alberta and Saskatchewan. This habitat is regenerating, and barren-ground caribou have not returned as there is no longer connectivity to the rest of their range, as subsequent fires in the North and South Slave region serve as a barrier to movement further south (Athabasca Chipewyan First

Nation Elders, Tanner, and Rigney 2003; Athabasca Chipewyan First Nation Elders et al. 2003; Thorpe and Barnaby 2016).

“Back 20–30 years it was all burned down (South Slave). When you fly from Fond du Lac to Łutsel K’e it’s all burned, all gone. No food for caribou, nothing to eat.” (Anonymous [Athabaskan Nuhenéné community] in Thorpe and Barnaby 2016:14)

“They fought fires in the past to protect the caribou range. Nowadays they don’t fight fires, the only place they fight fires is around the communities so all the lichen and caribou moss is burned [in the south slave].” (Anonymous [Northwest Territories Métis community] in Thorpe and Barnaby 2016:14)

There is some discrepancy in the available information about the ability of caribou to migrate through burnt areas to reach good quality habitat. Some knowledge holders say that caribou will move straight through burnt areas without eating, while others say caribou will just avoid the areas and alter their migration route (Kendrick 2003).

“Another problem is all the land that has been burnt around Łutsel K’e and this also keeps the caribou away. In the past when there were forest fires the land would burn just to a certain point, but now the fires burn out of control. ...Now there are many large burn areas that the caribou stay away. They do not migrate through those areas because there is nothing to feed on.” (Madeleine Drybones [Łutsel K’e] in Kendrick 2003:192)

As described in *Habitat Trends and Changes in Distribution*, industrial development and human disturbance on the range of the Bathurst herd is fragmenting the habitat in Wek’èezhìi and the North Slave region. These disturbances, particularly those located near key land bridges and water crossings, are causing caribou to change the direction of their migration routes across the landscape (Thorpe and Barnaby 2016; Tłı̨ch̨ Research and Training Institute 2016; Łutsel K’é Dene First Nation 2020; Beverly and Qamanirjuaq Caribou Management Board 2024).

“The caribou go around all those mines. They don’t go through there by that mine, because if there were no mine that’s where it goes through, right there before. Now it’s a mine and all the buildings and all the noise and all the explosions happening and also all these [poor quality] food that they eat. The caribou can’t use it no more, so they got to move somewhere. They got to move somewhere else.” (Joseph Judas [Wekweèti] in Tłı̨ch̨ Research and Training Institute 2016:36)

“All of those mines on the land have people working on them searching among the rocks and driving vehicles. There are usually good feeding areas for the caribou in the Barrenlands but if they are blasting rocks in the Barrenlands, it is on flat land where there are no trees. So if there’s blasting, the wind blows the dust from the north, south and from all over for many miles and all that dust settles among the caribou food. The caribou ingest all that with their food. That is why when we talk about the caribou these days we say the caribou look like this and like that. So today this is the situation with the caribou. If this is the behaviour of the caribou now, what will it be like in the future if there are more mine developments? By our observation of caribou behaviour,

development may cause the caribou to no longer migrate toward us. They will go further north or go somewhere else. It seems possible that will happen.” (Jimmy Kodzin [Wekweèti] in Tłı̨ch̓ Research and Training Institute 2016:31)

As described in *Habitat Trends and Changes in Distribution*, the habitat of the Tuktoyaktuk Peninsula and Cape Bathurst herds is somewhat fragmented by the Inuvik to Tuktoyaktuk Highway. The highway acts somewhat as a barrier causing caribou to avoid areas to the west of the highway (Advisory Committee for Cooperation on Wildlife Management 2022). There is a gap in the available information around the extent to which the highway alters the use of the available habitat on the west side of the road.

POPULATION

Abundance

Among traditional and community knowledge holders, it is thought that barren-ground caribou have always been relatively abundant compared to other large land mammals such as moose or muskox. This high abundance relative to other species is one of the defining features of barren-ground caribou.

Determining total abundance is difficult to determine from harvester information, and it is not suited to this type of knowledge. Indigenous and community knowledge is better suited to understand relative abundance (i.e., whether there is more or less than usual); however, this is not always how the information is presented. Knowledge holders do not often distinguish between abundance and the availability and accessibility of caribou (Benson 2015; Benson 2019). When caribou numbers are low and they are not found where they are expected, this is often described as caribou having moved elsewhere (North Slave Metis Alliance 2012; Zoe 2012; Benson 2015; Tłı̨ch̓ Research and Training Institute 2016). The section on population should be interpreted alongside *Distribution*.

“Well, they used to say there was no caribou around here a long time ago. Hyacinthe [Andre] said there's no caribou. He used to have to go 200 miles before they see caribou long ago. But like since the Inuvik has been here... there's lots of caribou. But, see now there's nothing. So, they just went some place else maybe.” (Tom Wright [Inuvik] in Benson 2015:44)

“Our legends talk about ekwò disappearing long ago. There have been times of scarcity and times of abundance. The Elders have always believed that when ekwò became scarce they would go away to be left alone – to recover and replenish themselves. They would then come back to offer themselves to the Tłı̨ch̓.” (John B Zoe [Behchokò] in Zoe 2012:71)

“And as I said in the beginning, it's worrisome to me. You know, I represent my members. I don't do this work for self-gain, you know, for just to do it. It's very important. This is our livelihood. This is the livelihood of my children. It's going to be the livelihood of my grandchildren, you know, in

trying to make something better in hopes in 20 years they can go and harvest. They can go to our camps and be able to safely, you know, hunt like we are today. I just really think talks need to happen on starting on a local level. And again, I'll say it's the government that, that the Aboriginal people need to lead that." (Lisa McDonald [Norman Wells] in Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022:307)

As barren-ground caribou herds vary in size and many of the herds overlap on the winter range, there is a lot of variation by region in the available information describing abundance. Though there is some regional variation when viewed across the NWT as a whole, the abundance of barren-ground caribou is lower than it has been in the past (Beaulieu 2012; Bathurst Caribou Advisory Committee 2022; Beverly and Qamanirjuaq Caribou Management Board 2023; Advisory Committee for Cooperation on Wildlife Management 2024). As noted in *Harvest Patterns*, harvesters are travelling further to harvest, and as noted in *Changes in Distribution and Habitat Trends*, barren-ground caribou are less accessible than they were prior to the early 2000s. Concern that caribou have disappeared from their historic range varies by region. Specific changes by region are described below in *Changes in Population Size*. Notably, in regions where caribou are less accessible, such as the southwest portion of Wek'èezhìi, the North Slave, South Slave, and parts of the Sahtu (Fort Good Hope, and Délı̨nę) the concern is greater (Délı̨nę ʔekwé Working Group 2016; Thorpe and Barnaby 2016; Wek'èezhìi Renewable Resources Board 2016a; Wek'èezhìi Renewable Resources Board 2016b; Bathurst Caribou Range Plan 2017; Bathurst Caribou Range Plan 2018; Bathurst Caribou Advisory Committee 2022; Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022).

"It was our tradition. All our trails are starting to disappear as the caribou trails are disappearing. And so today let's help each other with the caribou. And so as I speak today, I wonder how can I help my people. How can I help future generations, my future grandchildren, their grandchildren, to -- to how far -- how far into the future can we make plans for them." (Joseph Judas [Wekweèti] in Wek'èezhìi Renewable Resources Board 2016a:115)

"The young people are going to inherit the decisions that we make. We need to ensure that there's something left for them to inherit. But the survival of future generations as Tłı̨chʔ in this environment requires that they remain rooted in their language, culture, and way of life." (John B Zoe [Behchokò] in Zoe 2012:72)

"... the way I was taught, the traditional way, respect the animals and respect the land and they will respect us back. Need to pass this onto younger generations. Want caribou for your son or grandson? Then respect the animals. If you like caribou meat and you want your kids to have caribou meat, then respect the wildlife." (Simon Qingnaqtuq [Kitikmeot community] in Thorpe and Barnaby 2016:5)

“We’re worried about our young people and whether they’ll be able to hunt in the future. Will there be caribou for them to hunt? Will they have the skills they need?” (Délîṇę ʔekwé Working Group 2016:12)

“And now we have to work together. There’s a big issue that we have to tackle.... If we have to restrict our harvesting rights then we – we have to. ... We also want our young people, when – when they get older to still be able to hunt caribou. So there is going to be some recommendations that a lot of people might not be happy with. There might be some restrictions put on us, but we have to live with that, because we are in crisis where the caribou is concerned. So if we tackle this precisely, cautiously, as with one mind, then we should be able to resolve this.” (Joe Rabesca [Behchokò] in Wek’èezhìi Renewable Resources Board 2016b:51)

Though there have been signs of a recent decrease the Porcupine caribou population is relatively high compared with previous years, the accessibility of the herd in the NWT has fluctuated over the last several years. However even though there may be some year-to-year changes in accessibility, Porcupine caribou are reasonably accessible and, as such, similar concerns over abundance are less present in the range of this herd (ACCWM 2024; ACCWM 2023; GRRB 2023a; GRRB 2023c; GRRB 2023b; PCMB 2024; Porcupine Caribou Technical Committee 2024; GRRB 2024; GRRB).

Population Dynamics

Gaps exist regionally in the available Indigenous and community knowledge regarding current (March 2025) population dynamics. Many of the sources that contain information about population dynamics are no longer current. However, certain processes and programs in the NWT are collecting this information and making it publicly available. Notably, the Advisory Committee for Cooperation on Wildlife Management (ACCWM), which covers the Cape Bathurst, Bluenose-West and Bluenose-East herds, the Bathurst Caribou Advisory Committee (BCAC) processes, and the *Ekwò Nàxoèhdee K’è: Boots on the Ground* program in the range of the Bluenose-East, Bathurst and the Beverly herds. Currently, there is not a similar process producing this type of information for the Beverly, Qamanirjuaq, and Ahiak herds. Where available the current population dynamics information is summarized from these processes and presented below by herd.

Cape Bathurst

Indigenous and community knowledge regarding population dynamics is collected and reviewed annually during the ACCWM annual status meetings (ACCWM 2022; ACCWM 2023; ACCWM 2024; ACCWM 2025). The available information suggests sex ratios, birth rates, recruitment, and death rates are showing positive signs in the range of the Cape Bathurst herd from 2021-2023 (Table 1).

Table 1: Summary of the Indigenous and community knowledge of population dynamics indicators for the Cape Bathurst herd 2021-2024 from the ACCWM annual status meetings. Note the annual status meeting information is published the year following the information.

Status Year/ Indicator	2021 (ACCWM 2022)	2022 (ACCWM 2023)	2023 (ACCWM 2024)	2024 (ACCWM 2025)
Productivity and Recruitment	Inuvik harvesters see mostly bulls after they have separated. Inuvik hunters are hunting late in the winter, so it is difficult to comment.	The harvesters from the core area (Tuktoyaktuk) said a lot of calves. Most cows had a calf.	Difficult to assess but good trends observed, more calves and cows.	Community members from Tuktoyaktuk noted seeing a good number of calves with cows.
Sex Ratio	Difficult to say as they migrate separate and overwinter in different areas. Probably 50/50.	Good ratio, seeing more bulls mixed in the groups of cows.	Good mix of adults in late summer.	Generally, a good mix, a normal ratio of bulls to cows.

Bluenose-West

Similarly Indigenous and community knowledge regarding population dynamics is collected and reviewed annually for the Bluenose-West herd during the ACCWM annual status meetings (ACCWM 2022; ACCWM 2023; ACCWM 2024; ACCWM 2025). The available information suggests sex ratios, birth rates, recruitment, and death rates are showing somewhat positive signs in the range of the Bluenose-West herd from 2021-2023 (Table 2).

Table 2: Summary of the Indigenous and community knowledge of population dynamics indicators for the Bluenose-West herd 2021-2024 during the ACCWM annual status meetings. Note the annual status meeting information is published the year following the information.

Status Year/ Indicator	2021 (ACCWM 2022)	2022 (ACCWM 2023)	2023 (ACCWM 2024)	2024 (ACCWM 2025)
Productivity and Recruitment	See a lot of young ones, multiple cows with good signs. Seeing larger calves that may be staying with their mothers longer. Gwich'in harvesters are	Limited newborn calves, but lots of yearlings.	More calves with cows, more young cows having calves, seeing more calves alone.	More calves with cows observed in Paulatuk, some even with twins. Fewer calves observed by harvesters in the Sahtú due to the

	seeing few or less calves.			timing of their hunts.
Adult Composition	Gwich'in harvesters are seeing less bulls than normal. Paulatuk hunters are seeing a good mix of the sexes depending on the time of year.	Overall, for the harvest season it seems even between cows and bulls.	Good mix observed in late summer.	A good mix of young bulls and cows.

Bluenose-East

Similarly Indigenous and community knowledge regarding population dynamics is collected and reviewed annually for the Bluenose-East herd during the ACCWM annual status meetings (ACCWM 2022; ACCWM 2023; ACCWM 2024; ACCWM 2025). The available information suggests sex ratios, birth rates, recruitment, and death rates are showing positive signs in the range of the Bluenose-East herd from 2021-2023 (Table 3).

Table 3: Summary of the Indigenous and community knowledge of population dynamics indicators for the Bluenose-East herd 2021-2024 during the ACCWM annual status meetings. Note the annual status meeting information is published the year following the information.

Status Year/ Indicator	2021 (ACCWM 2022)	2022 (ACCWM 2023)	2023 (ACCWM 2024)	2024 (ACCWM 2025)
Productivity and Recruitment	Lots of cows with calves, lots of yearlings observed. High survival of calves through spring and summer.	In Kugluktuk observed lots of twins, and a higher number of yearlings. The TG ENK info shows that less than half the cows had calves and the calf:cow ratio was low.	Lots of calves and lots of yearlings.	Lots of calves, uncertainty exists due to seeing less of the large groups.
Adult Composition	Good mix of cows and bulls.	In Kugluktuk lots of young bulls, adult bulls, cows and calves. The TG info shows lots of young bulls and cows.	Good mix of cows and bulls.	Lots of bulls observed cows were further west from Kugluktuk. Tłıchǫ observers saw a good number of young bulls and cows, though

				uncertainty exists due to having only observed small groups.
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Bathurst

The most recent information available for the Bathurst herd is from the Ekwò Nàxoèhdee K'è (ENK) program up to 2024, as well as from the Bathurst Caribou Advisory Committee annual status meetings (Bathurst Caribou Advisory Committee 2022; Tłı̨ch̓ Research and Training Institute 2023; Bathurst Caribou Advisory Committee 2024; Tłı̨ch̓ Research and Training Institute 2024). In the 2021 field season, the Ekwò Nàxoèhdee K'è program observed calf:cow ratios they described as “normal”, and in 2022 calf:cow ratios were described as good, the 2023 field season the calf cow ratio in late summer to be very good (51.2:100) though less representative of the herd as a whole due to a low sample size. This is a positive sign as the number of calves was described as low from 2019 to 2021 (Bathurst Caribou Advisory Committee 2022; Tłı̨ch̓ Research and Training Institute 2023; Bathurst Caribou Advisory Committee 2024). Currently, there is little information available describing the sex ratio of the Bathurst herd. The program observed a high number of young bulls and cows during their 2022 field season, and higher numbers of bulls in 2023 (Bathurst Caribou Advisory Committee 2024). Information from the Ekwò Nàxoèhdee K'è program suggests that calf:cow ratios from the summer of 2024, though uncertainty exists as much of the herd was west of their field camp and the sample size was low (Tłı̨ch̓ Research and Training Institute 2025).

Changes in Population Size

As described above in *Abundance*, when viewed across the NWT populations of barren-ground caribou are lower than they have been in the past (Advisory Committee for Cooperation on Wildlife Management 2014b; Bathurst Caribou Range Plan 2018; Łutsël K'è Dene First Nation 2020; Beverly and Qamanirjuaq Caribou Management Board 2023). As described in *Changes in Distribution*, caribou populations change on multi-year cycles lasting typically 30 years (Beaulieu 2012). The population cycles are no longer following the natural patterns from the past (Wek'èezhì Renewable Resources Board 2016a; Bathurst Caribou Range Plan 2018). Based on a 30-year cycle, caribou populations should have begun to expand in the 2010s (Bathurst Caribou Advisory Committee 2021).

“In the past there were lots and lots of caribou. The caribou don't cross as much at ʔedacho [Artillery Lake caribou crossing] as they used to be. Its not only caribou population that is decreasing. I am not sure if I will ever see large numbers of caribou again.” (Anonymous [Łutsel K'è] in Łutsel K'è Dene First Nation 2002:26)

“As an example, we had lots of Peary caribou, we had lots of them, and they are small little white caribou. They have disappeared and 30 years later we are starting to spot them again. For Bathurst herd, if we continue to hunt without respect it will take another 30 years for the population to go up. Elders have to be listened to.” (Anonymous [Kitikmeot community] in Thorpe and Barnaby 2016:20)

Knowledge holders attribute the changes in population to the cumulative effects from a variety of factors including: increased wildfire on the winter range, increased predator populations, increased industrial and infrastructure development, climate change, increased insect harassment, increased road access into their range, disrespectful and over-harvest, decreased forage availability and quality, competitors, and big game hunting by outfitters (Tłıchq Research and Training Institute 2016; Łutsël K'è Dene First Nation 2020; Bathurst Caribou Range Plan 2018).

As mentioned previously, distribution and total abundance are closely linked in the available Indigenous and community knowledge. It can be assumed that the changes in distribution described in each region indicate changes in population (see *Changes in Distribution*).

“Our nátsezé [hunting] practices have changed during the years. Way back, Ɂekwé were close. These days we have to go hundreds of miles to get Ɂekwé, so the distance alone is becoming a factor. We should get together and come up with a community nátsezé, rather than people going individually” (Raymond Tutcho [Délı̄nɛ] in Délı̄nɛ Ɂekwé Working Group 2016:11)

The dramatic decrease in the population of the several barren-ground caribou herds (most notably the Bathurst herd) is causing difficulties in maintaining a cultural relationship with caribou, and due to the current hunting restrictions, indigenous people have been restricted from going out on the land to continue practicing and teaching their cultural traditions to the younger generation (Tłıchq Research and Training Institute 2024; Zoe 2012; Tłıchq Research and Training Institute 2016; Bathurst Caribou Range Plan 2018; Bathurst Caribou Advisory Committee 2021).

Current information exists in certain regions regarding the relative abundance of caribou. This information is typically in the form of harvesters describing if they encountered more, or less caribou while on the land than in previous years. Similar to the information in *Population Dynamics*, this information is collected and made available through the ACCWM and BCAC processes as well as through the *Ekwè Nàxoèhdee K'è* program. It should be noted that currently the PCMB does not publish this information. Where available changes in population size are presented below herd.

Cape Bathurst

Information regarding abundance and population trends are collected and reviewed annually for the Cape Bathurst herd during the ACCWM annual status meetings. The Cape

Bathurst herd population is relatively low, but is showing signs that it is increasing (Table 4) (ACCWM 2022; ACCWM 2023; ACCWM 2024; ACCWM 2025).

Table 4: Summary of the Indigenous and community knowledge of population indicators for the Cape Bathurst herd 2021–2024 during the ACCWM annual status meetings. The TK and CK Information presented in the status reports is a summary of the results from the WMAC (NNWT) community tours to both Inuvik and Tuktoyaktuk, where harvesters are asked directly about the various indicators. Note the annual status meeting information is published the year following the information.

Status Year/ Indicator	2021 (ACCWM 2022)	2022 (ACCWM 2023)	2023 (ACCWM 2024)	2024 (ACCWM 2025)
Population	Highly related to distribution. Less in the usual hunting areas for Inuvik than there was before the ITH. Stable but way lower than 10 years ago.	About the same as last year.	Similar to previous year. Inuvik harvesters noted a healthy population particularly in the treeline areas.	Tuktoyaktuk harvesters had positive observations of the population. Small number of Gwich'in observers indicated uncertainty over population size.
Population Trends and Rate of Change	Seems stable, decades ago there were thousands accessible year-round to those in Inuvik. The caribou stopped coming around Inuvik when the seismic activity began. Need to go 10 times farther than you used to harvest them. They are staying farther east.	Hunters successful and meeting their needs. About same amount as last year. Seeing positive signs.	Uncertainty around trends and rate of change. Difficult to say.	Tuktoyaktuk harvesters note population is doing well and growing. Small number of Gwich'in observers indicated uncertainty over population trends and rate of change.

Bluenose-West

Indigenous and community knowledge information describing abundance and population trends is collected and reviewed annually for the Bluenose-West herd during the ACCWM annual status meetings. The population of the Bluenose-West herd is relatively low, but the available information suggests signs of increase (Table 5) (ACCWM 2022; ACCWM 2023; ACCWM 2024; ACCWM 2025).

Table 5: Summary of the Indigenous and community knowledge of population indicators for the Bluenose-West herd 2021-2024 during the ACCWM annual status meetings. Note the annual status meeting information is published the year following the information.

Status Year/ Indicator	2021 (ACCWM 2022)	2022 (ACCWM 2023)	2023 (ACCWM 2024)	2024 (ACCWM 2025)
Population	Has been stable for a long while now, people have easy access to get what they need.	Population in good shape, appears either stable or a bit higher, harvesting effort in Paulatuk was a bit greater, had to go further to meet needs.	Numbers looked really good, plentiful this year.	Noted seeing lots of caribou out on the land.
Population Trend and Rate of Change	Some say decreasing or same, while others say, stable with small fluctuations for the last decade, with caribou present throughout the winter.	Either stable or a bit higher.	Difficult to say. Observations in Colville Lake suggest the numbers are going back up.	Similar to previous year, continues to show growth.

Bluenose-East

Indigenous and community knowledge information describing abundance and population trends is collected and reviewed annually for the Bluenose-East herd during the ACCWM annual status meetings. The population of the Bluenose-East herd is relatively low compared to past peaks, but the available information suggests positive signs of increase (Table 6) (ACCWM 2022; ACCWM 2023; ACCWM 2024; ACCWM 2025).

Table 6: Summary of the Indigenous and community knowledge of population indicators for the Bluenose-East herd 2021-2024 during the ACCWM annual status meetings. Note the annual status meeting information is published the year following the information.

Status Year/ Indicator	2021 (ACCWM 2022)	2022 (ACCWM 2023)	2023 (ACCWM 2024)	2024 (ACCWM 2025)
Population	Seeing small herds, or few big herds.	Steadily increasing around Kugluktuk, good group sizes. Around Délı̄nę caribou are not around anymore.	Appears to be more caribou, in smaller herds.	Observers in Kugluktuk and the Tłı̄chǫ didn't see many large groups.

Population Trend and Rate of Change	Trend is going back upwards on a 40-to-50-year cycle.	Steady and increasing The Tłıchq ENK program noted positive signs around the population trends: “It's looking good now, for a while they were gone, but it looks good now.” “They are coming back to their old trails - they never forget them” ... “They always come back”.	Seeing more caribou, a steady increase in population. Tłıchq harvesters noted observing more caribou. “In the winter I patrol a lot. Since the decline we don't see a lot but in the last couple of years I see more now. So, the caribou are likely coming back now.”	Uncertain as much of the herd did not migrate near Kugluktuk, and only small groups observed by the Tłıchq Ekwò Nàxoèhdee K'è program.
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Bathurst

The available information states that the population of the Bathurst herd is extremely low (Thorpe and Barnaby 2016; Tłıchq Research and Training Institute 2016; Łutsël K'é Dene First Nation 2020; Bathurst Caribou Advisory Committee 2022; Bathurst Caribou Advisory Committee 2021; Tłıchq Research and Training Institute 2023).

“1996 there was a lot of caribou. We see it on the island like probably fifty, sixty caribou at one time, probably a thousand, at one time. There used to be a lot of caribou. And then in '98 it stopped. There used to be a little bit but not like '96 though, but a little bit lesser than '98. 1998 was a little bit lesser than '96. So there used to be caribou but we see caribou around that Tsòtì (Little Marten Lake). And then, in the year 2000 it went down. We don't see thousands and thousands, just only a few. In 2000, hardly nothing. We just shot a few but it was hard to hunt for it. We have to walk and walk and walk. Back in '96 and '98 we shoot caribou; we don't have to walk far. In a really short distance we see a caribou...right on the edge of the shore line. The two cows are the leaders. Wherever the cow goes all the caribou go that same direction all day. That's what it was like. We were watching the cows; they were leading; that's where we stood all the time. We saw hundreds and hundreds and hundreds of caribou in one day. So, in the year 2000 we saw not much caribou and then in 2003 it's getting worse and worse and then in 2005 the last guide went in with Boyd Warner, we didn't see nothing at all on Tsòtì (Little Marten Lake). In 2005, nothing. We saw only five muskox on this one. No caribou...no nothing.” (Roy Judas [Wekweèti] in Tłıchq Research and Training Institute 2016:27)

As there is a large overlap in their winter summer range it has been suggested that emigration from the Bathurst to the Beverly herd is a likely contributor to the decline in population from 2018-2021 (Tłı̨chq Research and Training Institute 2023).

Knowledge holders have long known that barren-ground caribou that share range seasonally may join other herds on their migrations (Thorpe *et al.* 2001; Advisory Committee for Cooperation on Wildlife Management 2014a; Benson 2015; Thorpe and Barnaby 2016; Wek'èezhii Renewable Resources Board 2016b; Bathurst Caribou Range Plan 2018). This emigration has been described by knowledge holders as a contributing factor for decline in the Bathurst herd (Tłı̨chq Research and Training Institute 2023). It is reasonable to suggest that the loss of individuals from one herd could help offset potential declines in the herd they join. However, emigration simultaneously reduces the source herd with no net population gain, and it contributes to declines in the herd individuals are leaving. However, there is a gap in the available knowledge that describes the extent of this effect occurring.

Though many knowledge holders contend that the population will eventually cycle upwards, there is a high level of concern in the range of the Bathurst herd that populations are declining to critically low numbers and that this herd may disappear (Bathurst Caribou Range Plan 2017; Bathurst Caribou Range Plan 2018; Łutsël K'é Dene First Nation 2020).

"The caribou are listening to us talk here today. Elders used to say that one day the caribou will disappear. It is not our fault. But because this is happening, we should stop hunting the caribou for a while. Do not hunt the Bathurst anymore. We won't starve. There is muskox and meat at the store. Give the [Bathurst] caribou a rest, so they can rebound." (Herman Catholique [Łutsël K'é] in Łutsël K'é Dene First Nation 2020:38)

Beverly and Qamanirjuaq Herds

The available information describes the population of both the Beverly herd and the Qamanirjuaq herd as low relative to the last 25 years (BQCMB 2014a; Beverly and Qamanirjuaq Caribou Management Board 2024; Beverly and Qamanirjuaq Caribou Management Board 2023). The Beverly herd has shown recent signs of an increase in population, while the Qamanirjuaq herd's declining trend appears to be stabilizing (Beverly and Qamanirjuaq Caribou Management Board 2026). The decrease in availability is causing difficulty for communities on the southern portion of their range to maintain cultural linkages to barren-ground caribou.

"Most caribou herds, including the Beverly and Qamanirjuaq herds, are much smaller than they were 25 years ago. If this trend continues the herds may reach a point where they can't bounce back, which would create a crisis for Indigenous peoples across the caribou ranges." (Beverly and Qamanirjuaq Caribou Management Board 2023)

Porcupine Caribou

As described in indigenous and community knowledge is better suited to understand relative abundance (i.e., whether there is more or less than usual); however, this is not always how the information is presented. Knowledge holders do not often distinguish between abundance and the availability and accessibility of caribou. The available information describes that Porcupine caribou have been relatively accessible over the last 10 years, however they were less accessible in 2025 to harvesters in the NWT, which would suggest that the population is stable or slightly decreasing following its peak in 2017 (Gwich'in Renewable Resources Board 2026; Inuvialuit Game Council 2026; Porcupine Caribou Management Board 2026).

Health

Barren-ground caribou body condition is well known to vary by sex and to fluctuate between the seasons. Bulls will typically be in their best condition late August to September as they have spent the summer months feeding, and in poor body condition following the rut in mid-October as they will have used up much of their fat reserves (Benson 2019). Cows are in their best condition throughout the winter and spring, while in summer they are less fat as they have given birth and are expending energy feeding their calves (Benson 2019). As described in *Diet and Feeding Behaviour* and *Biology and Behaviour*, body condition is strongly affected by climatic conditions, which in turn influence snow depth and condition, insect populations, and growing conditions for forage (Benson 2015; Bathurst Caribou Range Plan 2018), as well as by disturbance and distance migrated (Lyver 2005).

"Could be the weather, or a year of more snow, all those things. It really makes a difference." (Tom Wright [Inuvik] in Benson 2015:38)

"Deep snow doesn't necessarily mean the caribou will be skinny, but out on the barrens when the snow is really hard packed, and in the forest when the snow is crusted, it is harder for the caribou to break through that for their food." (Jim Fatte [Łutsel K'e] in Lyver 2005:48)

When looking for caribou in good condition, harvesters will look at many aspects of the animal, not just how fat it may be. In live caribou harvesters may look for the following in determining health: size of the rump, visible ribs, the relative shortness of the tail, the flatness of their back and shoulder, the quality of their gait and posture, whiteness of the mane, rack/antler size, shape, and symmetry, number and shape of points, the size and shape of the antler shovel, and an individual's social role (WRRB 2013; Benson 2015; Benson 2019; Tłıchq Research and Training Institute 2022).

"After living long here in Wekweètì you know how caribou looks, you know how it tastes, and all that, you know if it is healthy and not healthy. Even my husband knows it because he is a hunter."

Last year he shot one or two caribou and it was sick. He knows it. He knows it when the caribou is sick. They took no meat. They just cut the meat all apart and just threw the meat away.” (Virginia Lamouelle [Wekweètì] in Tłı̨ch̓ Research and Training Institute 2016:28)

When processing caribou, harvesters will look at several indicators to determine the health of the animal including: amount of backfat, stomach fat, the colour of the bone marrow, the quality and smell of the meat, colour and quality of the lungs, liver, and kidney, and the presence of pus, cysts, or parasites (Tłı̨ch̓ Research and Training Institute 2016; Benson 2019).

“When you cut the caribou, it smells. Some of them smell; as soon as you open it, you smell it. But some of these you cut it open it smells really good, just like before, but some of them is not like that. Just smells; it hits you really strong,” (William Quitte [Wekweètì] in Tłı̨ch̓ Research and Training Institute 2016:19).

Harvesters note there are certain indicators of unhealthy animals, including pus, cysts, swollen joints, lungs that stick to the rib cage while they are being butchered, poor quality hides, animals that have trouble moving, damaged hooves, and excessively skinny animals (Russell, Folliot, and Svoboda 2008; Thorpe and Barnaby 2016; Tłı̨ch̓ Research and Training Institute 2016; Benson 2019; Tłı̨ch̓ Research and Training Institute 2022). Harvesters in Wekweètì had a number of observations of poor caribou health while butchering caribou between 2013–2016 (Tłı̨ch̓ Research and Training Institute 2016).

“Normally when butchering a caribou the lungs are not stuck to the rib cage. Hunters in Wekweètì noticed that they have had the abnormal occurrence where the ribs are stuck to the lungs. When I shoot caribou sometimes, one out of five, I’ll see a caribou with the lungs sticking to the ribs... Sometimes you have to cut it off. It’s stuck to the lungs, and not only that sometimes you see green stuff on the lungs too.” (Bruce Football [Wekweètì] in Tłı̨ch̓ Research and Training Institute 2016:22)

Several parasites and pathogens are found in the population of barren-ground caribou, including: warble flies, nose bot flies, Besnoitia, lung worms, tape worms, and brucellosis (Benson 2019; Sahtú Renewable Resources Board and Délı̨nę Got’ı̨nę Government 2022; Beverly and Qamanirjuaq Caribou Management Board 2023).

As part of their reproductive cycle, nose bot fly larvae use the sinus cavity of caribou to survive the winter months. Nose bot larvae are commonly found in harvested caribou but are not considered overly harmful (WMAC [North Slope] and Aklavik HTC 2009).

The warble fly uses the caribou as a host throughout the spring and summer months. Warbles bite caribou and lay their eggs under the skin. The eggs then hatch into larvae, which bore holes into the hide. The caribou are particularly bothered by the biting warble flies and may lose body fat or die from exhaustion in an attempt to run away from the irritation caused by the warbles (WMAC [North Slope] and Aklavik HTC 2009)

Increased harassment by biting insects, including mosquitoes, warble flies, and bot flies, interferes with feeding and contributes to reduced body condition (Benson 2019). Declines in fat reserves resulting from reduced forage compromise the ability of barren-ground caribou to endure periods of limited forage availability, particularly during ice-on-snow events in the fall and spring, thereby increasing the risk of starvation (Tłıchq Research and Training Institute 2016).

According to knowledge holders, lungworm infections compromise respiratory function in barren-ground caribou, thereby increasing their susceptibility to predation by wolves and grizzly bears (Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022).

"...caribou are susceptible to a parasite called a lung worm. It has been detected for several years, but the infection is spreading, and climate change seems to be a factor. They have a harder time to breathe and tire quickly, which in turn makes them easier to be preyed upon by wolves and grizzly bears." (Lisa McDonald [Norman Wells] in Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022:145)

"Warmer weather can increase parasites that can affect the behaviour, condition, and productivity of the caribou. Example, lung worm. Their range used to be limited by the climate but longer summers and shorter winters have seen the disease move north, and that is a direct cause of climate change." (Lisa McDonald [Norman Wells] in Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022:140)

Rescue Effects

As described in *Description and Movements and Dispersal*, barren-ground caribou are capable of migrating long distances and are found seasonally throughout northern Canada in the NWT, Nunavut, and northern Manitoba, Saskatchewan (and historically northeastern Alberta). Porcupine caribou range seasonally between Alaska, Yukon, and the NWT.

There is limited information in the available body of Indigenous and community knowledge discussing the possibility of herds outside the NWT replacing extirpated herds of the NWT, or mitigating the population declines of the herds present.

There is, however, the understanding by knowledge holders that when caribou leave an area, the habitat improves as the forage regrows (Benson 2015). This would seem to suggest that so long as the condition of the habitat remains favourable, caribou may return to reoccupy the area from outside herds.

"I think as the land... grows up again, then I think you'll see more of... that Bluenose East? You'll see them moving this way. In this area too, because of the reindeer, there's a lot of mixtures. And the old-timers say they even breed together now." (James Firth [Inuvik] in Benson 2015:45)

However, in northeastern Alberta, knowledge holders point out that even though the habitat has recovered locally, barren-ground caribou have not been present since the 1960s as the habitat is blocked by numerous burnt areas to the north (Athabasca Chipewyan First Nation Elders *et al.* 2003; Athabasca Chipewyan First Nation Elders, Tanner, and Rigney 2003).

It is important to recognize that if the declines observed in the NWT's barren-ground caribou herds (see *Changes in Distribution* and *Changes in Population Size*) are partly due to unfavorable habitat conditions, the existing habitat in the NWT may be insufficient to support any new incoming caribou herds from other regions. It is worth noting that there is limited information in the available body of TK and CK describing the arrival of new caribou herds in areas where they were not previously found. There is however information to suggest that the inverse is true, where caribou do not necessarily return to areas of their former range. For example, when looking back during the peaks of past cycles we can see that there is no guarantee caribou will return to areas they have used in the past. Even at their previous peak in the mid-1990s, barren-ground caribou did not occupy all of their former historic range, particularly in the southern portions (Beaulieu 2012).

THREATS AND LIMITING FACTORS

Indigenous and community knowledge holders describe numerous contributing factors as threats and limiting factors to barren-ground caribou across their range. Changing climatic conditions are an important driver of many of the threats to barren-ground caribou. Climate-driven factors are influencing caribou body condition, mortality, and ultimately abundance. Climate change is increasing the rate and intensity of wildfires, which are reducing the amount and connectivity of available winter habitat and forage. A less predictable and warming climate is changing snow conditions and causing more ice on snow events, leading to difficulties in caribou accessing forage. Warming temperatures lead to increased insect harassment, causing caribou to expend more energy and a reduction in body condition. Though the impacts are less clear, warming temperatures are causing ecosystem changes including the increased shrubification of the tundra (Tłıchǫ Research and Training Institute 2024).

Land use, such as industrial and infrastructure developments, as well as human disturbances, are frequently mentioned by knowledge holders as threats to caribou. Increasing resource development activities (mines, active and abandoned exploration camps, oil and gas developments, exploration, and pipelines) and their associated infrastructure (winter and all-season roads, hydro lines) are causing changes in distribution and habitat loss and fragmentation in certain parts of the range of barren-ground and Porcupine caribou. Winter roads and all-season roads (both current and

proposed) that service the mines and communities in the NWT and Yukon are allowing ease of access to harvesters into the range of several herds. Disrespectful harvesting activities are seen as potential threats, as they cause stress and are suggested as one of the reasons for changes in migration patterns. Over harvest and disrespectful harvest practices are seen as a potential threat in the range of the Beverly, Ahik, and Qamanirjuaq herds. Over harvest is considered less of an issue for the Porcupine caribou as well as the Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose-West, and Bluenose-East, and Bathurst barren-ground caribou herds as harvest is regulated in these areas through a variety of means including harvest restrictions, mobile no-harvest zones, tags for resident hunters, total allowable harvests, and community conservation plans.

Increasing numbers of predators causing increased mortality are considered a principal threat. Interactions with competitors, such as muskox and reindeer, are causing changes in distribution along with other impacts. Pathogens and parasites are mentioned as potential threats by certain knowledge holders. Past outfitted sport hunts influenced the health of current barren-ground caribou through the removal of prime bulls from the population.

Wildfires and Habitat Loss in the Winter Range

As described in *Habitat Trends, Habitat Fragmentation, Changes in Distribution, and Changes in Population Size*, the loss of habitat in the winter range resulting from wildfire is a significant threat to barren-ground caribou.

"I want to emphasize what Joseph said yesterday that the large fires have changed migratory routes and there is no food for [caribou]. There are only a few areas left that are unburned and those areas should be protected so caribou can come back." (Anonymous [Tłı̨chʼı̨ community] in Thorpe and Barnaby 2016:14)

Though wildfires are a natural part of the land and have always burned across the boreal and taiga forests in the range of barren-ground caribou, wildfires are burning with an increase in size and intensity (Kendrick, Lyver, and Łutsel K'e Dene First Nation 2005; Government of the Northwest Territories 2019). For the first time, lightning caused wildfires are being observed on the tundra (Tłı̨chʼı̨ Research and Training Institute 2024).

Increased wildfires have contributed to a significant loss of winter habitat, and a change in distribution in the NWT (Figure 11). As this increase in size is attributed to both a changing climate and government policies around fire suppression, and that regeneration of forage is on the time scale of decades, it is highly likely that this threat will continue to occur over the next ten years, particularly due to the slow rate of regrowth of lichen in the northern climate, which the main caribou food source during winter. Knowledge holders are highly certain that wildfire and its impact on habitat is impacting caribou populations, and that the large extent of burned forest on the winter habitat alter

caribou migration which causes the herds to remain on the barrenlands during winter instead of migrating into the southern forest as they used to. Knowledge holders are concerned that the government lack funds and willingness to fight fires on important caribou habitat and will let it burn (Athabasca Chipewyan First Nation Elders et al. 2003; Jacobsen 2013; Thorpe and Barnaby 2016; Bathurst Caribou Range Plan 2017).

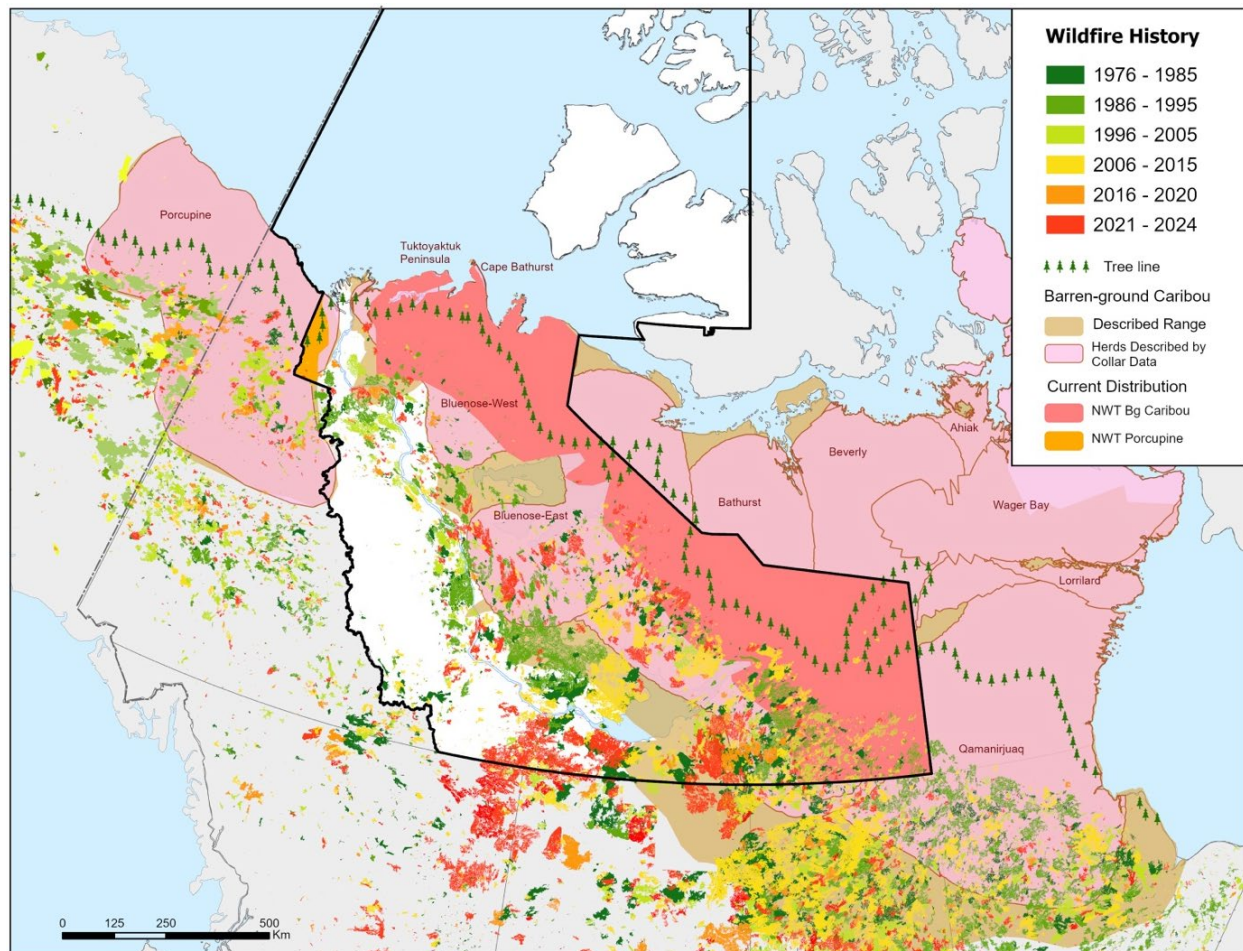


Figure 11: Current distribution and historic maximum (circa 1890s) range of Porcupine and barren-ground caribou in the NWT, and herd range as described by collar data mapped over wildfire history (1975–2024). It is important to note that this figure is based on the written and verbal descriptions from the following sources where caribou were described to be found or harvested in the NWT, as such the boundaries should be seen as an approximate representation. Map courtesy of B. Fournier & N. Wilson GNWT-ECC (Katz 2010; NSMA 2012; Bathurst Caribou Range Plan 2017; Bathurst Caribou Range Plan 2018; Bathurst Caribou Advisory Committee 2021; Bathurst Caribou Advisory Committee 2022; Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022; ACCWM 2023; BQCMB 2023; ACCWM 2024; BQCMB 2024; GRRB2024).

“Forest fires are more severe now than in the past. In the past there were so many caribou, but now there are not as many because of the forest fires. Forest fires also kill a lot of the wildlife like insects, birds, and small furbearing animals. A lot of things have gone. There were not as many

forest fires in the past.” (Maurice Lockhart [Łutsel K’e] in Kendrick, Lyver, and Łutsel K’e Dene First Nation 2005:8)

“Yeah, I -- traditionally, when -- back when the climate was normal, there wasn't that much fires. And now it's -- the river's drying up. Less and less water. There's really -- I understand it to be manmade.” (Frank T’seleie [Fort Good Hope] in Norman Wells RRC and Sahtú Renewable Resources Board 2024:189)

The impacts of wildfire and smoke are not distributed evenly across the ranges of the barren-ground caribou herds in the NWT. Though wildfire burns across the range of nearly all of the herds and smoke travels long distances, it is the winter range of Bluenose-East, Bathurst, Beverly, and the Qamanirjuaq herds that is primarily impacted. The available information does not describe the severity of the NWT population-level effect from wildfire-induced habitat loss. The impacts from wildfires are continuous until forests have both regenerated and are connected to enough suitable habitat in the range as a whole. The level of concern varies by region, with lower levels of concern expressed in the Porcupine, Tuktoyaktuk Peninsula, Cape Bathurst, and Bluenose-west herd ranges (Advisory Committee for Cooperation on Wildlife Management 2014a; Benson 2019; Advisory Committee for Cooperation on Wildlife Management 2024). A high level of concern exists in regions where wildfire has led to a loss of habitat, changed migration routes, contraction in range, and decline in population size (Wek’èezhii Renewable Resources Board 2016a; Wek’èezhii Renewable Resources Board 2016b; Thorpe and Barnaby 2016; Bathurst Caribou Range Plan 2017; Bathurst Caribou Range Plan 2018; Government of the Northwest Territories 2019; Łutsel K’é Dene First Nation 2020; Beverly and Qamanirjuaq Caribou Management Board 2024; Norman Wells RRC and Sahtú Renewable Resources Board 2024).

Ice on Snow Events

A less predictable and warming climate is changing snow conditions and causing more ice on snow events, leading to poor body condition and potential mortality from difficulties in accessing forage. As described in *Diet and Feeding Behaviour*, icing caused by seasonal rain on snow events, or warm temperatures mid-winter can negatively impact body condition by reducing the availability of winter forage by making it too difficult for caribou to dig through (Thorpe *et al.* 2001; WMAC [North Slope] and Aklavik HTC 2009; Katz 2010; Jacobsen 2013; Advisory Committee for Cooperation on Wildlife Management 2014b; Benson 2015; Benson 2019; Łutsel K’é Dene First Nation 2020). Poor snow conditions, such as ice on snow, are largely climate-driven; as such these events are likely to happen over the short term (within the next ten years). Though there are few dates for specific icing events in the available information, the knowledge suggests ice on snow conditions have periodically occurred in the range of barren-ground caribou

and Porcupine caribou. Specific instances in the available information include lots of rain in the winter of 2004-2005 in the range of the Bluenose-West herd leading to poor body condition (Benson 2015). With a warming climate it is highly probable that more of these events will occur in the next ten years.

“As I remember, I was trapping with my dad on a migratory route and he said this year the caribou would be having a hard time. A lot of caribou might die of starvation. I said, Why? Why is that? He said you look at the weather. The weather affects the caribou, he said. He said first it snowed and then there was freezing rain and then the cold -- cold -- cold weather, cold -- cold weather. He said that the caribou when they eat they have to remove snow from the ground to eat. But this -- the -- because of the freezing rain the caribou will be having a hard time.” (Edward Chocolate [Gamètì] in Wek’èezhì Renewable Resources Board 2010b:53–54)

“Some years it’s good and some years it’s bad—never the same all the time. It depends on the food that’s growing up and the freezing rain, freezing snow and everything like that, it’s not good for the caribou.” (Donald Aviugana [Aklavik] in WMAC [North Slope] and Aklavik HTC 2009:47)

Knowledge holders have noted that barren-ground caribou are staying further north during the winter, often staying on the tundra throughout the year, than they have in the past. This change in distribution is attributed to changing snow conditions in addition to the increase in fires on their winter habitat. As knowledge holders often do not tend to describe abundance and distribution separately, we can infer (with medium-low certainty) that the change in caribou staying further north is also potentially due to lower abundance from these factors. Ice on snow events are variable in scope; they may be localized or widespread depending on the size of the weather system, or whether it is compared against the range of a single herd, or against all barren-ground caribou in the NWT. Barren-ground caribou migrate in order to seek better conditions; however, certain herds, such as the Tuktoyaktuk Peninsula and the Cape Bathurst herd, have relatively small ranges, therefore freezing rain events may have widespread impacts. The available information does not describe the severity of the NWT population-level effect from ice on snow events on forage availability. Concern for the impacts relating to climate change is high, though in the available knowledge there is a medium-low amount of concern specifically relating to ice on snow events (Benson 2015; Thorpe and Barnaby 2016; Benson 2019; Łutsël K’è Dene First Nation 2020; Sahtú Renewable Resources Board and Délı̨nę Got’ı̨nę Government 2022; Beverly and Qamanirjuaq Caribou Management Board 2024).

Other Effects of Climate Change

Increased Insect Harassment

As described in *Habitat Trends*, changing climate and warming temperatures are linked to increased insect harassment. Increased temperatures are extending the duration of the biting insect season. The increase severity and duration of the biting insect season is a potential threat to caribou. Caribou may expend a significant amount of energy trying to escape from biting insects, contributing to poor body condition which may influence fall pregnancy rates. The impact of an increase in biting insects varies by the year, with some years being favourable for caribou (cool, and windy), and other years contributing to increased insect activity (hot, low winds). As the quantity of insects is linked to climate, it is highly likely there will be summers of increased insect activity over the short term. The Ekwò Nàxoèhdee K'è program noted that hot, humid and calm summers have higher levels of insect harassment (Tłıchq Research and Training Institute 2025). In these conditions animals are constantly moving and running in circles, therefore minimizing their ability to put on fat during the months of high insect activity (Tłıchq Research and Training Institute 2019; Tłıchq Research and Training Institute 2023).

From a habitat perspective, barren-ground caribou and Porcupine caribou have a small number of options to seek refuge from insects. They can either move to higher elevations or latitudes, or to the edge of large water bodies to seek cooler weather and windy conditions (Thorpe *et al.* 2001; WMAC [North Slope] and Aklavik HTC 2009; Benson 2015; Benson 2019). The Porcupine caribou range includes numerous mountain ranges, which create inherently complex climatic patterns. Variation in aspect and elevation produces a fine-scale mosaic of conditions, allowing caribou to more easily access areas where they can escape insect harassment. In contrast, barren-ground caribou depend on large lakes and coastal areas and the winds they generate to provide similar refuge. (Tłıchq Research and Training Institute 2019). Unfortunately, the quality of suitable habitat has and will decrease as barren-ground caribou can only move so far north (or northeast away from the treeline) in the search of cooler climates and insect-free conditions. Should several years in a row of high insect activity occur there will certainly be an impact to caribou health and on the population as knowledge holders have long known that insect activity is a contributor to poor body condition.

***"They travel fast because of the black flies. They go up to the highest hill and don't move because of the flies. Down in the muskeg the flies are even worse. That's why they travel so fast, not because anything is chasing them but because they are trying to get away from the flies."** (Joseph Judas [Wekweèti] in Bathurst Caribou Range Plan 2017:14)*

The spatial extent of the impact is varied as it is influenced by the climate. Certain regions will annually report good insect conditions, while in other regions conditions are less favourable (Advisory Committee for Cooperation on Wildlife Management 2024; Tłıchq

Research and Training Institute 2023). The severity of the effect on the population is unknown as it is not described in the available information. Determining the level of concern regarding the impact of biting insects on barren-ground caribou is challenging. However, their frequent mention in the available information suggests that the concern is moderate to low (Bathurst Caribou Range Plan 2017; Bathurst Caribou Range Plan 2018; Advisory Committee for Cooperation on Wildlife Management 2024).

"With the hotter summers that we're having now, that must be hard for them. Because of that, there's a lot more mosquitoes. So I think that really affects them... I think we used to get more rain. It seems like we don't get as much as we used to, the last few years, anyway. You talk about climate change. ... It never used to be that way. But in the last few years, I really noticed that all the falls have been like stretched right out longer, like this year and the year before, the rabbits were white, and we never even had snow. So it's late." (James Firth [Inuvik] in Benson 2015:52)

Habitat Change

Climate change is causing changes to the ecosystem of the tundra and treeline portions of the range of barren-ground caribou. Knowledge holders note that shrubs are increasing in size and distribution across the tundra. The shrubification of the tundra and expansion of the treeline northwards have been ongoing for several decades (Katz 2010) and are highly likely to continue over the next 10 years. The increase in shrubs on the southern edge of the tundra appears to be occurring across the range of barren-ground caribou and Porcupine caribou. There is no information describing the severity of this effect, and concern appears to be low.

Tłı̨chǫ Elders state that vegetation on the tundra have grown extensively since the 1960s; that willows that used to be low shrubs are now growing higher and denser than previously, covering many places, thus extending the treeline further north, and making it hard for elders to recognize places as the landscape has changed drastically. Tłı̨chǫ Elder Joe Zoe stated later that the caribou will migrate further north on the barrenlands and were concerned that caribou will not move south as they used to due to the overgrown habitat ([Tłı̨chǫ Research and Training Institute 2025](#)).

"the land looks different from what I remember when I traveled with my dad." (Joe Zoe [Gamètı] in Tłı̨chǫ Research and Training Institute 2025:37)

"The barrenland is becoming smaller." (Joe Zoe [Gamètı] in Tłı̨chǫ Research and Training Institute 2025:29)

"Well look, eh. From back in 1950s to today? The country used to look, well it still look good but you know, it's now, the earth is full grown. Just grown there, lot of willows, lot of trees. Big difference now. You know? John Tsal (John Vaneltsi), he was around Blackstone in 1930s and then after the 1980s they took him back over to Dawson and over Blackstone. 'You remember this place here?' they stop and they told him they were going up Blackstone. 'I can't remember' he said 'grow too much'." (Robert Alexie Sr. [Fort McPherson] in Katz 2010:40–41)

Permafrost thawing is currently seasonally occurring due to a warming climate and is highly likely to continue over the next 10 years. Knowledge holders note that thawing permafrost is causing instances of slumping and impacting the firmness and moisture content of the ground (WMAC [North Slope] and Aklavik HTC 2009; Advisory Committee for Cooperation on Wildlife Management 2014; Tłıchǫ Research and Training Institute 2019; Gwich'in Renewable Resources Board 2023). Permafrost thawing has been linked to the collapse of eskers through the melting of their ice rich cores (Tłıchǫ Research and Training Institute 2019). These impacts to areas of permafrost as well as eskers may cause caribou to avoid the area leading to a loss of habitat. The degree of certainty that melting permafrost will have on the population is unknown. Most of the available information describing melting permafrost as a threat is in the range of Porcupine caribou, and the western herds near the Mackenzie Delta, as well as to esker habitats in the range of the Bathurst and Bluenose-East herds, though this melting is likely occurring across the range of barren-ground caribou and Porcupine caribou (Advisory Committee for Cooperation on Wildlife Management 2014; Benson 2019; Tłıchǫ Research and Training Institute 2019; Gwich'in Renewable Resources Board 2023). The severity of this effect on the population is unknown. Though concern for the impacts relating to climate change are high, in the available knowledge there are a medium-low amount of concern specifically relating to permafrost melting.

"I know an elder told us, Gwich'in Elder, said that's [permafrost melt] just like quicksand, so caribou are not going to come through there, so it could be changing their migration patterns, right? So, I know you're starting to see more water." (Billy Archie [Aklavik] in WMAC [North Slope] and Aklavik HTC 2009:24)

Increased temperatures are contributing to the loss of permanent snow patches on the tundra (Tłıchǫ Research and Training Institute 2019; Gunn et al. 2024). Permanent snow patches contribute to improved forage by providing a source of melt water throughout the summer which contributes to better growing conditions for plants, as well as provides protection from insect harassment (Tłıchǫ Research and Training Institute 2018; Tłıchǫ Research and Training Institute 2019).

"The caribou in the past, in the late 1980s and early '90s used to go on the hillsides where the sun wouldn't melt the snow patches. As the summer gets warmer, later on the snow patches would turn into ice and a lot of caribou would be on them. But now we don't see that no more, because of the climate change. Now we see them in the shoreline of lakes, ponds and streams, this is how they cool down." (John Koadloak [Kugluktuk] in Tłıchǫ Research and Training Institute 2018:67)

Summer drought conditions have persisted since 2022 in the tundra; the land and vegetation are dry through the summer months, and rain doesn't fall until August (Tłıchǫ Research and Training Institute 2024). Mid-July weather is increasingly hot and humid,

but without rain and increased insect activity (Tłıchq Research and Training Institute 2024). Caribou food dries out during these drought conditions, making it difficult for them to eat and digest (Tłıchq Research and Training Institute 2024). Prolonged drought conditions and large fires on their fall and winter forage habitat are not what caribou need (Tłıchq Research and Training Institute 2024).

Industrial Land Use

Industrial developments such as exploration, mining, oil and gas, and hydroelectric developments can be considered by many as one of the most significant threats concerning barren-ground caribou. These developments have long occurred on the southern part of the range of barren-ground caribou, with some of the earliest mines in the NWT opening in the 1930s. Mines and mineral exploration can impact caribou in a variety of ways including an increase in stress and change in behaviour and impact caribou health and body condition. Caribou are particularly sensitive to disturbances from noise and smells (Benson 2015; Thorpe and Barnaby 2016; Benson 2019; Łutsël K'é Dene First Nation 2020). The mines and exploration camps cause caribou to change their migration routes and avoid certain areas resulting in a loss of available habitat (AREVA Resources Canada Inc. 2012). Mines and the associated dust and pollution they produce impact the quality of forage and the availability of habitat (Parlee, Basil, and Casaway 2001; Kendrick, Lyver, and Łutsel K'e Dene First Nation 2005; Advisory Committee for Cooperation on Wildlife Management 2014a; Thorpe and Barnaby 2016; Government of the Northwest Territories 2019; Łutsël K'é Dene First Nation 2020; Beverly and Qamanirjuaq Caribou Management Board 2024). Low-level flights associated with mineral exploration increase stress and may cause caribou to expend unnecessary energy or injure themselves (Inuvik Community Corporation, Tuktoyaktuk Community Corporation, and Aklavik Community Corporation 2006; Beverly and Qamanirjuaq Caribou Management Board 2014a; Wek'èezhìi Renewable Resources Board 2016b; Tłıchq Research and Training Institute 2023).

"We did a TK study combined with science looking at the food around the mine around Diavik and as Joseph was saying at 30 km away from the mine, it was almost normal, but the closer you got to the mine the more dust there was and the less sign of caribou. Harry Apples said the [East] Island [Diavik mine site] is dead to caribou, caribou don't go there anymore." (Anonymous [Tłıchq community] in Thorpe and Barnaby 2016:10)

Numerous industrial developments occur across the range of barren-ground caribou. Beginning in the early 2000s, an increased amount of mineral exploration and development began in the Nunavut portions of the range of the Beverly and Qamanirjuaq herds. As of December 2024, there are two operating mines (Meadowbank and Meadowbank Amaruq, Meliadine) on the range in Nunavut, and six operating mines in

Northern Saskatchewan (Beverly and Qamanirjuaq Caribou Management Board 2024). In the NWT, there are three operating diamond mines in the range of the Beverly and Bathurst herds (Ekati, Diavik, and Gahcho Kué) (Bathurst Caribou Range Plan 2018; Bathurst Caribou Advisory Committee 2021). Currently, there are no operating mines in the ranges of the other herds. Mineral exploration is occurring throughout the range of barren-ground caribou, particularly in the range of the Bathurst, Beverly, and Qamanirjuaq herds, and to a limited extent in the range of the Bluenose-West and Bluenose-East herds, as well as in the Canadian range of the Porcupine caribou.

Though it is difficult to predict future mining projects, the Back River Gold project is at an advanced stage, or in its early stages of production at Goose Lake Nunavut south of Bathurst Inlet (Nunavut Impact Review Board 2025). This project would be on the range of both the Bathurst and Beverly herds and has the potential to impact barren-ground caribou.

The impacts from mining and mineral development are currently happening and highly likely to continue to occur over the next ten years. Knowledge holders are very certain these mining developments are impacting barren-ground caribou populations in the regions they occur (Bathurst, Beverly, Qamanirjuaq). Knowledge holders have a high level of concern for the impacts these developments are having on barren-ground populations, animal health, and migration routes (De Beers Canada Inc. 2010; Tłıchq Government 2012; Jacobsen 2013; Thorpe and Barnaby 2016; Tłıchq Research and Training Institute 2016; Bathurst Caribou Range Plan 2017; Bathurst Caribou Range Plan 2018; Łutsël K'é Dene First Nation 2020; Bathurst Caribou Advisory Committee 2022; Beverly and Qamanirjuaq Caribou Management Board 2024; Tłıchq Government 2025).

Oil and gas developments and exploration are restricted to the regions where the underlying geology will support them. This is largely in the winter range of Bluenose-West, and the ranges of Cape Bathurst, Tuktoyaktuk Peninsula, and Porcupine caribou. Oil and gas exploration frequently involves the construction of seismic lines. Seismic lines (and pipelines) from these projects increase access for both harvesters, potentially leading to an increased harvest, and predation (Katz 2010). The construction of pipelines in permafrost areas requires them to be above ground. Knowledge holders have suggested that, should these be constructed, they would change the distribution of caribou as they would be reluctant to migrate under them (Inuvik Community Corporation, Tuktoyaktuk Community Corporation, and Aklavik Community Corporation 2006; Advisory Committee for Cooperation on Wildlife Management 2014a; Benson 2019). Future oil and gas developments are difficult to predict; the threat of development in the Arctic National Wildlife Refuge in Alaska has been ongoing, and the level of concern regarding oil and

gas developments on the range of the Porcupine caribou is high. There are currently no proposed pipelines in the range of barren-ground caribou in the NWT. The level of concern regarding oil and gas developments on barren-ground caribou is low.

The impacts of hydroelectric development are primarily related to the influence these projects have on ice conditions in large waterways, which can affect the ability of barren-ground caribou to cross the ice safely (Kendrick 2003; Kendrick, Lyver, and Łutsel K'e Dene First Nation 2005; Barnaby and Simmons 2013). Additionally, such developments may alter caribou distribution due to the presence of associated power lines (Bathurst Caribou Range Plan 2017). These impacts are currently occurring on the Taltson River at Nonacho Lake, and at three dams (Wellington, Waterloo, and Charlot River) in northern Saskatchewan near Camsell Portage, and their associated transmission lines running towards Black Lake and southeast towards the mines in northeastern Saskatchewan (Beverly and Qamanirjuaq Caribou Management Board 2024). Impacts from these projects are currently happening and very likely to happen over the next ten years. An expansion of the Taltson hydro project and linking it to the Snare hydro system is proposed (Government of the Northwest Territories 2025). Several routes have been put forward, one is partially underwater as it crosses Great Slave Lake, while the other options route westward around Great Slave Lake; all of these options would have new infrastructure around the periphery of the historic range of the Bathurst and Beverly herds (Government of the Northwest Territories 2025). The extent of the current impacts are low, and the level of concern is relatively low.

Infrastructure Developments

Infrastructure development, such as roads and winter roads can impact barren-ground caribou in a variety of ways. Vehicle noise and the visual barriers caused by roads can cause stress and avoidance, which can ultimately change migration routes and create barriers to movement and reduce available habitat (De Beers Canada Inc. 2010; Benson 2019; Government of the Northwest Territories 2019; Bathurst Caribou Advisory Committee 2021). Dust from roads can impact forage quality (Katz 2010; Kendrick 2003). Roads also have cumulative effects as they influence harvest patterns and increase harvesting rates by creating easy access to previously relatively inaccessible areas (Kendrick, Lyver, and Łutsel K'e Dene First Nation 2005; Advisory Committee for Cooperation on Wildlife Management 2014a; Bathurst Caribou Range Plan 2017; Bathurst Caribou Range Plan 2018; Łutsel K'e Dene First Nation 2020; Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022; Bathurst Caribou Advisory Committee 2022). Roads may also impact caribou by increasing the risk of vehicle collisions, as caribou may

also be enticed onto the road by the easy walking, insect avoidance, and view of potential predators (Government of the Northwest Territories 2019). Barren-ground caribou are reluctant to cross winter roads causing them to stall and become more susceptible to wolf predation (Tłıchǫ Government 2025). Additionally, roads increase access, leading to higher caribou harvest and a greater abundance of gut piles. These gut piles attract and sustain wolves, creating a cumulative effect that may increase predation on caribou (Bathurst Caribou Advisory Committee 2022).

Currently, there are several roads in the range of barren-ground caribou in the NWT, Nunavut and Yukon. The Porcupine caribou range has the Dempster Highway, as well as a seasonal ice road to Aklavik from Inuvik, and an unofficial ice road connecting Aklavik and Fort McPherson. The Inuvik to Tuktoyaktuk Highway is in the range of the Tuktoyaktuk Peninsula and Cape Bathurst herds. The Bluenose-West herd may be accessed via the Sahtú winter road to Colville Lake. The Bluenose-East herd can be accessed via the Sahtú ice road to Délı̄nę, and via the ice roads to Gamètì and Wekweètì. The Bathurst and Beverly herds can be accessed along the Tibbitt to Contwoyto winter road servicing the diamond mines. Several roads are found in or near the southern range of the Qamanirjuaq herd: Highway 905 is an all season road in northern Saskatchewan ending in Stony Rapids, the winter road from Stony Rapids to Uranium City, the winter road system in Manitoba to Lac Brochet and Tadoule Lake (Beverly and Qamanirjuaq Caribou Management Board 2023). In addition to these roads, a 25 km access road from Rankin Inlet to the Meliadine mine is in the range of the herd (Nunavut Impact Review Board 2023a). A mine access road for the Meadowbank mine complex northwest of Baker Lake is also in the range of both the Beverly and Qamanirjuaq herds (Nunavut Impact Review Board 2019).

In addition to these roads there are several future roads proposed in the range of barren-ground caribou. In Nunavut, a proposed 230 km road from the former mine at Jericho, Contwoyto Lake, to Grays Bay is in the range of the Bathurst and Beverly herds, notably this road would pass through the calving grounds and post calving range of the Bathurst herd (Nunami Stantec Limited 2024). The GNWT is proposing to construct an all-season road from Yellowknife to Lockhart Lake, and northwards to the Nunavut border, planned to connect to the proposed road in Nunavut. The proposed road would increase access for hunters to the summer, fall and winter habitat of the Bathurst and Beverly caribou. The Back River Gold project proposes to construct a winter road of approximately 130 km from Goose Lake to Bathurst Inlet, in the range of the Bathurst and Beverly herds (Nunavut Impact Review Board 2023b). The GNWT's Mackenzie Valley Highway Project proposed to replace approximately 281 km of seasonal Mackenzie Valley Winter Roads; this would transform the Sahtú winter road to Norman Wells into an all-season road

(Government of the Northwest Territories 2023). The upgraded Mackenzie Highway would increase access to both the Bluenose-East and Bluenose-West herds.

The impact from existing roads is currently occurring and will likely continue for the next 10 years. Numerous knowledge holders are confident that roads have had an impact on barren-ground caribou populations and seasonal migration patterns, and have expressed a high level of concern (Advisory Committee for Cooperation on Wildlife Management 2014a; Benson 2015; Bathurst Caribou Range Plan 2017; Bathurst Caribou Range Plan 2018; Bathurst Caribou Advisory Committee 2021; Bathurst Caribou Advisory Committee 2022; Bathurst Caribou Advisory Committee 2023; Bathurst Caribou Advisory Committee 2024).

Predators

As described in *Relationship Within and Among Species*, numerous knowledge holders suggest that predation on barren-ground caribou is occurring by wolves and grizzly bears at elevated levels, potentially contributing to population declines (Bathurst Caribou Advisory Committee 2022; Thorpe and Barnaby 2016; Wek'èezhìi Renewable Resources Board 2016a; Advisory Committee for Cooperation on Wildlife Management 2024).

The increase in the number of wolves has largely been attributed by knowledge holders to the reduction in trapping and harvest of predators on the range of barren-ground caribou (Benson 2015; Thorpe and Barnaby 2016; Bathurst Caribou Range Plan 2017; Beverly and Qamanirjuaq Caribou Management Board 2023). Increased predation occurs as a result of the winter roads as caribou are reluctant to cross them, and become more susceptible to ambush by wolves (Tłıchǫ Government 2025). Localized increases in wolves has also been attributed to the presence of gut piles from the high level of harvest occurring along the Tibbitt to Contwoyto and Gahcho Kué winter roads (Bathurst Caribou Advisory Committee 2022).

Wolves primarily impact caribou populations by reducing the survival rates of both adults and calves (Bathurst Caribou Advisory Committee 2022; Behrens 2024). Calves are particularly vulnerable to predation from wolves (Thorpe *et al.* 2001; Benson 2015; Wek'èezhìi Renewable Resources Board 2016a; Bathurst Caribou Advisory Committee 2022). Wolf predation negatively affects cow and calf caribou survival, with disproportionate impacts observed within the range of the Bathurst herd, where population levels are critically low (Government of the Northwest Territories and Tłıchǫ Government 2020).

Knowledge holders note that the impact from predators is happening now and is likely to continue in the next ten years. As described in *Relationship Within and Among Species*, there is uncertainty over the impact caused by predators on the population, with some

suggesting that predators form part of the natural balance. This uncertainty in the available information suggests a medium level of certainty that predators are impacting caribou. Not all predators are found across the range of barren-ground caribou; grizzly bears, for example, do not share their entire range with barren-ground caribou, nor (as they hibernate) are they active year-round. The severity of the impact is unknown; however, there is a high level of concern for the impacts of grizzly bear predation on newborn calves on the calving ground, and concerns of wolves on caribou during the winter season. Especially when caribou population is low, there is concern that the impact of wolves are greater on the remaining caribou herds. (Advisory Committee for Cooperation on Wildlife Management 2014a; Wek'èezhì Renewable Resources Board 2016a; Bathurst Caribou Range Plan 2017; Bathurst Caribou Range Plan 2018; Bathurst Caribou Advisory Committee 2022; Advisory Committee for Cooperation on Wildlife Management 2024; Behrens 2024).

Harvest-Related Issues

Harvest-related issues, including disrespectful harvest, overharvest, and past outfitted sport hunting are all considered as threats to barren-ground caribou.

Disrespectful harvest includes a wide range of actions ranging from meat wastage, chasing caribou, harvesting the leader, taking more than you need, speaking disrespectfully or acting in a manner disrespectful to caribou. Meat wastage or not using all of the animal is seen as an issue across the range (Advisory Committee for Cooperation on Wildlife Management 2014a; Beverly and Qamanirjuaq Caribou Management Board 2014a; Délı̨nę ʔekwé Working Group 2016; Łutsël K'é Dene First Nation 2020; Beverly and Qamanirjuaq Caribou Management Board 2024).

"In the past we never threw meat away. We brought back all the meat in the sleigh. Monitors need to watch everybody. If they see people leaving meat, they need to tell them to take the meat. People need to respect the caribou. We're doing something good for our people." (Albert Boucher [Łutsel K'e] in Łutsël K'é Dene First Nation 2020:38)

"We also have to think about how to take good care of ʔekwé. If we waste what we kill, ʔekwé will know and next time he will never come back." (Charlie Neyelle [Délı̨nę] in Délı̨nę ʔekwé Working Group 2016:13)

Online meat sales are seen as a potential threat to caribou. Knowledge holders note that sales of meat are leading to hunters taking more than they need (WMAC [North Slope] and Aklavik HTC 2009; Soublière 2011; Advisory Committee for Cooperation on Wildlife Management 2014a; Bathurst Caribou Advisory Committee 2023; Beverly and Qamanirjuaq Caribou Management Board 2023).

"If I went out hunting caribou last week and I got five and a month later I got another five, am I going too far? One person can't eat ten caribou – this is my example – unless you go out for a

community hunt; that would be different. A person taking more than they could eat is probably trying to sell them.” (Anonymous [Tsiigehtchic] in Advisory Committee for Cooperation on Wildlife Management 2014a:168)

“There are simply no jobs in Tuktoyaktuk. One of the only ways of making money is harvesting caribou and selling the animal or selling dry meat. I’ve heard the going price for a caribou is \$200 in the ISR and hopefully, we don’t have to go to that extent here.” (Anonymous [Fort Good Hope] in Advisory Committee for Cooperation on Wildlife Management 2014a:168)

“We have to keep the caribou protected. If we don’t then they will move away. Other communities, they sell caribou. That’s not our way; we don’t do that. The caribou know what we do.” (Anonymous [Colville Lake] in Advisory Committee for Cooperation on Wildlife Management 2014a:168)

Chasing caribou on snowmachines, quads or by drone are disrespectful actions on caribou. Chasing barren-ground caribou in this way causes disturbance and stress, and may cause them to change their migration routes (Soublière 2011; Benson 2015; Tłıchq Research and Training Institute 2016; Benson 2019). Improper disposal of barren-ground caribou remains (i.e., bones, hides, heads, and meat) is also considered a sign of disrespect and may cause caribou to avoid the area in the future (WRRB 2013; Tłıchq Research and Training Institute 2016; Łutsël K’è Dene First Nation 2020).

“If you throw the bones away, a caribou talks about how they treated his remains. When the world was new it was believed that all the animals had supernatural spirits. That is why it is said that the caribou said, “Those people do not take good care of our bones. They just walk all over our bones.” That is what they communicate to their spirits. The animals said, “If [people] don’t take care of your bones, don’t go to them.” That is what the animals say to each other, they say. That is why they would not throw away caribou bones just anywhere. They would take good care of the remains. It is true that they have to be discarded but still they would make a rack for it. Even the hairs on the hide are collected and discarded together. In the past the old people do not want their campsite left littered with scraps of caribou.” (Robert Mackenzie [Wekweètì] in Tłıchq Research and Training Institute 2016:43)

Knowledge holders have long known harvesting the leader and not allowing the first group to pass and settle into an area can lead to barren-ground caribou avoiding the area in the future. As described in *Biology and Behaviour* and *Movement and Dispersal*, caribou are sentient beings that rely on their collective memory to decide how to move across the landscape; when knowledgeable individuals such as the leaders, are harvested, their knowledge of where to go is removed from the group (Benn 2001; Kendrick, Lyver, and Łutsel K’è Dene First Nation 2005; WMAC [North Slope] and Aklavik HTC 2009; Padilla and Kofinas 2010; Soublière 2011; Benson 2015; Wek’èezhì Renewable Resources Board 2016c; Benson 2019).

“They used to respect caribou long ago. When we hear the caribous are coming, we just leave them for a while ‘til the leader pass, ‘til the lead bunch pass. After they pass, they always start

hunting. Like today, soon as they hear there's caribou down here they take off with speed boats and put their skidoos in the boat and just drive up—hit the leader. I guess since that time our caribou don't like to go through that route anymore. I guess that's why we don't have too much caribou.” (Anonymous [Aklavik] in WMAC [North Slope] and Aklavik HTC 2009:22)

Overharvesting is seen by some as a threat to barren-ground caribou, but this topic is highly controversial, varies by region, and there is considerable debate about the impact on caribou from the level of harvest (Advisory Committee for Cooperation on Wildlife Management 2014; Bathurst Caribou Range Plan 2017; Benson 2019; Gwich'in Renewable Resources Board 2023). (Advisory Committee for Cooperation on Wildlife Management 2014; Bathurst Caribou Range Plan 2017; Benson 2019; Gwich'in Renewable Resources Board 2023). Indigenous and community knowledge holders note that harvest rates are relatively low compared to the past when people relied more on caribou for clothing and tools, as well as when caribou was used to help feed their dog teams, and when caribou meat was sold to fur trading posts; however there is considerable debate as to whether harvest is indeed lower now than it was in the past (Wek'èezhìi Renewable Resources Board 2010b; Zoe 2012; Advisory Committee for Cooperation on Wildlife Management 2014; Colville Lake RRC 2019).

“We have many dog teams, we have many dogs. Dogs would feast on the caribou meat, but we do not find where that the caribou, the population been – that reduce it. It was part of the harness that the – the toboggan bags, it's been the babiche, every part of our life keeping the caribou.” (Phillip Dryneck [Tłı̨chǫ community] in Wek'èezhìi Renewable Resources Board 2010b:222)

Knowledge holders in the range of the Bathurst, Beverly and Bluenose-East herds are concerned about the effects of winter roads on barren-ground caribou especially regarding increased access created by these roads (NSMA 2025). The NSMA Guardianship Program patrols the Tibbitt to Contwoyto Winter Road during the operational season (February to March) to observe what is happening to caribou on their winter range (NSMA 2025). NSMA Guardians systematically documented and quantified gut piles along the winter road for insight on harvest-related activities. The minimum harvest along the Tibbitt to Contwoyto Winter Road was estimated in 2025 at 2,814 (2,610 – 3,150) caribou, based on 2,248 caribou harvested (NSMA 2025). The average gut pile had 20 caribou; one location was noted as having 1,200 caribou. Overall, at approximately 10% of kill sites meat wastage was observed (NSMA 2025). Although harvest remains a vital and culturally significant practice for Indigenous peoples in the North, the Tibbitt to Contwoyto Winter Road has enabled a level of access (and therefore harvest) that was not possible prior to the road's construction (NSMA 2025).

“All this hunting is making me wonder if there is over-harvesting. I'm worried this easy access is depleting the herd permanently” (NSMA community member in NSMA 2025)

Although there have been issues with compliance, harvesting is actively managed in a variety of ways across the range of barren-ground caribou. Currently, the Bathurst, Cape Bathurst, Bluenose-West and Bluenose-East herds are under total allowable harvest (TAH) systems, with certain herds having the TAH set to zero (Cape Bathurst, Bathurst). Though Cape Bathurst harvest is effectively closed (I/BC/07), it is likely that harvest occurs from this herd when individuals enter the adjacent wildlife management unit (I/BC/06) and hunters use tags designated for Bluenose-West caribou. Harvest is managed in other herds through community conservation plans, such as the harvest of the Bluenose-East herd by those in Délı̨nę (Délı̨nę ʔekwé Working Group 2016) and the proposed community conservation plan for Colville Lake and the Bluenose-West herd (Colville Lake RRC 2019). Herds with TAH systems in place do not allow for resident harvest. Currently, no restrictions are in place for Indigenous hunters for the Porcupine, Beverly, Ahiak, and Qamanirjuaq herds, and resident hunters are allowed limited tags in certain areas for the Beverly herd. Estimating harvest of barren-ground caribou is relatively challenging, as harvest reporting is not required in many of the regions, or the data is not public. Where available, a summary of recent harvest data is provided in Table 7 (note: harvest information is not publicly available for several herds). The reported harvest is most likely an underestimate, as many hunters don't report harvest or don't report an accurate number; the actual total harvest is likely much higher than stated in the tables. The level of concern surrounding harvest varies by region, with knowledge holders in the range of the Bathurst and Beverly herd having a high level of concern, particularly for the harvest along the Tibbitt to Contwoyto winter roads. Concern in the range of the Porcupine caribou surrounding overharvest or disrespectful harvest appears to be moderate (Benson 2019; Gwich'in Renewable Resources Board 2023a; Gwich'in Renewable Resources Board 2023b).

Table 7: Sources of harvest information across the NWT (Déḻnē ʔekwē Working Group 2016; Inuvialuit Game Council 2023; Advisory Committee for Cooperation on Wildlife Management 2024; Bathurst Caribou Advisory Committee 2024; Nunavut Wildlife Management Board 2024; Gwich'in Renewable Resources Board 2024; WRRB 2024; Advisory Committee for Cooperation on Wildlife Management 2025; Bathurst Caribou Advisory Committee 2025 in prep).

Herd	Type of Harvest Management	Tags Available	Filled/reported/ estimated	Source
Porcupine	No restrictions on Indigenous harvest	Not Applicable	38 IGC reported (June 2021-January 2022); 203 GRRB estimate (June 2023-May 2024)	(Inuvialuit Game Council 2023; Gwich'in Renewable Resources Board 2024)
Bluenose-West	Total Allowable Harvest	840 Tags: 34 Gwich'in 403 Inuvialuit 403 Sahtú	Gwich'in: 7 (2023) & 24 (2024). Inuvialuit: 306 (2023) & 286 (2024) Sahtú:(Officially Unreported, estimated 170-200 in 2023, and 100 in 2024) ¹	Advisory Committee for Cooperation on Wildlife Management 2024; Advisory Committee for Cooperation on Wildlife Management 2025
Bluenose-East	Total Allowable Harvest	450 either sex (2024 Nunavut) 193 bulls (Wek'èezhii), (2025 increase to 395 bulls) ³	170 (2022-2023) Nunavut ²	Advisory Committee for Cooperation on Wildlife Management 2024
			63 (2020-2021) Tł̱chq̱, 63 (2021-2022) Tł̱chq̱, 0 bulls Tł̱chq̱ (2022-2023), 1 Bull (2023-2024) Tł̱chq̱	(Advisory Committee for Cooperation on Wildlife Management 2022; Advisory Committee for Cooperation on Wildlife Management 2023; Advisory Committee for Cooperation on Wildlife Management 2025)
	Déḻnē Community Conservation Plan	150 caribou as a self-imposed target	Assumed to be very low due to limited winter access	Advisory Committee for Cooperation on Wildlife Management 2025
Bathurst	Total Allowable Harvest NWT, Total Allowable Harvest Nunavut	10 Bulls (Nunavut), 0 Wek'èezhii	Reported Harvest Not Available	Nunavut Wildlife Management Board 2020

Herd	Type of Harvest Management	Tags Available	Filled/reported/ estimated	Source
Beverly	No restrictions on Indigenous harvest	Not Applicable	725 Reported through Tłıchǫ Harvest Monitoring Program 2024	Bathurst Caribou Advisory Committee 2025 in prep

¹ During the 2024 ACCWM Annual Status Meeting Sahtú community knowledge presentation David Codzi (Behdzi Ahda First Nation) provided the above estimates of harvest.

² Partially reported harvests of (127 harvested as of Oct 25/2023, and 75 as of Nov 13/2024) are available (Advisory Committee for Cooperation on Wildlife Management 2024; Advisory Committee for Cooperation on Wildlife Management 2025)

³ Nunavut Wildlife Management Board 2024; WRRB 2024

Outfitted sport hunting for barren-ground caribou began to close in the NWT in 2010. However, the effects from outfitted sport hunting are still mentioned by knowledge holders in the NWT as a potential impact. The available Indigenous and community knowledge suggests that outfitted sports hunts targeted the most prime bulls in the population, and that this has led to a decline in the quality of the genetics and health in the population (Tłıchq Government 2007b; Sangris 2012).

"Nobody knew where they went or what they did, but they were gone for years. The elder that I talked to thinks that they might have gone to migrate with the other herds. I asked him, 'Why do you think they would have migrated together with the other herds?' He said, the way nature works is that ekwë could be in big numbers, but in some years the breeding bulls are not there. When the breeding bulls are not there, immature bulls will take over. There is more inbreeding, and the herds become weak. The calves are not strong; many don't survive. He said the cows sense that something is wrong, so they leave, and migrate with other herds. Then years later they come back, when they're strong again." (Fred Sangris [N'dilo] in Sangris 2012:78)

Outfitter camps were typically constructed near reliable caribou water crossings or land bridges, places where caribou are known to migrate through. Most of these camps have not been removed nor cleaned up since the closure of outfitted hunting for barren-ground caribou. These unused outfitter camps have not been adequately remediated. A significant amount of old fuel drums and other equipment have been abandoned at some of these sites (Tłıchq Research and Training Institute 2023). Numerous knowledge holders have identified the continued presence of visual and olfactory disturbances associated with these camps as a significant ongoing impact. Similar to mining exploration camps, these outfitter camps cause caribou to avoid the area and potentially change their migration patterns (Tłıchq Research and Training Institute 2016; Tłıchq Research and Training Institute 2023).

"Outfitters are the same thing as a mine, because before the outfitters, the animals loved to use that area, and that country. But since the outfitters have been established, the camps, on all the migration routes area, the caribou start to know that. So they don't go near there or close to it. They go close to it sometime but the outfitters start attacking the caribou, so they are chasing the caribou, and it goes away from there. Because of all these outfitter camps right in front of the caribou, they don't settle down and don't move for a while. But before it wasn't like that. There were no camps, so whatever spot that is good for food they stop and then eat and hang around for a while. Not for a day, but for a week or maybe half a week and then they start moving to next spot. It goes like that. But the [outfitter] camps are there so the caribou can't stop, they have to keep on going going going, until there is an area that's hardly anything happening, no noise no nothing. They stop and hang around a little bit and then start moving again." (Joseph Judas [Wekweèti] in Tłıchq Research and Training Institute 2016:40)

Competitors

As described in *Relationship Within and Among Species*, muskox may be a potential threat to barren-ground caribou. While the potential impact is already occurring and is expected to continue over the next decade, there remains uncertainty about whether muskox will negatively affect caribou. Muskox populations occur locally across the range of barren-ground caribou. The level of severity of the impact is unknown and occurs seasonally as caribou migrate through areas occupied by muskox. The level of concern is uneven, certain areas with more muskox such as the Sahtú, or areas where they have been introduced (Alaska/Yukon north slope), have higher levels of concern, while in other regions the concern exists however it is low (Bathurst Caribou Range Plan 2017; Benson 2019; Sahtú Renewable Resources Board 2020; Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022; Norman Wells RRC and Sahtú Renewable Resources Board 2024).

In addition to muskoxen, colonies of hyperabundant light geese (Snow and Ross's Geese) have been identified by knowledge holders as a potential threat to barren-ground caribou. The potential impact is already occurring and is expected to continue over the next decade, there remains uncertainty about whether large light geese colonies will negatively affect caribou. Light geese colonies occur near the coast in the summer range of barren-ground caribou (notably the Ahaik, and Qamanirjuaq herds). Currently the level of concern is low (Carter *et al.* 2025).

POSITIVE INFLUENCES

Several positive developments are taking place across the range of barren-ground caribou. These include the implementation of community conservation plans, local communities leading conservation efforts, community-based predator management programs, the protected areas and land use planning encompassing barren-ground caribou habitat, the expansion of Indigenous guardianship programs across the NWT, and community initiatives, such as publishing harvest protocols and educating young harvesters. The largest positive influence for protecting the Bathurst caribou is the implementation of the Mobile Core Bathurst Caribou Management Zone (the no-hunting zone), which has been in effect since 2016. The zone is adjusted each week of the year following the movement of the Bathurst caribou collars. Bathurst, Bluenose-East, and Beverly caribou currently have significant overlap on their respective winter ranges. This overlap is leading to the protection of certain Beverly and Bluenose-East animals that are inside the mobile no-hunting zone intended to protect the Bathurst herd (Tłı̨chǫ Government 2025).

The calving grounds of three herds are partially protected from development through their inclusion in various protected areas: portions of the Porcupine herd's range are found in Ivvavik National Park and Vuntut National Park (Yukon), as well as in the Aullaviat/Anguniarvik Traditional Conservation Area, the Old Crow Flats Special Management Area, and in Dàadzàii Vàn Territorial Park (Community of Aklavik et al. 2008; Community of Inuvik et al. 2008; Parks Canada 2016, WMAC [North Slope] 2024).

"Many of today's Elders in Aklavik grew up on the land in and around Aullaviat/Anguniarvik. We learned from our Elders, and over the decades we have seen changes to the land and the wildlife firsthand. We now live in Aklavik, but our time in Aullaviat/Anguniarvik is precious. It allows us to harvest, connect with our ancestors, spend time with family and friends, and to pass on our knowledge to tomorrow's leaders. The Elders in Aklavik are pleased to see that with the establishment of the Aullaviat/Anguniarvik Traditional Conservation Area, our vision for full wilderness protection across the Yukon North Slope is complete." (Lorna Store [Aklavik] in WMAC [North Slope] 2024:11)

The Bluenose-West herd's calving grounds are found in Tukturn Nogait National Park (NWT); while the Queen Maud Gulf Bird Sanctuary encompasses most of the Ahiak and Beverly herds' calving grounds (ACCWM 2014b). A portion of the winter habitat for the Beverly and Qamanirjuaq herd is in the recently established Thaidene Nene National Park Reserve. Land use plan zoning affords some protection to barren-ground caribou herds throughout the NWT through a zoning process that restricts certain types of developments in special management areas. Currently, land use plans are in place in the GSA, the Sahtú, and Tłı̄chǫ regions (Tłı̄chǫ Government 2013; Gwich'in Land Use Planning Board 2018; Sahtú Land Use Planning Board 2023). Land use plans in the Yukon have been approved overlapping the range of Porcupine caribou in the northern Yukon, and the Peel Watershed (North Yukon Planning Commission 2009; Peel Watershed Planning Commission 2019). The Nunavut Land Use Plan is currently in draft form and has not yet been approved (Nunavut Planning Commission 2023).

The implementation of community conservation plans, and voluntary harvest reductions or harvest closures through the implementation of a TAH, and the Mobile Core Bathurst Caribou Management Zone, have had a positive influences on caribou by reducing mortality in an effort to help populations recover (Délı̄nǫ ʔekwé Working Group 2016; Wek'èezhı̄ Renewable Resources Board 2016c; Bathurst Caribou Range Plan 2017; Colville Lake RRC 2019; Łutsël K'é Dene First Nation 2020).

"Kugluktuk Hunters and Trapper association have worked together on the caribou and I am one of the board members for the group. We had made a suggestion to the GN [Government of Nunavut] about how we should handle where the caribou keep their young ones and the HTO we had a motion that passed that there were no hunting in the calving grounds until the young were out of the calving so June, July, August and September." (Jayko Palongayak [Kugluktuk] in Bathurst Caribou Range Plan 2017:12)

"We want to be real partners, and real contributing member of the Joint Management Proposal. That we're doing something that's going to hopefully make a difference. And that's probably the biggest reason that -- that the -- that the leadership decided that rather than be thought of sitting on the sidelines, that we're -- our first action would be zero harvest and -- and decline any ceremonial harvest tags. Masi." (John B Zoe [Behchokò] in Wek'èezhì Renewable Resources Board 2016c:52)

Community conservation plans allow for a collaborative approach in harvest management and have the potential to provide better outcomes than conventional approaches, such as total allowable harvests. Community conservation plans allow for local communities to become central in the assessment of conditions and concerns, as well as part of the decision making process around harvest management (Délìnę ʔekwé Working Group 2016; Colville Lake RRC 2019; Łutsël K'é Dene First Nation 2020).

"Our ancestors have lived in this area for millennia and have relied extensively on caribou long before assertions of European sovereignty or control. Our members continue Denesoline harvesting traditions and practices in modern forms in this area today... For LKDFN, our relationships and responsibilities to the caribou are established in histories and accounts that go back thousands of years. These relationships and responsibilities are the underpinnings of Denesoline law and our traditional management systems." (Łutsël K'é Dene First Nation 2020:8)

These community-led approaches maintain a respect for the rights of Indigenous peoples and, in some regions, are more effective than the implementation of a harvest limit (Sahtú Renewable Resources Board 2023).

"We need a Deline plan, made by the people of Deline. If it comes from government, people will never agree to it. Everyone will support it if it comes from Deline." (Leonard Kenny [Délìnę] in Délìnę ʔekwé Working Group 2016:7)

"Sahtúgot'ìnę (the people of Great Bear Lake) are extremely concerned about news that ʔekwé (caribou) populations are declining. The Sahtúgot'ìnę prophets have said that ʔekwé will remain with us as long as we take good care of them. This means that that we must make wise decisions gogha horíla (when they're in danger). The Délìnę ʔehdzo Got'ìnę (Renewable Resources Council) is working with our community to make changes so that ʔekwé will decide to come back. Following the words of Dene ʔehtséokə (our grandparents), we believe that it is necessary to follow ʔekwé ʔeʔa (caribou law) and not people's law in our action plans. At the present time, our role in ʔekwé stewardship, and the co-management system set up in the land claim, are being challenged. We are determined to take action ourselves, whatever happens, so that ʔekwé will come live with us again. If we strengthen our stewardship practices, we will be better able to work with our co-management partners in conservation. This document is a starting point for discussion about how we can best follow ʔekwé ʔeʔa at this time." (Délìnę ʔekwé Working Group 2016:1)

In addition to community led conservation and planning, certain organisations are undertaking formal predator control programs. Community-based predator management programs are seen as having a positive influence on barren-ground

caribou through increased calf and adult survival, and contribute to the stabilisation of the Bathurst and Bluenose-East herds (Behrens 2024).

Over the last ten years, numerous Indigenous guardianship programs have become established in the NWT. Guardianship programs in the NWT and the Yukon that overlap the range of barren-ground and Porcupine caribou include: Tłı̨ch̨o Ekwò Nàxoèhdee K'è: Boots on the Ground, the Łutsel K'e Ni Hat'ni Dene, Sahtú K'aowe, K'asho Got'ine Guardians in the Sahtú, the Imaryuk Community Monitoring Program, and the Munaqsi program in the Inuvialuit Settlement Region, and the guardian program for Aullaviat/Aguniarvik Traditional Conservation Area (Łutsël K'è Dene First Nation 2020; Advisory Committee for Cooperation on Wildlife Management 2021; Tłı̨ch̨o Research and Training Institute 2023). These guardianship programs have a positive influence on caribou in numerous ways. They help reinforce traditional knowledge and are a way for many community members to connect with the land and their culture, helping to ensure a healthy relationship with caribou (see *Relationship with People*). These programs help ensure that cultural knowledge around caribou is maintained. By spending time interacting with caribou, guardians are able to assess caribou health and habitat conditions. This research and the sharing of knowledge contribute to the protection and health of barren-ground caribou (Tłı̨ch̨o Research and Training Institute 2020; Tłı̨ch̨o Research and Training Institute 2023). Guardianship programs are also able to provide independent monitoring of industrial activities, environmental conditions, and harvest monitoring, which provides indigenous groups a greater influence in caribou and land management.

“The Ekwò Nàxoèhdee K'è program allows the Tłı̨ch̨o Government to independently watch, report and communicate activities that may cause disturbance to the land and wildlife. If the Tłı̨ch̨o guardians had not been on the lake and reported the activities, Diavik’s helicopter would have continued to fly for six weeks in August and September over the Bathurst caribou herd, at a time where they are highly sensitive to disturbance.” (Tłı̨ch̨o Research and Training Institute 2023:46)

In addition to the individual programs, the Caribou Guardians Coalition was established as a collaborative guardian network, where organisations can work together for the conservation and protection of the Bathurst herd (Bathurst Caribou Advisory Committee 2021).

Increasingly communities are publicly releasing harvest protocols as well as conducting education and outreach to youth on proper harvesting methods. Harvest protocols are a positive influence in that they outline how to have respect for the land and caribou. In addition to releasing these protocols, many communities are actively engaged in outreach and education to teach youth how to respectfully hunt caribou. Commonly this includes taking what you need, pursuing and recovering injured animals, not wasting

meat, disposing of bones properly, sharing meat with others, and using alternate sources of meat when caribou are unavailable (Délı́nę ʔekwé Working Group 2016; Łutsël K'é Dene First Nation 2020).

"We don't just go out for nátsezé [hunting] – we go out because we love our Dene néné [land]" (Alfred Taniton [Délı́nę] in Délı́nę ʔekwé Working Group 2016:22)

"Just like to say that times have changed a lot from when we were much more dependent on caribou. Time has come for us to carry out our part of the deal. Caribou took care of us, when we had nothing else, we were totally dependent and that's why most of us are here today. It's an interesting relationship we have with caribou: at the same time as being our loved ones, they are our beautiful food. Now that we know the trouble that the caribou are in is largely our own doing we have to do something to help them back for getting us here today." (Anonymous [North Slave Métis Alliance community] in Thorpe and Barnaby 2016:7)

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Your collective efforts and dedication continue to play a critical role in supporting caribou conservation and stewardship across the North.

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- Jim Elias [Inuvialuit community]
- David Codzi [Colville Lake]
(Sahtú Renewable Resources Board and Délı̨nę Got'ı̨nę Government 2022)
- Daniel Jackson [Fort Good Hope]
- Joseph Judas [Wekweètì]
- Joseph Moosenose [Whatì]
- Lisa McDonald [Norman Wells]
- Louis Zoe [Gamètì]
- Walter Bezha [Délı̨nę]
- Wilbert Kochon [Colville Lake]
(Sangris 2012)
- Fred Sangris [N'dilo]
(Thorpe *et al.* 2001)
- Charlie Keyok [Kitikmeot community]
(Thorpe and Barnaby 2016)
- Anonymous [Athabasca Nuhenéné community]
- Anonymous [Bay Chimo/Bathurst Inlet]
- Anonymous [Łutsel K'e]
- Anonymous [North Slave Métis Alliance community]
- Anonymous [Tłı̨chʔ community]
- Anonymous [Kitikmeot community]
- Simon Qingnaqtuq [Kitikmeot community]
(Tłı̨chʔ Government 2007a) Day 1
- Jimmy Martin [Tłı̨chʔ community]
(Tłı̨chʔ Government 2012)
- Dora Nitsiza [Whatì]
(Tłı̨chʔ Research and Training Institute 2013)
- Albert Boucher [Tłı̨chʔ community]
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- Anonymous [Tłı̨chʔ community]
- Bruce Football [Wekweètì]
- Jimmy Kodzin [Wekweètì]
- Joseph Judas [Wekweètì]

- Joe Dryneck [Wekweèti]
 - Robert Mackenzie [Wekweèti]
 - Roy Judas [Wekweèti]
 - Virginia Lamouelle [Wekweèti]
 - William Quitte [Wekweèti]
- (Tłıchǫ Research and Training Institute 2018)
- John Koadloak [Kugluktuk]
- (Tłıchǫ Research and Training Institute 2023)
- Anonymous [Tłıchǫ community]
 - Louis Zoe [Tłıchǫ community]
 - Joe Zoe [Gamètı]
- (Tłıchǫ Research and Training Institute 2025)
- Joe Zoe [Gamètı]
- (Wek'èezhıı Renewable Resources Board 2010b)
- Phillip Dryneck [Tłıchǫ community]
 - Edward Chocolate [Gamètı]
- (Wek'èezhıı Renewable Resources Board 2010c)
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- (Wek'èezhıı Renewable Resources Board 2010e)
- Sheryl Grieve [North Slave Metis Community] in
- (Wek'èezhıı Renewable Resources Board 2016a)
- John B Zoe [Behchokò]
 - Joseph Judas [Wekweèti]
 - Tony Rabesca [Behchokò]
- (Wek'èezhıı Renewable Resources Board 2016c)
- Joseph Judas [Wekweèti]
 - Joe Rabesca [Behchokò]
- (Wek'èezhıı Renewable Resources Board 2016c)
- Joe Rabesca [Tłıchǫ community]
 - John B Zoe [Behchokò]
- (WMAC [North Slope] and Aklavik HTC 2009)
- Annie B. Gordon [Aklavik]
 - Anonymous [Aklavik]
 - Barbara Allen [Aklavik]
 - Billy Archie [Aklavik]
 - Donald Avuigana [Aklavik]
 - George Selamio [Aklavik]
 - Jack Goose [Aklavik]
 - Jerry Arey [Aklavik]
- (WMAC [North Slope] 2024)
- Lorna Storr [Aklavik]
- (Zoe 2012)
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2027 Update

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John Blyth



John Blyth currently resides in Fort Smith, Northwest Territories, Canada. For the last 13 years, John has operated a multidisciplinary consulting firm, blending environmental education, outdoor professional safety certification, and Indigenous guardianship training. John has been involved in numerous barren-ground caribou initiatives in the NWT including working as a technical writer for the Advisory Committee for Cooperation on Wildlife Management (ACCWM) since 2018, and for the Bathurst Caribou Advisory Committee (BCAC) since 2023, and compiling the species status report for barren-ground and Porcupine caribou in 2017. John has also been involved in delivering training programs for the Tłıchǫ Ekwò Nàxoèhdee K'è, the Imaryuk guardians on the Inuvik to Tuktoyaktuk Highway, the Ni Hadi Xa program, and the Tłıchǫ Caribou Monitoring Program at MacKay Lake, and in numerous communities across the range of barren-ground caribou in the NWT.

Adam Bathe



Adam is wrapping up his MSc in Natural Resources Management, during which he has gained experience in establishing monitoring programs, developed a GIS-based analysis of habitat disturbances, and blended publicly available TK data with his scientific work. Adam has been involved in numerous barren-ground caribou initiatives in the NWT including working as a technical writer for the Advisory Committee for Cooperation on Wildlife Management (ACCWM) since 2018, and for the Bathurst Caribou Advisory Committee (BCAC) since 2022, and compiling the species status report for barren-ground and Porcupine caribou in 2017. Adam has also been involved in delivering training programs for guardians programs in the Sahtú, the Imaryuk guardians on the Inuvik to Tuktoyaktuk Highway, the Ni Hadi Xa program, and in numerous communities across the range of barren-ground caribou in the NWT.

SCIENTIFIC KNOWLEDGE COMPONENT

Names and Classification

Common Name (English):	Barren-ground caribou
Common name (French):	Caribou de la toundra (Canada), renne (France)
Scientific name:	<i>Rangifer tarandus</i> Linnaeus 1758
Population/subpopulation:	Porcupine, Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose West, Bluenose East, Bathurst, Beverly, Ahik, Qamanirjuaq, Wager Bay, and Lorillard
Synonyms:	caribou
Class:	Mammalia
Order:	Artiodactyla
Family:	Cervidae (Deer)
Life form:	Animal, vertebrate, terrestrial mammal, deer, caribou

Systematic/Taxonomic Clarifications

Recent and significant findings in phylogenetic analysis of caribou around the world has resulted in a clear need for major revisions of caribou taxonomy at species and sub-species levels (Harding 2022). Based on this review, caribou under consideration in this report would be called *Rangifer arcticus*. However, as this new classification is still under review (see Mammal Diversity Database 2026), for this report the caribou under investigation will refer to the name *Rangifer tarandus* (Linnaeus 1758) following Mammal Diversity Database (2026).

Caribou from the Mackenzie Delta east to Hudson Bay including Baffin Island were classified as the sub-species *groenlandicus* (Banfield 1961). Within the Northwest Territories (NWT), *R. t. groenlandicus* presents as 10 identifiable subpopulations: Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose West, Bluenose East, Bathurst, Beverly, Ahik, Qamanirjuaq, Wager Bay and Lorillard. These 10 subpopulations are included in COSEWIC's Barren-ground caribou Designatable Unit (DU3) (COSEWIC 2011).

The Porcupine caribou subpopulation, which seasonally crosses into the western NWT from Yukon and Alaska, was classified as an *R. t. granti* "intergrade" between *R. t.*

groenlandicus and the Alaskan sub-species *granti* (Banfield 1961). However, this taxonomy is out-dated, relying primarily on skull characteristics, pelage colour, and antler shape. Reviewing phylogenetic advancements, Harding (2022) considers Porcupine caribou as members of the same sub-species as barren-ground caribou. The Porcupine caribou subpopulation is included in COSEWIC's (2011) Barren-ground caribou DU3, based on genetic and behavioural similarities to the other barren-ground subpopulations in the NWT and Nunavut (NU). However, because the Porcupine subpopulation range is separated from the ranges of the other NWT barren-ground subpopulations by the Mackenzie River valley and delta, it was considered geographically distinct by the NWT Species at Risk Committee (SARC; SARC 2022) and was assessed separately from the other Barren-ground DU subpopulations.

Subpopulation names clarification

Refined definitions of subpopulations since the 1960s and increased knowledge of caribou movements have led to changes in the number of subpopulations identified within the NWT (COSEWIC 2016, Table 8). Barren-ground caribou subpopulations across the NWT (including the area that became NU) were previously defined based on winter distribution until Thomas (1969) recognized subpopulations based on their return to an annual calving ground. As a result, Thomas (1969) reduced the 11 subpopulations recognized by Banfield (1954) to four (Bluenose, Bathurst, Beverly and Qamanirjuaq).

In the early 1980s, four subpopulations were recognized based on calving areas: Melville Peninsula, Wager Bay, Lorillard and Queen Maud Gulf (Calef and Heard 1981; Heard *et al.* 1987). By 1995, caribou "virtually disappeared" from the Melville Peninsula (Buckland *et al.* 2000). Currently, the southern portion of the Melville Peninsula is included in the Wager Bay caribou annual range, and the Queen Maud Gulf subpopulation is referred to as the Ahiak subpopulation (Campbell *et al.* 2012a, 2022).

In 1994, as part of a process for developing a comprehensive co-management plan for the 'Bluenose' caribou subpopulation, an analysis of distribution data from population and telemetry surveys conducted from 1966 to 1993 (Kelsall 1968; Hawley *et al.* 1979; Brackett *et al.* 1982; Latour and Heard 1985; Latour *et al.* 1986) indicated that there were three calving areas in the Cape Bathurst, Melville Hills and Bluenose Lake areas (Nagy *et al.* 2005; Nagy 2009b). Nagy (2009a and b) used a cluster analysis of the locations of satellite-collared females in 1996-2006 to further support the designation of what are now recognized as the Cape Bathurst, Bluenose-West and Bluenose-East subpopulations.

Table 8. Approximate chronology of subpopulation names used for barren-ground caribou found in the Northwest Territories.

Current name	Subpopulation/name chronology																																											
<i>These subpopulations winter in taiga and calve in tundra habitats</i>																																												
Porcupine	Porcupine																																											
Tuktoyaktuk Peninsula ¹																				Tuktoyaktuk Peninsula																								
Cape Bathurst	Bluenose Caribou Subpopulation (1 subpopulation) (two to three calving grounds recognized)													Cape Bathurst																														
Bluenose West														Bluenose West																														
Bluenose East														Bluenose East																														
Bathurst	Bathurst																																											
Beverly ²	Beverly (Inland Calving Area)													??										Beverly (Inland Calving) no longer in use after 2009																				
	??																							Beverly (Queen Maud Gulf Calving Area)																				
Qamanirjuak	Qamanirjuak																																											
<i>These subpopulations winter and calve in tundra habitat</i>																																												
Ahiak		Queen Maud Gulf																												Ahiak														
-	Melville Peninsula ³																																											
Wager Bay	Wager Bay																																											
Lorillard	Lorillard																																											
	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024

¹ The Tuktoyaktuk Peninsula subpopulation was recognized in 2005 after domesticated reindeer had been removed from the Tuktoyaktuk Peninsula.

² Up to the 1994 population estimate, the Beverly subpopulation was defined as calving inland on a calving ground south of Garry Lakes in Nunavut. This calving ground has not been used since 2009. The fate of that Beverly subpopulation is unclear; it either shifted in large numbers to calving in the Queen Maud Gulf lowlands (Nagy *et al.* 2011) or declined to very low numbers and the remnant subpopulation joined a larger subpopulation calving in the Queen Maud Gulf (Adamczewski *et al.* 2015). The Beverly subpopulation defined more recently as calving in the central and eastern Queen Maud Gulf (based on surveys conducted since 2011) may not correspond exactly to the earlier inland-calving Beverly subpopulation.

³ The Melville Peninsula subpopulation was identified in the early 1980s (Calef and Heard 1981, Heard *et al.* 1987) but "virtually disappeared" from the peninsula by 1995 (Buckland *et al.* 2000). The southern portion of the Melville Peninsula is currently included in the Wager Bay subpopulation annual range (Campbell *et al.* 2012a, 2022).

Nagy *et al.* (2011) used NWT and NU data for all satellite-collared caribou (1993-2008) to examine the annual spatial clustering between female barren-ground caribou in mainland Canada. The designation of six subpopulations in the NWT was considered robust and supported the use of definitions based on fidelity to calving grounds (Cape Bathurst, Bluenose-West, Bluenose-East, Bathurst, Beverly [as defined by Nagy *et al.* 2011], Qamanirjuaq) (Nagy *et al.* 2011).

The Tuktoyaktuk Peninsula subpopulation was recognized in 2005 after domesticated reindeer had been removed from the Tuktoyaktuk Peninsula. People had reported seeing caribou there and a survey in September 2005 revealed 3,800 caribou, of which less than a third were reindeer (Branigan 2005; Nagy and Johnson 2006; Davison and Branigan 2011).

Currently, calving grounds of five subpopulations (Beverly, Ahiak, Qamanirjuaq, Wager Bay and Lorillard) are recognized in the eastern barren lands in NWT and NU. However, the fate of the Beverly subpopulation and its relationship to the Ahiak subpopulation are unclear, which reflects changing knowledge, differences in how subpopulations are defined either by calving ground affiliation among females or overall (all seasons) affiliation (Nagy *et al.* 2011), analytical techniques, and changes in caribou abundance and movement.

Until the late-2000s there was general agreement that the Beverly subpopulation calved on an inland calving ground south of Garry Lake, while the Ahiak subpopulation calved along the Queen Maud Gulf coast (Gunn *et al.* 2000; Adamczewski *et al.* 2015, 2020). Surveys conducted in 1994 on the Beverly subpopulation's traditional inland calving ground revealed an estimated 120,000 breeding females (43,100 SE) on the calving ground and an estimated 276,000 adults and yearlings in the subpopulation as a whole (106,000 SE) (Campbell *et al.* 2012a). The subpopulation was not surveyed again until 2002 (Johnson and Mulders 2009) and results from that survey suggested that it had declined. Further surveys took place in 2007, 2008, 2009, and 2010 and suggested an even more rapid decline of breeding females on the traditional inland calving ground (90-100 caribou in June 2010), to the point where densities of breeding females were too low to survey further (Campbell *et al.* 2012a). In 2007-2010, a high (43%) degree of switching (females that move from one subpopulation's annual calving ground to another's) was observed in collared Beverly females that switched from calving on the traditional inland calving ground to the coastal Queen Maud Gulf (Gunn *et al.* 2012). Females in most subpopulations have a low (<5%) annual rate of switching between neighbouring calving grounds (Gunn *et al.* 2012) (see *Movements* for additional information on switching).

Irregular studies and low collar numbers (a satellite collaring program on the Beverly subpopulation wasn't started until 2006) across both the Beverly and Ahiak caribou ranges has hampered a detailed understanding of the factors that may have influenced

the decline and/or calving distribution shift (Campbell *et al.* 2012a; BQCMB 2014). Two interpretations of available data have been suggested.

One interpretation (e.g., Gunn *et al.* 2012; Adamczewski *et al.* 2015) suggests that following the collapse in densities on the traditional inland calving ground, the remnant Beverly subpopulation joined the larger Ahiak subpopulation. This accounts for the calving ground switch shown by the collared females in 2007-2010 (as a behavioural response to maintain the advantages of gregarious calving). By this interpretation, the inland calving Beverly subpopulation is considered to be no longer identifiable.

A second interpretation (e.g., Nagy *et al.* 2011; Nagy and Campbell 2012) suggests that the Beverly subpopulation still exists but occupies the western of two calving grounds along the coastal Queen Maud Gulf, somewhat overlapping with the calving grounds of the Ahiak subpopulation. In this interpretation, some of the Beverly females started calving along the coast prior to the 2002 survey and the subpopulation used both the traditional inland calving ground and the coastal calving ground from the mid-1990s to the late-2000s (Nagy and Campbell 2012). The switch shown by the collared caribou in 2007-2010 is seen as the last of a continued movement that started much earlier. Campbell *et al.* (2012a) stress that other mechanisms (e.g., predation, human disturbance, disease, low productivity, insects, weather, etc.) were probably also at play and the subpopulation did suffer a decline as a result of these factors and moved to the coastal calving ground in order to avoid these influences. However, they contend that this shift in calving distribution likely took place over many years (Nagy *et al.* 2011).

For the purposes of this report, the Beverly subpopulation's annual range is considered to encompass both the traditional inland calving ground and the coastal calving ground, although the traditional inland calving ground has not been used since 2009 (Adamczewski *et al.* 2015). However, the Beverly subpopulation defined more recently as calving in the central and eastern Queen Maud Gulf may not correspond exactly to the earlier inland-calving Beverly subpopulation. Where studies have considered the two calving grounds separately, the terms Beverly North and Beverly South are used to describe those caribou associated with the coastal calving ground and the traditional inland calving ground, respectively.

Description

Barren-ground caribou are a medium-sized cervid (member of the deer family) characterized by migratory and gregarious (social) behaviour. Mature males have a striking white neck and mane, a brown back, and a distinct white and dark band along the flank separating the brown back from the white belly (Figure 12). The legs are dark brown with a white line around the top of the hooves. The head is dark brown and often has a light 'skull cap' and a light-coloured muzzle. The coat of females and juveniles is a

more muted version of the males' colours. Newborn calves are typically ruddy in colour. Wide variation in coat colour from light to dark can often be seen in caribou groups. Both males and females have antlers, and the antlers of mature males can be massive and are shed after the rut. The velvet is dark brown and shed in the fall (Miller 2003). Pregnant females usually keep their antlers until a few days after their calves are born while non-pregnant females shed their antlers in late winter (Whitten 1995; Bergerud *et al.* 2008).



Figure 12. Barren-ground caribou females in winter (left) and male caribou in velvet in late summer (right; photo credits: GNWT/J. Nagy, ENR).

Compared to other deer, caribou have large hooves with dew claws long enough to be weight-bearing. The hooves are flexible and can spread wide enough to reduce sinking into snow or soft ground. The hoof edges are sharp in winter to give a stronger grip on snow and ice. The large hooves also contribute to the strong swimming ability of caribou.

Mature female caribou are about 10-15 % smaller and weigh 10-50% less than adult males and both sexes vary seasonally in body weight; for example, females can weigh 90-135 kilograms (kg) in the fall and lose about 10% of their weight during the winter, although this varies greatly depending on the winter foraging conditions (Boertje 1996; Miller 2003). Over decades, body size varies with density and migration distance (Bergerud *et al.* 2008; Couturier *et al.* 2009a, b), which in turn reflects whether the subpopulation is in an increasing or decreasing phase (Couturier *et al.* 2010).

Barren-ground caribou in the NWT (including the Porcupine subpopulation) are considered to be genetically, behaviourally and morphologically distinct from Dolphin

and Union caribou (*R. t. groenlandicus x pearyi*) and Peary caribou (*R. t. pearyi*), and genetically distinct from boreal woodland caribou (*R. t. caribou*) (McFarlane *et al.* 2016; Committee on the Status of Endangered Wildlife in Canada [COSEWIC] 2011; Harding 2022).

Life Cycle and Reproduction

The reproductive lifespan of caribou is likely about 12 years, with females living as long as 12-16 years, and males for a few years less (Thomas and Kiliaan 1998b). Generation time, used in species assessment, is estimated at 8-9 years based on adult survival and fecundity (Boulanger pers. comm. 2011 in SARC 2017).

Caribou are sexually dimorphic, meaning the sexes differ in body size and display ornamentation (coat and antlers). The breeding system is polygynous (a male mates with more than one female) and it has been assumed that body and antler size largely affect the male's competitive ability to control access to females (Miller 2003). However, at least in reindeer, in addition to large breeding males, smaller (younger males) were also active breeders (Røed *et al.* 2005).

Although observations of rutting behaviour in the NWT are limited, the rut is known to occur in the fall over two-three weeks, within a longer period when the females can have several oestrus cycles of 10-12 days (McEwan and Whitehead 1972; Bergerud 1975; Ropstad 2000). Nonetheless, during the rut, conceptions are highly synchronous. For example, in the Qamanirjuaq subpopulation in 1966 and 1967, 80% of the conceptions were during the first 11 days (19-29 October) of a four- to five-week mating season (Dauphiné and McClure 1974).

With breeding taking place in October (rut), calving follows in June after a gestation averaging 225-235 days (Skoog 1968; Bergerud 1975). The female's body condition determines the age of first pregnancy and the annual likelihood that a female will conceive. Barren-ground caribou usually calve at three years of age, although under high forage availability and a corresponding high rate of body growth, females can calve at two years of age (Thomas and Kiliaan 1998b; Bergerud *et al.* 2008).

Females typically give birth to a single calf; twins are very rare (Thomas and Kiliaan 1998b). The calf can stand within a few minutes of birth and in 2-3 days can keep pace with the maternal female. Lactation depends on the female's protein reserves (Gerhart *et al.* 1996), and the calf's growth rate depends on the female's milk production. Calves that weigh more in September are more likely to survive the following winter (Arthur and Del Vecchio 2009). Calves are typically weaned in the fall but stay with the female during the first winter. Yearlings, especially females, follow the females to the calving ground (Bergerud *et al.* 2008).

Like the rut, calving is highly synchronized with most calves born within a few days of each other. For example, between 1957 and 1994, the peak of calving for the Beverly subpopulation, based on aerial surveys, was determined as a 4–5-day period between 1 and 17 June (Gunn and Sutherland 1997). For the Bathurst subpopulation from 1966 to 1996, the annual peak was five days between 3 and 15 June (Sutherland and Gunn 1996). Based on data from satellite-collared female caribou from 2006 to 2019, the number of days within which 50% of births occurred ranged from 4.25 to 7 for seven subpopulations in NWT and Alaska (Couriot *et al.* 2023).

At the broad scale of the NWT and NU, based on data from satellite-collared females between 1993–2009, Nagy (2011) found that the peak of calving was generally earlier for the western subpopulations than for the subpopulations to the east and north-east (Table 9). Couriot *et al.* (2023) found synchrony in calving date for seven subpopulations, with an overall peak calving date of June 5 and with peak calving for each subpopulation and year occurring within a 3-week window (May 25 – June 16; Table 9). Synchrony was even stronger for females within subpopulations in a given year, suggesting that caribou have adapted calving timing to their local conditions, and neighbouring subpopulations had slightly more synchrony in their calving date than more distant subpopulations (Couriot *et al.* 2023).

Table 9. Mean and median calving dates estimated from satellite-collared female daily movement rates (neither study considered the Porcupine, Tuktoyaktuk Peninsula, Wager Bay or Lorillard subpopulations). Median calving date = the date at which 50% of the births had occurred; SD = standard deviation; SE = standard error.

Subpopulation	Nagy (2011)			Couriot <i>et al.</i> (2023)		
	Mean Calving Date	SE (days)	Sampling Period	Median Calving Date	SD (days)	Sampling Period
Western Arctic (Alaska)	n/a	n/a	n/a	June 3	5	2010–2017
Cape Bathurst	June 4	5	1993–2009	May 30	6	2006–2017
Bluenose–West	June 9	4	1993–2009	June 3	6	2006–2017
Bluenose–East	June 7	4	1993–2009	June 5	6	2009–2019
Bathurst	June 8	4	1993–2009	June 2	5	2009–2019
Beverly	June 13	4	1993–2009	June 9	5	2006–2019
Qamanirjuaq	June 12	4	1993–2009	June 6	5	2013–2019
Ahiak	June 15	4	1993–2009	n/a	n/a	n/a

Timing of peak calving has varied across years for individual subpopulations (Sutherland and Gunn 1996, Gunn and Sutherland 1997, Gunn and Poole 2010, Couriot *et al.* 2023). For example, the peak of calving for the Bathurst subpopulation shifted to four days later (to 8-14 June) between 1999 and 2009 (Gunn and Poole 2010), except for 2005 when the peak of calving averaged about six days later than normal. A shift to earlier calving (5-6/7 June) was recorded in 2010-2012 (Croft pers. comm. 2016 *in* SARC 2017). For the Bluenose-West subpopulation, between 2001 and 2005, the peak of calving based on aerial surveys was 15-26 June, and at this time calves were either a few days or a week old based on their appearance (Theberge and Nagy 2001; Nagy and Johnson 2007b), which suggested late rut, late calving compared to Nagy's (2011) average of June 9 (Table 9), and possibly females in poor condition. Couriot *et al.* (2023) found that timing of peak calving was variable across years and across subpopulations, but no significant trend of earlier calving in more recent years was detected. Weather conditions that most influenced calving date differed among subpopulations, including how strong the effects were and whether they were positive, negative or neutral (Couriot *et al.* 2023). For Qamanirjuaq caribou, using a longer collared caribou dataset from 2004 to 2016, Mallory *et al.* (2020) found that the date of peak calving was 9.42 days earlier in 2016 (~ June 9) than in 2004 (~ June 18)⁵, and corresponded to a 7.25-day earlier spring green-up over that period. Earlier peak calving occurred in years with less snow on the calving area and along the migratory route (Mallory *et al.* 2020).

For Porcupine caribou, based on when at least half of the female collared caribou are seen with a calf during aerial surveys, calving date has varied over time, but has not shifted significantly, with a median calving date from 1983 to 1996 of June 1 (Griffith *et al.* 2002), and a mean calving date from 1999 to 2024 of June 2 (PCTC 2024). In 2025, the peak of calving could not be determined because fewer than half of the female collared caribou were seen with a calf during the last survey on June 3 (PCTC 2026). Consequently, the peak of calving that year occurred after June 3 (PCTC 2026).

Calf production and recruitment are discussed in *Population Dynamics - Trends and Fluctuations*.

Adult sex ratios from fall composition surveys conducted on NWT barren-ground caribou subpopulations between 1978 and 2023 generally exceeded 40 males/100 females (Table 10). The lowest values were for surveys conducted on the Bluenose East subpopulation between 2009 and 2019, and on the Bathurst subpopulation between 2004 and 2008 and in 2019. The fall composition survey for the Tuktoyaktuk Peninsula and Cape Bathurst subpopulations was conducted near the end of the rut, and results

⁵ Peak calving inferred from Mallory *et al.* (2020) Figure 3.

from that survey may have underestimated the male:female ratio (ACCWM 2017a,b). For Bathurst caribou, the most recent fall male:female ratios from 2022 to 2025 were very high, potentially a result of more adult females emigrating from the subpopulation than males (Adamczewski *et al.* 2024a,b).

Table 10. Ratios of males/100 females from fall composition surveys conducted on NWT barren-ground caribou subpopulations, 1978-2023.

Subpopulation	Year	Males/100 females	95% Confidence Interval	Source
Porcupine ¹	1980	60	N/A	PCTC (2011)
	2010	57	N/A	PCTC (2011)
	2012	47	N/A	Caikoski (2020)
Tuktoyaktuk Peninsula + Cape Bathurst	2015 ²	43	34-52	ACCWM (2017a)
Bluenose West	2009	69.8	N/A	Adamczewski <i>et al.</i> (2020)
Bluenose East	2009	42.9	39.6-46.3	Adamczewski <i>et al.</i> (2014)
	2013	42.6	38.9-46.1	Boulanger <i>et al.</i> (2014)
	2015	41.7	36.7-47.9	Boulanger <i>et al.</i> (2019)
	2016	37.2	32.8-41.3	BGC-TWG (2020)
	2017	43.7	31.7-59.0	BGC-TWG (2020)
	2018	38.0	33.2-43.7	Boulanger <i>et al.</i> (2019)
	2019	35.3	30.9-40.8	BGC-TWG (2020)
	2020	63.3	50.0-79.0	Adamczewski <i>et al.</i> (2022)
	2021	68.7	61.3-77.4	Adamczewski <i>et al.</i> (2022)
	2022	64.8	57.3-72.7	Adamczewski <i>et al.</i> (2024a)
	2023	58.2	53.1-64.6	Adamczewski <i>et al.</i> (2024b)
	2024	62.1	55.6-68.3	Adamczewski <i>et al.</i> (in prep.)
	2025	38	33-43	ACCWM (2026)
Bathurst	2000	53	45-63	Gunn <i>et al.</i> (2005)
	2001	63	50-78	Gunn <i>et al.</i> (2005)
	2004 ³	37	31-43	Gunn <i>et al.</i> (2005)
	2006	36.2	32.3-40.4	BGC-TWG (2020)
	2007	30.5	27.5-33.7	BGC-TWG (2020)
	2008	38.3	33.4-43.5	Boulanger <i>et al.</i> (2014)
	2011	58.5	52.6-65.1	Boulanger <i>et al.</i> (2014)
	2012	56.7	50.5-64.0	Boulanger <i>et al.</i> (2014)
	2014	49.0	44.4-54.0	Boulanger <i>et al.</i> (2017)
	2017	59.2	50.1-67.8	Adamczewski <i>et al.</i> (2019)
	2018	46.1	43.1-59.0	BGC-TWG (2020)
	2019	34.7	26.5-43.2	BGC-TWG (2020)
	2020	64.1	49.9-79.6	Adamczewski <i>et al.</i> (2022)
	2022	105.6	92.4-122.0	Adamczewski <i>et al.</i> (2024a)
	2023	110.1	91.7-129.6	Adamczewski <i>et al.</i> (2024b)
	2024	91.0	84.0-112.0	Adamczewski <i>et al.</i> (in prep.)

Subpopulation	Year	Males/100 females	95% Confidence Interval	Source
	2025	99.0	N/A	GNWT unpublished data
Beverly	1978 ⁴	71.2	N/A	Gunn (1984)
	1980 ⁴	77.6	N/A	Gunn (1984)
	1981 ⁴	57.4	N/A	Gunn (1984)
	1982 ⁴	60.7	N/A	Gunn (1984)
	2009	53.8	47.8-61.6	BGC-TWG (2020)
	2011	69.1	64.6-74.1	BGC-TWG (2020)
	2022	62.8	55.0-71.4	Adamczewski <i>et al.</i> (2024a)
	2025	76	N/A	GNWT unpublished data
Qamanirjuaq	2008	57.4	N/A	Campbell <i>et al.</i> (2010)
	2016	61.6	56.6-66.4	Boulanger <i>et al.</i> (2018)
Ahiak	2009	53.8	N/A	Adamczewski <i>et al.</i> (2020)

¹ A survey was also conducted in 2009, but confidence in the estimate was low (PCTC 2011)

² Survey conducted close to the end of the rut so may have underestimated the males/100 females ratio

³ Surveys were also conducted in 2000 (53 males/100 females) and 2001 (63 males/100 females) but it was believed that the samples were not representative of the subpopulation as the caribou were rapidly migrating (SARC 2017)

⁴ May not be representative of what is currently considered the Beverly subpopulation (see *Subpopulation names clarification*)

Physiology and Adaptability

The physiology and adaptability of barren-ground caribou in the NWT has not been specifically studied. However, Alaskan and Norwegian reindeer have been well-studied for their ability to conserve heat and moisture while being active during long and cold winters (Blix *et al.* 2011) and for their nutritional ecology (White 1983; Gerhart *et al.* 1996; Chan-McLeod *et al.* 1999; Russell and White 2000).

Adaptations by caribou to long cold winters include their dense coat, which consists of hollow guard hairs and an under-fur of thin woolen hairs with an average of 2,000 hairs/centimetre (cm)² (12 millimetres [mm] long) on the legs and 1,700 hairs/cm² (30 mm long) on the back (Timisjarvi *et al.* 1984). Caribou also have intricately developed scrolled nasal bones, which provide a large surface area over which the animal breathes and which then provides a large surface to warm and moisten incoming air (Dieterich and Morton 1990). Physiological adaptations are supported by behavioural traits that save energy and minimize the gain of metabolic heat. For example, the energetic cost associated with walking through deep snow (Fancy and White 1985) is reduced by caribou following in each other's tracks.

Caribou are susceptible to heat stress and need to avoid over-heating during hot days or excess movements. When they run or move through deep snow and build up body heat, they can resort to open mouth panting, which forces air flow over their thick tongue

with its plentiful blood supply (Miller 2003). If body heat continues to build up, the animal has a complicated arrangement of veins and arteries in the head, which selectively keeps the brain cool (Blix *et al.* 2011). The legs play an important role in radiant heat loss, especially during heat stress, and in convective heat loss, especially during exercise (Folkow and Mercer 1986). In summer, caribou will seek remnant snow beds or stand in water, which likely is an attempt to keep cool and avoid insects (Bergerud *et al.* 2008). At higher temperatures, caribou and reindeer become less active and graze less during the hottest part of the day, likely to minimize producing heat while being active, and/or to reduce food intake to reduce heat load from rumination (Thompson and Barboza 2014; Trondrud *et al.* 2023; Stoessel *et al.* 2026; see Threats - Climate Change for impacts of heat stress). Responses to high temperatures also include increased subcutaneous body temperature, reduced heart rate, and increased activity later in the day during cooler temperatures, although the latter may not be sufficient to offset potential reduced forage intake during the periods of low activity, and likely contributes to reduced body mass in the fall (Trondrud *et al.* 2023).

Caribou muscles are well-adapted to both speed and endurance as the muscles have microscopic fibre types that have a high proportion of fast-contracting fibres as well as a high oxidative and high glycolytic capacity (Essén-Gustavsson and Reh binder 1985). Caribou also have relatively large hearts for their body size (Dauphiné 1976), which contributes to speed and endurance. Their large hooves with sharp edges contribute to reduced sinking in snow or soft ground, increased grip on snow and ice, and their strong swimming ability. Their hollow hair also keeps them buoyant while swimming.

Caribou are adapted to a long season without plant growth and low forage quality. Low temperatures, wind chill and snow impose high energetic costs, which are met by mobilizing body reserves of fat and protein. They can seasonally metabolize 26–42% of their body protein, mostly from muscles (Gerhart *et al.* 1996; Chan-McLeod *et al.* 1999) in addition to 90% or more of their fat reserves (Adamczewski *et al.* 1993). As well as breaking down protein for energy, females allocate protein reserves to fetal growth, lactation and their own survival needs (Barboza and Parker 2008). While caribou adapt to these conditions by reducing their maintenance energy requirements, they also select a diet to minimize loss of body mass.

Caribou, unlike most wildlife, have the unique ability to use lichen as an important food resource because they have rumen microflora that can ferment it (Aagnes *et al.* 1995). Lichens are a characteristic feature of the taiga, forming extensive and abundant mats, which enable caribou to forage efficiently on them. They are high in digestible carbohydrates (Svihus and Holand 2000) but are very low in protein and minerals. Protein and mineral intake is particularly important during late winter, especially for pregnant females (Parker *et al.* 2005). Caribou can offset the low protein content of lichens by

recycling nitrogen and selecting vascular plants higher in protein (Parker *et al.* 2005). A mixed diet of lichen and vascular plants with higher protein levels also stimulates digestion of lichen (Aagnes *et al.* 1995).

The digestive physiology of caribou reveals other adaptations. During the brief annual pulse of plant growth in spring and summer, by selectively foraging on the high protein flower buds of cotton-grass, caribou can selectively digest the protein to “multiply” its effect on growth and reproduction (White 1983; Cebrian *et al.* 2008).

Caribou senses also play an important role in how they interact with their environment. For example, reindeer eyes adapt to extreme changes in light conditions from extended darkness in winter to extended daylight in summer through changes in the wavelength reflection from the tapetum lucidum (a reflective layer located behind the retina; Stokken *et al.* 2013; Fosbury and Jeffery 2022). During summer, the colour is golden with more light reflected out of the eye. In winter the colour is deep blue with less light reflected and may be an adaptation to detect predators during long periods of darkness (Stokken *et al.* 2013). Reindeer can hear sounds at frequencies at least as low as 30 Hz, and therefore may be more sensitive to activities such as seismic exploration, than previously thought (Perra *et al.* 2022).

Unlike other members of the deer family, female caribou grow antlers. Presence of antlers on females likely evolved in response to competition for access to feeding craters during winter. In group situations, a caribou can be displaced from a feeding crater that it dug, by another caribou. At winter feeding sites in Quebec, female caribou with antlers were successful in almost all their interactions at feeding craters with males that had shed their antlers, even though the males were larger in body size (Barrette and Vandal 1986).

As is typical of long-lived species, caribou adaptability depends on trade-offs between reproduction and survival (Gaillard *et al.* 1998, 2000). Females can safeguard their own survival in years of restricted forage access either by not becoming pregnant or weaning their calf prematurely (Russell and White 2000).

Caribou behaviour is relatively plastic. Their ability to make long distance movements are the core of their adaptive abilities relative to environmental variations (Bergerud *et al.* 2008) (see *Movements*). A consequence of this adaptive behaviour is that barren-ground caribou need extensive annual ranges for survival (Bergerud *et al.* 2008).

Caribou can learn to adapt to human activities (Haskell and Ballard 2008) although little is known about how to facilitate that adaptation. More typically, caribou responses to humans are similar to their responses to predators (ranging from being alert to displacement and avoidance) (Stankowich 2008).

Interactions

Forage/Vegetation

Most of the winter diet of barren-ground caribou, and even some of the summer and fall diet, consists of lichen, but caribou are not dependent solely on lichens (Russell *et al.* 1993; Thomas 1998; Bergerud *et al.* 2008). Barren-ground caribou also feed on a variety of plants (shrubs, forbs, grasses and sedges, and mushrooms) (Russell *et al.* 1993; Bergerud *et al.* 2008). Although caribou are not dependent on lichens, the large amount of lichen forage on the winter range likely contribute to the periodic high numbers of barren-ground caribou and their widespread distribution (Kelsall 1968).

Lichens, the primary winter food source of caribou, are poor growth competitors against vascular plants and mosses, and are most abundant on sites where growing conditions for other plants and mosses are poor (Johnson 1978). Cornilissen *et al.* (2001) suggest that the negative relationship between vascular plants and terrestrial lichen abundance is due to shading. Lichens are also slow growing (Scotter 1963) and Cladina lichens, the preferred caribou terrestrial forage lichen, often does not become abundant following fire disturbance until 30-80 years post-disturbance (Ahti 1977). In the Taiga Plains in the NWT, terrestrial lichen recovery for caribou forage is predicted to take 50-100 years following fire and depends on stand type (Greuel *et al.* 2021). Impacts of climate change on terrestrial lichens and other vegetation are discussed in *Threats - Climate change*.

High densities of caribou can affect vegetation (Manseau *et al.* 1996; Bergerud *et al.* 2008; Zamin and Grogan 2013) through trampling, the removal of plant material and fertilizing effects of caribou fecal pellets and urine.

Barren-ground caribou

Many interactions are intraspecific, owing to the gregarious behaviour exhibited by barren-ground caribou that contributes to their survival. However, there are costs of gregariousness, including competition for forage, increased risk of some parasites and disease, and increased vulnerability to some threats.

For Bluenose East, Bathurst and Beverly subpopulations, from 2006 to 2021, encounters between individual caribou within each subpopulation peaked during 1) mid-April likely corresponding to staging prior to the start of spring migration, 2) early July likely corresponding to insect harassment season, and 3) mid-October corresponding to rut and fall migration (Gurarie *et al.* 2024a). Overlap between those subpopulations occurred during winter (October to early May) although the degree of overlap varied among years (Gurarie *et al.* 2024a; see *Distribution Trends - Trends in winter distribution*).

One advantage of gregariousness is social learning. In Alaska, between 2012 and 2020, migratory caribou in the Western Arctic Herd shifted their winter range by 500 km, likely due to collective memory of poor winter conditions (Gurarie *et al.* 2024b).

Interactions with other herbivores

Barren-ground caribou share their ranges with other mammalian and avian herbivores, but assessment of these interactions in the NWT has been largely drawn from experience elsewhere as they have not been studied in detail. The interactions can include overlapping diet and habitat, shared predators and possible interactions through parasites and diseases.

The approximately four-year (lemmings and voles) and 10-year (snowshoe hares) cycles of small-bodied herbivores and their predators mean that over time, pulses of biomass and energy pass through the tundra and taiga. Sometimes these different length cycles will be synchronized by climate (Sinclair *et al.* 1993). In the NWT and broader circumpolar region, lemming populations have undergone alternating periods of cyclic and non-cyclic fluctuations over the past four decades (Gauthier *et al.* 2024). When lemmings and voles peak they can reach 200-300 individuals/hectare (ha) and remove 50-70% of the annual growth of tundra plants, however, potassium, phosphorus and nitrogen excreted in lemming urine promotes vascular plant growth (Kryazhimskii and Danilov 2000). Conversely, impacts on vegetation is negligible during periods of low density. In a long-term study where lemmings (herbivores) were excluded from vegetation plots over more than 60 years, the vegetative response varied among land-cover classes (dry, moist, and wet tundra), but in lemming excluded plots, lichen abundance (dominated by *Cetraria* sp. and *Peltigera* sp.) was greater in exclosures compared to control plots (Ucello *et al.* 2025).

Geese (e.g., *Chen* spp.) colonies and flocks of ptarmigan (*Lagopus* spp.) may contribute to pulses of forage removal as they periodically reach high numbers on barren-ground caribou summer and winter ranges, respectively. Concentrations of geese resulted in decreased vegetation cover, species richness, and diversity of vegetation inland from the Queen Maud Gulf coast (Alisauskas *et al.* 2006). Ptarmigans follow caribou to feed on plants exposed when caribou dig craters through the snow (Pedersen *et al.* 2006) and their numbers periodically peak, but the effect of their foraging, especially on dwarf birch and willow is uncertain (Syroechkovskii 1995).

Barren-ground caribou have overlapping distribution with three large-bodied herbivores: moose (*Alces alces*), muskoxen (*Ovibos moschatus*), and boreal woodland caribou.

Muskox distribution has increased in the NWT, with muskoxen re-occupying large parts of their historic ranges. Most overlap is of relatively low densities of muskoxen on the

tundra. Muskoxen distribution has recently expanded along the tree-line and spread south of the tree-line in the south-eastern NWT (Gunn *et al.* 2024), east towards Hudson Bay, and south past the tree-line within the Kivalliq region of NU (Campbell *et al.* 2012b). Muskoxen have been reported as far south as northern areas in Alberta, Saskatchewan and Manitoba (CBC 2014; Adamczewski pers. comm. 2013b in SARC 2017; Larter pers. comm. 2026). Studies describing the relationship between caribou and muskoxen have focused on habitat use and diet on the Arctic islands (e.g., Thomas *et al.* 1999; Larter *et al.* 2002). Within the taiga, habitat relationships are unknown and other effects such as overlap in diet (especially grasses and sedges), displacement, supporting predation, or shared parasites and diseases have not been studied. Caribou and muskoxen harbour similar parasites, such as tapeworms and muscle worms, but interspecific parasite relationships are uncertain (Kutz *et al.* 2012; Elkin pers. comm. 2012 in SARC 2017).

A large part of the distribution of boreal woodland caribou overlaps the winter ranges of barren-ground caribou, especially the Bluenose-West and Bluenose-East subpopulations (Gunn *et al.* 2004). Nagy (2011) found that approximately 41% of the range of boreal caribou overlaps the cumulative winter range of barren-ground caribou; however, recent declines in barren-ground caribou numbers and contraction of ranges in a northeast direction suggests that the current distribution may be much lower with much less overlap. Boreal and barren-ground caribou have likely co-existed for millennia on the winter range, and boreal caribou densities are almost universally low. Nagy *et al.* (2003) found at least one barren-ground caribou in a group of boreal caribou, suggesting that they may occur in mixed groups where they overlap on barren-ground caribou winter range.

Moose densities in the NWT are low (1-7 moose/100 km²; ECC 2023). Their distribution overlaps barren-ground caribou distribution mostly in the taiga and to a lesser extent on the tundra. Moose tend to use early successional habitat in the taiga, such as after forest fires, and along streams and rivers where they feed on shrubs, sedges and grasses. Although moose appear to be increasing in abundance on the open tundra based on caribou surveys over the last 20 years (Adamczewski pers. comm. 2026), overall moose densities on the tundra are still very low. Moose and caribou also share some of the same species of parasites, which have wolves as the final host (*Taenia hydatigena*, *T. krabbei*, *Echinococcus granulosus*) (Rausch 2003; Elkin pers. comm. 2012 in SARC 2017).

On frozen lakes, caribou are attracted to muskrat (*Ondatra zibethicus*) pushups (Kelsall 1970). Although the significance for the muskrats is unknown, the caribou likely benefit from the frozen green roots and stems of cattails, sedges, and grasses, which have high levels of protein (Klein 1990).

Predators

Predators are a significant component of caribou ecology, affecting survival and reproduction, which in turn contribute to changes in abundance. Caribou can be thought of as living in a 'landscape of fear' (Laundré *et al.* 2010), which is to say that many of their movements and habitat selection choices are a consequence of minimizing their risk of exposure to wolves and grizzly bears (*Ursus arctos*), and less often wolverine (*Gulo gulo*) and lynx (*Lynx canadensis*) (Bergerud *et al.* 2008). An array of predators and scavengers depend on barren-ground caribou. The role of predation in caribou population dynamics probably differs among subpopulations and likely has a greater impact during declines and the phase of low numbers (constant mortality would have a greater effect at lower population levels). Grizzly bears may have a greater impact on newborn caribou on calving grounds (Reynolds and Garner 1987; Adams *et al.* 1995), but wolves are effective predators of all sex and age classes of caribou throughout the year (Miller 2003; Bergerud *et al.* 2008).

The vulnerability of barren-ground caribou to predation varies with environmental conditions and seasonal distribution. When caribou congregate, especially on the calving grounds, newborn calves are particularly vulnerable. On the Qamanirjuaq and Beverly subpopulations' calving grounds, examination of calf carcasses was used to describe predation rates (Miller and Broughton 1974; Miller *et al.* 1985, 1988). On the Beverly subpopulation's calving ground, 154 of 287 carcasses of caribou calves were killed by wolves in June 1981-83 and most (72.1%) were less than four days old at death (Miller *et al.* 1985, 1988). Between 2010 and 2013, the average calf mortality rate during the first week of life was estimated at approximated 2% and 6% on the Qamanirjuaq and Beverly calving grounds respectively (Szor *et al.* 2014). Calf mortalities due to predation were higher for the Beverly subpopulation (54%) than for the Qamanirjuaq subpopulation (25%; Szor *et al.* 2014). Although two mortalities were attributed to grizzly bears and one to a golden eagle (*Aquila chrysaetos*), most of the predation mortalities for which the predator was identified were due to wolf predation (34 mortalities). Most non-predator calf mortalities showed signs of stillbirth or neonatal abandonment (Szor *et al.* 2014). Due to the proximity of several Inuit communities to the spring migratory route of the Qamanirjuaq subpopulation, high numbers of wolves are harvested most springs, whereas the spring migratory route of the Beverly subpopulation is more remote and fewer wolves are harvested (Szor *et al.* 2014).

On the Porcupine calving grounds, calves located within large groups of females and calves were less vulnerable to predation than those on the periphery (Griffith *et al.* 2002). The preferred coastal calving grounds of the Porcupine subpopulation had fewer predators than areas further south (Russell and McNeil 2005), and it is likely that a key reason for the late-winter migration of barren-ground caribou to remote northern calving grounds is to reduce exposure to predators (Heard *et al.* 1996).

There is little recent information on predation rates on barren-ground caribou in the NWT and NU. During the late 1980s, radio-collared wolves were tracked in the Bluenose-West range to measure caribou kill rates in late winter and summer. The kill rate for two packs of six and seven wolves in April 1992 was almost a caribou killed every two days (Clarkson and Liepins 1992). Earlier studies in the Yukon suggested that wolves will kill caribou at the rate of just under a caribou every 10 days per wolf (Hayes and Russell 2000).

There are few recent estimates of wolf numbers on barren-ground caribou ranges based on surveys conducted specifically for wolves (Table 11). Klaczek *et al.* (2016) used mean pack size and mean den density from aerial den surveys conducted from 1996 to 2012 to estimate wolf density and numbers on the Bathurst caribou summer range. They found a relatively strong numerical response by wolves to the declining Bathurst caribou subpopulation with mean wolf densities decreasing from 7 wolves/1000 km² to 2.5 wolves/1,000 km² when caribou numbers declined from 300,000 - 349,000 (1996-2000) to 32,000 - 35,000 during (2009-2012; Klaczek *et al.* 2016). Although precision of the estimates from the 2006 stratified random survey and 2021 geospatial survey is low, the estimates suggest that wolf numbers were relatively low on the Bathurst caribou winter range those years (Mattson *et al.* 2009; Clark *et al.* 2024).

Table 11. Estimated wolf densities and numbers on the Bathurst caribou range in the NWT based on aerial surveys for wolves.

Sub-population	Study area	Method	Year/Period	Wolf Density (#/1000 km ²)	Wolf Population Estimate ¹	Source
Bathurst	Summer Range (Caribou)	Den surveys	1996-2000	7.0	497	Klaczek <i>et al.</i> 2016
			2002-2006	4.2	295	
			2008-2012	2.5	177	
	Winter range (Caribou)	Stratified random survey	2006	-	211 (163-259)	Mattson <i>et al.</i> 2009
	Winter range (Caribou)	Geospatial survey	2021	2	89 (31-147)	Clark <i>et al.</i> 2024

¹ Numbers in brackets are 95% confidence intervals.

In addition to wolf abundance surveys, indices that have been used to assess wolf population trends include wolf sightings during aerial surveys for other wildlife, number of adult wolves seen at den sites, number of pups/pack and active den sites in late summer, and ungulate biomass indices (Heard *et al.* 1996, Klaczek *et al.* 2016, WFATWG 2017, Nishi *et al.* 2024). Incidental observations may only provide a very rough index of predator numbers; however, accurate counts of wolves would require intensive survey flying (Serrouya *et al.* 2015) and much higher coverage than caribou surveys generally provide.

Heard (1992) observed an average of eight wolves/100 hours flying in the Queen Maud Gulf area during the 1980s, which is lower than the 24-33 wolves/100 hours observed during surveys of the Ahiak subpopulation in 2007 and 2008 (Poole *et al.* 2014). Williams (1995) observed 25 wolves and eight bears/100 hours flying the Beverly calving ground in 1993 and 54 wolves and 12 bears/100 hours in 1994. This is higher than observed in 1987 and 1988, when 13 wolves and 1.7 bears/100 hours and no wolves and 1.9 bears/100 hours flying were seen, respectively (Heard and Jackson 1990).

In 2007 and 2008, the major calving grounds in the NWT and NU were flown at about the same time. Poole *et al.* (2014) summarized sightings of bears and wolves on eight calving grounds from 2007 and 2008. In general, proportionately higher densities of wolves were observed in more eastern subpopulations, with higher densities of grizzly bears in more western subpopulations. This is supported by the numbers of grizzly bears mapped on the Cape Bathurst and Bluenose-West calving grounds during 2000-04 (Theberge and Nagy 2001; Nagy and Johnson 2007a and b). More recently, DNA hair-snagging methods also suggest an increasing trend in grizzly bear density from east to west with densities of 8.6 grizzly bears/1000 km² (95% CI = 7.7-9.2 bears/1000 km²) in the Inuvik-Tuktoyaktuk area in the NWT in 2019-2020 (Boulanger and D'Eon-Eggertson 2024), 6.13 grizzly bears/1000 km² (95% CI = 5.19-7.07 bears/1000 km²) in the western Kitikmeot Region of Nunavut in 2021-2023 (Awan *et al.* 2025), and 3.54 grizzly bears/1000 km² (95% CI = 2.06-6.08 bears/1000 km²) in the Kivalliq Region of Nunavut in 2016-2017 (GN 2017c; Awan *et al.* 2018).

Wolf sightings recorded during late winter aerial surveys for the Bathurst subpopulation between 1987 and 2016, and for the Bluenose East subpopulation between 2009 and 2016 suggest no trend in wolf sightings or mean pack size (Williams and Fournier 1996; Gunn 2013; Croft pers. comm. 2012 in SARC 2017; D. Cluff pers. comm. in WFATWG 2017), despite both subpopulations declining during those periods. Although changes in the abundance of a predator relative to its prey will have time lags, exactly how and when predator abundance responds to changes in caribou abundance is uncertain since alternative prey availability will have an influence. Wolf sightings during strip-transect surveys for caribou on the Bathurst and Bluenose East caribou winter ranges in late winter 2020 suggested that wolf densities were relatively higher on the Bluenose East winter range than on the Bathurst winter range, corresponding to higher densities of caribou on the Bluenose East winter range (Nishi *et al.* 2024).

Aerial wolf den surveys were conducted from 1996 to 2012, and in 2023 and 2024 on a portion of the Bathurst caribou summer range, to estimate occupancy of wolf dens, pack size and pup survival. The technique samples 10 km x 10 km grid cells with the flight path visiting previously known den sites and searching eskers and esker-like habitat for new dens. Surveys are conducted when visibility is good, daytime temperatures are cool, and

at a time of day when wolves are likely resting outside the den, most notably before biting insects arrive. Repeated surveys are critical to model detection probability, but unfortunately have been lacking. Limited repeated visits to some den sites have permitted a crude assessment of detection probability.

The number of occupied wolf dens observed/1,000 km flown fluctuated during surveys conducted from 1996 to 2012 but exhibited an overall decrease (WFATWG 2017). When surveys began, flight paths typically went from one active den site to another, with little search for new dens. Although skewed because of reduced search time, during the late 1990s and early 2000s, up to about 11 wolf dens/1,000 km flown was observed. From 2006–12, annual estimates ranged from 3.55–5.78 wolf dens/1,000 km flown (mean = 4.63; WFATWG 2017). Caribou abundance declined from 1996–2012 and has declined further since then. Virtually all adjacent active wolf dens observed from 1996 to 2006 were at least 15 km apart (Cluff pers. comm. 2015 in SARC 2017), with this distance between dens possibly increasing as the barren-ground caribou population has decreased (Klaczek *et al.* 2015).

The number of active den sites observed during pup counts on the Bathurst summer range decreased between May/June (during birthing of pups) and mid- to late-August (late summer) from 1996 to 2012 (Klaczek *et al.* 2016). The proportion of active dens in May/June that were still active in late summer decreased from 53% in the first 11 years (1996–2006), to 9% in the last six years (2007–2012; Klaczek *et al.* 2016). The number of active den sites in late summer fluctuated between seven and 17 from 1996 to 2006, and decreased to between one and three dens from 2007 to 2012 (Figure 13, Klaczek *et al.* 2016). Based on GPS-collared wolves and repeated aerial and ground-based surveys in 2013 and 2014, litter loss accounted for almost half of den abandonments detected (Klaczek *et al.* 2016). Wolf pup recruitment (mean number of pups/pack in late summer) also declined from 1995 to 2012 and remained low in 2013–2014 (Figure 13, Klaczek *et al.* 2016).

High den abandonment and low pup recruitment were correlated with the contraction of the distribution of the Bathurst caribou subpopulation during late summer toward the calving ground (Klaczek *et al.* 2016). Klaczek *et al.* (2015) demonstrated that, contrary to what would be expected, wolves do not show a behavioural or adaptive response to contractions in Bathurst summer range, continuing to select den sites in esker-rich areas, despite the large distance between the dens and prey base. Reduced access to prey during this key pup growth period can adversely impact pup survival and population growth among wolves (Klaczek *et al.* 2015).

The number of adult wolves sighted at dens on the tundra summer range of the Bathurst subpopulation from 1996–2012 had fluctuated widely (Figure 13) but suggested a declining trend. Following a gap in data collection from 2013 to 2022, surveys conducted

in 2023 and 2024 suggest that average pups/den and number of dens active in August has remained low (Wilson *et al.* 2023, 2024).

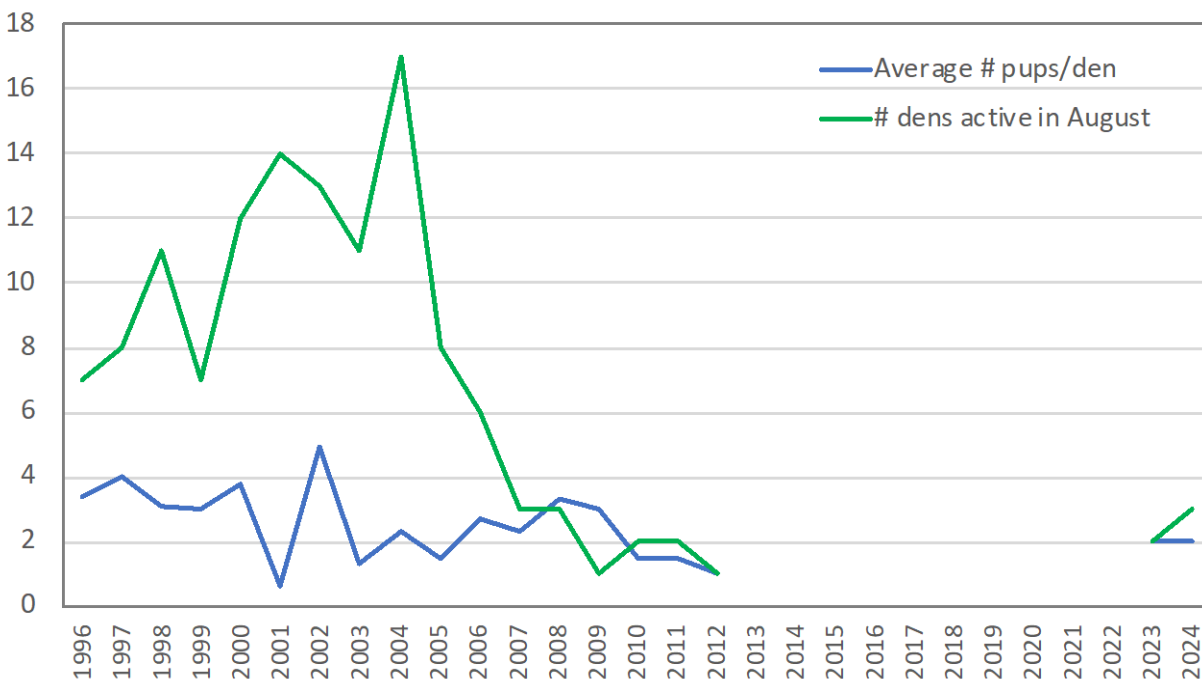


Figure 13. Average number of pups/den and number of dens active in August on the Bathurst caribou summer range (1996–2024) (Klaczek *et al.* 2016; Wilson *et al.* 2023, 2024).

Due to the lack of reliable information on absolute wolf abundance on the winter ranges of the Bathurst and Bluenose East caribou winter ranges, Nishi *et al.* (2024) used an Ungulate Biomass Index (UBI) to derive wolf abundance estimates for wolf removal target levels. Wolf abundance estimates were calculated based on caribou abundance estimates from population surveys conducted in 2018, and caribou population estimates projected to March 2020. The resulting wolf population estimates on the Bathurst and Bluenose East winter ranges in March 2020 were 49 wolves and 121 wolves respectively, and were much lower than the 992 wolves estimated on the winter range of the larger Beverly subpopulation (Table 12; Nishi *et al.* 2024).

Information on wolves, based on indices of predator abundance and diet, is available; however, there is less information on grizzly bear predation. Grizzly bear diets can consist of 10–93% caribou, depending on the season, with the highest occurrence during spring and fall when encounter rates were higher (Gau *et al.* 2002). Except for populations that eat salmon, grizzly bear populations in areas of the Arctic with access to barren-ground caribou consistently showed the highest terrestrial meat consumption of any North American population (Mowat and Heard 2006). Grizzly bear sightings have increased at least on the range of the Bluenose-East subpopulation (Dumond 2007). Higher densities of grizzly bears, possibly sustained by muskoxen as alternative prey, may influence

neonatal caribou calf survival, which could affect subpopulation recovery from low population levels. In the Kitikmeot Region of Nunavut, which includes the northern calving and summer ranges of the Bluenose-East and Bathurst subpopulations, grizzly bear densities increased at an estimated rate of 2.6%/year from 1988 to 1995 and 3.3%/year from 1996 to 1999 based on radio-collared grizzly bears (GN 2017c). In the area around Kugluktuk in the western Kitikmeot Region of Nunavut, grizzly bear density in 2021 was of 6.6 grizzly bears/1000 km² (95% CI = 5.1-8.7 bears/1000 km²), which was slightly, but not significantly higher than 5.6 grizzly bears/1000 km² (95% CI = 4.5-7.0 bears/1000 km²) in 2008-2009 (Awan *et al.* 2025).

Table 12. Estimated wolf densities and numbers on barren-ground caribou ranges in the NWT based on Ungulate Biomass Index (UBI; from Nishi *et al.* 2024).

Sub-population	Study area	Ungulate Biomass Index based on:	Year	Wolf Density (#/1000 km ²)	Wolf Population Estimate ²
Bathurst	Winter range (Caribou)	2018 Bathurst caribou subpopulation estimate	2018	3.5	87
		Bathurst caribou subpopulation estimate projected to 2020	2020	2.0	49
Bluenose East	Winter range (Caribou)	2018 Bluenose East caribou subpopulation estimate	2018	5.3	196
		Bluenose East caribou subpopulation estimate projected to 2020	2020	3.2	121
Beverly	Winter range (Caribou)	2018 Beverly caribou subpopulation estimate	2018	7.0	1070
		Beverly caribou subpopulation estimate projected to 2020	2020	6.4	992

Wolverine and lynx occasionally take adult caribou (Bergerud 1971; Dumond 2007). Wolverines are effective scavengers of wolf-killed caribou (Lee 1995; van Dijk *et al.* 2008) as well as sometimes being able to kill caribou through persistent long chases (Dumond 2007, Magoun *et al.* 2018). Pursuits of up to 62 km have been documented (Magoun *et al.* 2018). Ravens (*Corvus corax*) scavenge wolf kills, removing enough meat that the scavenging affects wolf kill rates (Kaczensky *et al.* 2005); ravens can take 75% of the edible carcass from a pair of wolves. In Alaska, immature golden eagles take calves on calving and summer ranges (Whitten *et al.* 1992) and one calf mortality due to golden eagle predation was documented on the Qamanirjuaq caribou range (Szor *et al.* 2014). golden eagles have been sighted during calving ground surveys of the Cape Bathurst, Bluenose-West (Nagy and Johnson 2007a and b), Bluenose-East and Bathurst subpopulations (Tracz pers. comm. 2015 in SARC 2017, Boulanger *et al.* 2024a).

Parasites and Disease

(Parasites and disease (the only thing updated here is some new information on insect harassment from a project in the Porcupine caribou range))

The University of Calgary's research group has transformed the understanding of disease and parasites in barren-ground caribou. Strong community links such as in the Sahtú and Kugluktuk have encouraged a flow of samples and diagnoses. Recently, the CircumArctic Rangifer Monitoring and Assessment Network (CARMA), in association with the University of Calgary's Faculty of Veterinary Medicine, tested field protocols for standardized monitoring of caribou and reindeer health. Between 2007 and 2010, a total of 544 caribou were sampled using standardized protocols from eight subpopulations (Brook *et al.* 2009; Ducrocq *et al.* 2012; Kutz *et al.* 2012), to establish a baseline for parasite monitoring. Preliminary results suggest differences among subpopulations and that levels of diseases and parasites 2007-2009 were relatively low (Kutz *et al.* 2012). Caribou collected in 2007-09 were part of the first systematic survey for Johne's disease (*Mycobacterium avium paratuberculosis* (MAP)) in caribou across a wide geographic range. NWT barren-ground caribou levels were less than 4% prevalence (Forde *et al.* 2012). MAP is economically important among domestic sheep and cattle because this bacterial disease can result in death (Forde *et al.* 2012).

Studies of the effect of warble flies and gastro-intestinal nematodes on caribou and reindeer reveal that those parasites can influence host body reserves and pregnancy rates (Albon *et al.* 2002; Hughes *et al.* 2009). Warble fly parasites reduce foraging time when caribou try to avoid the adult insects. Female flies lay their eggs on the caribou (Witter 2010; Witter *et al.* 2012a). Once the bot and warble fly (oestrid flies) eggs hatch, the caribou host then incurs the protein costs of the immune responses and the growth and maintenance costs of the larvae (Thomas and Kiliaan 1990; Cuyler *et al.* 2012).

Some parasites, such as tapeworms and muscle worms, intimately link barren-ground caribou to their predators and may even modify caribou behaviour by increasing susceptibility to the predator, which increases the chances of the parasite completing its life cycle (Kutz *et al.* 2012). Wolves are the final host for some parasites, which they acquire by feeding on the intermediate host (e.g., caribou) (Rausch 2003). Wolves also hunt moose, which harbour a similar array of tapeworms in the NWT as barren-ground caribou (*Taenia hydatigena*, *T. krabbei*, *Echinococcus granulosus*) (Elkin pers. comm. 2012).

Although disease outbreaks rarely cause many deaths in barren-ground caribou, large mortality events have been reported in other populations. The blood parasite *Microfilaria setaria* was associated with the 1973-74 deaths of thousands of domestic reindeer in northern Finland as well as subsequent outbreaks in the region (Laaksonen *et al.* 2010).

Barren-ground caribou harbour a diverse array of gastro-intestinal nematodes and tapeworms, muscle and lung worms as well as blood parasites (Kutz *et al.* 2012), but their interrelationships are not well described or understood. Wild Svalbard reindeer reduce the risk of parasite transmission by foraging away from the vicinity of fecal pellets containing parasite eggs and larvae (Van de Waal *et al.* 2000). This behaviour may come at a cost of lost foraging time or additional energy expenditure. Folstad *et al.* (1991) suggests this as one reason why barren-ground caribou leave their calving grounds.

While individual subpopulations have been sampled for some parasites, especially the more conspicuous ones (warbles (Witter 2010) and *Besnoitia* (Larter 1999) for example), detailed and systematic sampling is mostly lacking.

Other bacterial diseases like brucellosis can cause lameness and affect reproductive rates. Brucellosis rates are generally low in barren-ground caribou across the NWT and NU (Elkin pers. comm. 2012). Larter and Nagy (1996) showed a 5% prevalence from blood samples of 42 Cape Bathurst caribou collected in 1995. Brucellosis is one of the diseases that is routinely tested for in blood samples. Contrastingly, foot rot (another bacterial disease) also causes lameness (Handeland *et al.* 2010), but is diagnosed based on sighting lame caribou and testing hoof samples. The disease is characterized by swollen feet and lameness and is seen in late summer. Warm temperatures and muddy ground constitute favourable conditions for this soil-borne bacterium, which enters the foot through minor abrasions. This may be why sharp gravel on roads is a pre-disposing factor (Radostits *et al.* 2007 in Handeland *et al.* 2010). The percent of lame Bathurst caribou seen during fall sex and age composition counts was higher in 2001 (0.03%; $n = 6,122$) than in 2000 (0%; $n = 4,695$) and 2004 ($<0.01\%$; $n = 12,444$), although overall percentages of lameness were very low. In 2001, foot rot was diagnosed on the Bathurst late summer range (Gunn *et al.* 2005).

Trends in most parasites are unknown in the NWT. An exception is warble flies, since the larvae are obvious as they grow under the skin along the caribou's back in late winter. The level of infestation is partly determined by weather and varies among subpopulations and among years; males and calves tend to have proportionally more larvae (Thomas and Kiliaan 1990; Cuyler *et al.* 2012). Not only are the larvae easy to count, but the adult flies are active only when conditions are suitable. In summer 2004, the severity of warble fly harassment was relatively high on the Bathurst subpopulation's range; in the subsequent winter 163 caribou harvested from this subpopulation all had warbles (Gunn 2013). Of the relatively few males harvested, 46% were classified as having high infestations of warbles while only 5% of the females had warble numbers in the high category.

On the Porcupine caribou range, insect harassment is affected by wind speed, temperature, days since snow melt, precipitation, topographic position and soil moisture

for mosquitoes, and by temperature, cumulative growing degree days, and time of day for oestrid flies (Hein *et al. in review*). Currently, the start and end dates of harassment by both mosquitos and oestrid flies are occurring earlier and the number of days with high harassment are higher than in the past (Figure 14; Hein *et al. in review*). The average annual harassment index for oestrid flies has also increased.

The increase in community-based sampling, such as the Sahtú region's caribou health program, has increased both interest and opportunities for the collection of baseline information (Brook *et al.* 2009) and is leading to innovative and low-cost approaches to measuring trends in diseases (Curry *et al.* 2011) and health (Wu *et al.* 2012). Wu *et al.* (2012) found that lesions on caribou teeth are a permanent record of physiological stress for which the timing (year) can be determined (from aging the tooth). This is important because it also relates to monitoring age structure.

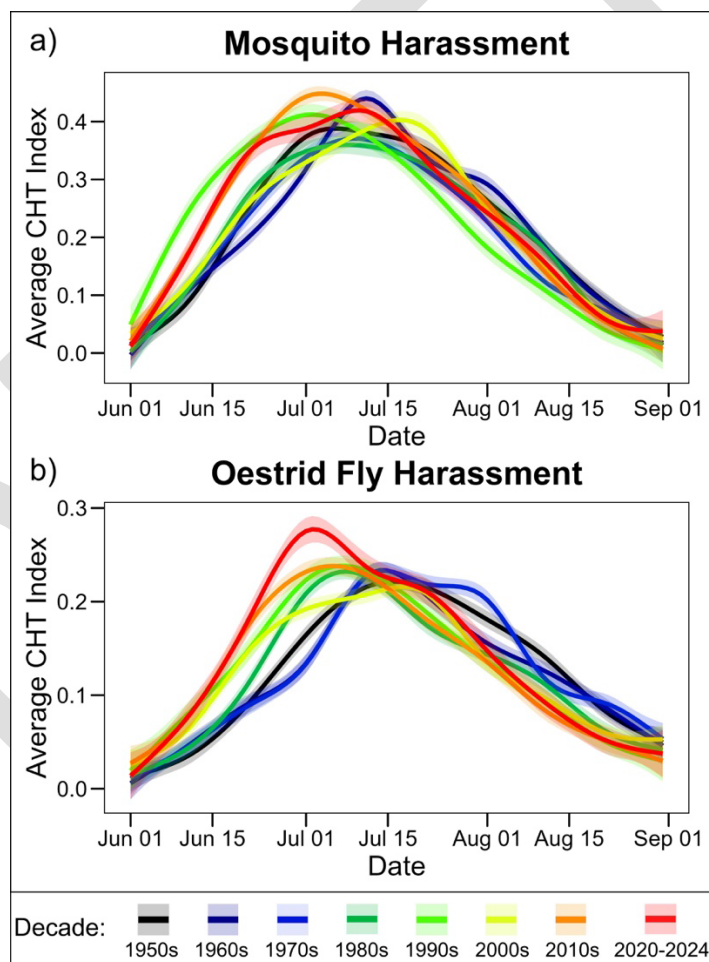


Figure 14. Daily predicted mosquito (a) and oestrid fly (b) harassment on the Porcupine caribou subpopulation summer range in Alaska, USA, and Yukon and Northwest Territories, Canada, from 1950-2024, averaged by decade, and smoothed using a generalized additive model. Mosquito and oestrid fly harassment were hindcasted using the climate, habitat, and topography (CHT) insect indices. Shading represents 95% confidence intervals. (reproduced from Hein *et al., in review*).

Interactions with Humans

Barren-ground caribou are a central part of Indigenous way of life, providing sustenance, and spiritual, cultural, social and economic well-being (ACCWM 2014, CMA 2020, BCAC 2021, BQCMB 2024a). They are also a keystone species in the Arctic environment, a crucial indicator of ecosystem health, and an important symbol of vast undisturbed northern landscapes in Canada.

Currently, barren-ground caribou hunting by Indigenous harvesters occurs throughout the distribution of barren-ground caribou in the NWT except where it is closed in portions of the Tuktoyaktuk Peninsula and Cape Bathurst ranges, and in the Bathurst subpopulation's winter range as defined by the Mobile Core Bathurst Caribou Management Zone (Table 13, Figure 15). Harvest of the Bluenose-West subpopulation is also limited on its winter range in the Inuvialuit, Gwich'in and Sahtu land claim areas subject to total allowable harvests (TAH). TAHs are also in place for the Bluenose East subpopulation in NWT and Nunavut (Table 14). Resident hunting is open in the Porcupine caribou range in northwestern NWT and in portions of the Beverly, Ahiak and Qamanirjuaq ranges in southern NWT. Non-resident and commercial (meat) hunting is not permitted in the NWT.

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Table 13. Hunting regulations for barren-ground caribou in the Northwest Territories for the 2025/26 season (from GNWT 2025a).

Harvester	Bag Limit ¹	Season	Tag Required	Sex restriction	Hunting area	Subpopulation
Indigenous (AH or GHL) ²	0	Closed	N/A	N/A	Mobile Core Bathurst Caribou Management Zone	Bathurst
					G/BC/02 I/BC/07 in harvester's traditional area	Cape Bathurst Tuktoyaktuk Peninsula
	Unrestricted	July 1 - June 30	No	No	G/BC/01 I/BC/05 S/BC/02	Porcupine
					R/BC/03 ³	Beverly Ahiaik
					U/BC/01	Beverly Ahiaik Qamanirjuaq
			Yes	No ⁴	I/BC/06 S/BC/01	Bluenose West
				Male only	R/BC/01 ³ S/BC/03 D	Bluenose East
					R/BC/02 ³	Bluenose East Beverly
		June 16 - March 31	No	No	I/BC/08 in harvester's traditional area	Tuktoyaktuk Peninsula
AH	Unrestricted	July 1 - June 30	No	No	G/BC/03	Porcupine
GHL	Unrestricted	July 1 - Dec 25	No	No	G/BC/03	Porcupine
Resident	2	August 15 - April 30	N/A	Male only	G/BC/01 ⁵	Porcupine
	1				U/BC/01 ⁶	Beverly Ahiaik Qamanirjuaq

¹ Bag limit = the number of animals a hunter may kill in a season, subject to an existing quota

² AH = Aboriginal harvester; GHL = General Hunting License holder

³ Excluding any portion of the area within the Mobile Core Bathurst Caribou Management Zone

⁴ Target of 80% males; also includes portions of Tuktoyaktuk Peninsula and Cape Bathurst ranges

⁵ Except G/WP/01

⁶ Mandatory reporting of harvest to local Environment and Climate Change office



Figure 15. Barren-ground caribou hunting management zones in the Northwest Territories.

For Porcupine caribou, resident hunter harvest regulations have changed little since the early 2000s, with the main change a reduction of the bag limit from five (any sex) to two (males only) in 2006 (GNWT 2011).

The current regulations for other NWT subpopulations reflect the implementation of a series of restrictions on harvesting of barren-ground caribou since the early 2000s in response to significant declines in barren-ground numbers (Table 14, see *Population*). A broad regulation change in 2006/07 for all management zones where hunting for barren-ground caribou was still open to resident hunters, was a reduction of tags from five (any sex) to two (males only) (GNWT 2011).

For the Tuktoyaktuk Peninsula, Cape Bathurst and Bluenose West caribou, resident, non-resident and commercial (meat) hunting for barren-ground caribou was closed in the Inuvialuit Settlement Region (ISR) in March 2006, and in the Gwich'in Settlement Area (GSA) and Sahtú Settlement Area (SSA) in October 2006 (ACCWM 2014).

Table 14. Summary of changes to management of barren-ground caribou harvests in the Northwest Territories, 2005/06 to 2024/25. Changes to barren-ground caribou harvest management in Nunavut (NU) are also included. See text for additional description of changes. ISR = Inuvialuit Settlement Region; GSA = Gwich'in Settlement Area; SSA = Sahtú Settlement Area; TAH = total allowable harvest

Year	Tuktoyaktuk Peninsula (TP)	Cape Bathurst (CB)	Bluenose West (BNW)	Bluenose East (BNE)	Bathurst	Beverly	Ahiak	Qamanirjuaq
2005/06	Resident, non-resident and commercial harvest closed in ISR							
2006/07	Resident, non-resident and commercial harvest closed in GSA and SSA			Resident, non-resident and commercial harvest closed in SSA				
				where open, resident bag limit reduced from 5 (any sex) to 2 (males only)				
2007/08	I/BC/06 split into 3 (I/BC/06 [BNW core], I/BC/07 [CB core], I/BC/08 [TP core])							
	I/BC/08 closed to all barren-ground caribou hunting April 15 - June 15	I/BC/07 and G/BC/02 closed to all barren-ground caribou hunting	I/BC/06 Indigenous harvest tag required (80% male target) ISR quota=345 GSA quota=22 SSA quota=350					
2008/09								
2009/10	I/BC/08 extended in the southwest resulting in reduction of northwest portion of I/BC/07			Resident, non-resident and commercial harvest closed in Wek'èezhìi	Resident, non-resident and commercial harvest closed in	Resident, non-resident and commercial harvest closed in North Slave and South Slave regions		

Year	Tuktoyaktuk Peninsula (TP)	Cape Bathurst (CB)	Bluenose West (BNW)	Bluenose East (BNE)	Bathurst	Beverly	Ahiak	Qamanirjuaq
				and all of North Slave Region	Wek'èezhii, and North Slave and South Slave regions			
2010/11					Indigenous harvest quota implemented: ≤300 (80% males or ≤60 females)			
2011/12								
2012/13								
2013/14	I/BC/07 southeastern boundary moved north to Husky Lakes resulting in reduced size of I/BC/07 and expansion of I/BC/06, which now includes portions of TP and CB ranges							
	I/BC/06 portion of TP and CB ranges open for Indigenous harvest and requires tags							
2014/15				Indigenous harvest target: 1800 (80% males, 20% females)	Mobile Core Bathurst Caribou Management Zone (No harvesting) implemented Indigenous harvest up to 15 males for community			

Year	Tuktoyaktuk Peninsula (TP)	Cape Bathurst (CB)	Bluenose West (BNW)	Bluenose East (BNE)	Bathurst	Beverly	Ahiak	Qamanirjuaq
					ceremonial purposes			
2015/16				Indigenous harvest of 950 males for NWT and NU		Resident harvest opened in U/BC/01 in NWT South Slave Region		
2016/17				Indigenous harvest Wek'èezhii TAH=750 males Sahtú TAH=150 (max 20% females) (NU Kugluktuk TAH=340)	NWT: Indigenous harvest TAH=0			
2017/18					(NU: TAH=30 males)			
2018/19								
2019/20			I/BC/06 quotas increased (80% male target) ISR quota=403 GSA quota=34 SSA quota=403	Wek'èezhii TAH reduced to 193 males				

Year	Tuktoyaktuk Peninsula (TP)	Cape Bathurst (CB)	Bluenose West (BNW)	Bluenose East (BNE)	Bathurst	Beverly	Ahiak	Qamanirjuaq
2020/21				(NU Kugluktuk TAH reduced to 170 and up to 50% of TAH can be females)	(NU: TAH reduced to 10 males)			
2021/22								
2022/23								
2023/24								
2024/25				Wek'èezhi TAH increased to 395 males (NU Kugluktuk TAH increased to 450 with no sex ratio limit)				

In 2007/08, barren-ground caribou management zone I/BC/06 was split into three zones to better represent core areas for each subpopulation (Tuktoyaktuk Peninsula - I/BC/08, Cape Bathurst - I/BC/07, Bluenose West - I/BC/06) (ACCWM 2017a,b). Also in 2007/08: all hunting was closed for the Cape Bathurst subpopulation; a seasonal closure for Indigenous harvesting was implemented for the Tuktoyaktuk Peninsula subpopulation to allow Cape Bathurst caribou to migrate; and quotas were implemented for Indigenous harvesting for the Bluenose West subpopulation (ACCWM 2017a,b). The quotas included a target of 80% males. Adjustments to boundaries of the three management zones in 2009/10 and 2014/15 resulted in a reduction of I/BC/07 and expansion of I/BC/06. Management zone I/BC/06 now includes areas used by Tuktoyaktuk Peninsula and Cape Bathurst caribou, making it difficult to determine which subpopulation caribou are being harvested from in the area where all three subpopulations overlap (ACCWM 2017a,b). In 2019/20, quotas for I/BC/06 were increased based on the 2018 population estimate of the Bluenose West subpopulation, which indicated an increase in numbers (ACCWM 2021).

Resident, non-resident and commercial harvesting were closed for Bluenose East caribou in the Sahtú Settlement Area in October 2006 (ACCWM 2014) and on January 1, 2010 within Wek'èezhìi and all of the North Slave Region (Table 14, GNWT 2015; WRRB 2019a). In January 2015, an Indigenous harvest target of 1800 Bluenose East caribou was recommended for the NWT with males comprising at least 80% of the harvest (GNWT 2015; WRRB 2019a). For the 2015/16 harvest season, the Tłı̨chǫ Government and GNWT came to an agreement to implement the WRRB's recommendation of a harvest target of 950 males for Bluenose East caribou in the NWT and Nunavut based on the June 2015 survey that indicated a continuing population decline (WRRB 2019a). It was also noted that work would continue with authorities in Nunavut towards implementing a consistent approach to the harvest of Bluenose East caribou in the NWT and Nunavut (WRRB 2019a). For the 2016/17 season, harvest levels were set for Wek'èezhìi (750 males; WRRB 2019a), Sahtú (150 caribou, maximum 20% females; SRRB 2016, GNWT 2017), and Nunavut (340 caribou; GN 2017a). With the subpopulation continuing to decline, the harvest level for Wek'èezhìi was reduced to 193 males in 2019/20 (TG and GNWT 2024), and for Nunavut was reduced to 170 caribou in 2020/21, with females comprising no more than 50% of the Nunavut total allowable harvest (GN 2020a). Following the June 2023 survey, which indicated that Bluenose East caribou numbers appeared to be rebounding (see *Population*), harvest levels were increased in 2024/25 to 395 for Wek'èezhìi (WRRB 2025) and to 450 caribou (with no limit on the proportion of females) in Nunavut (GN 2024a). Since then, the subpopulation was estimated at 28,759 based on the June 2025 survey, which was lower than the 2023 estimate (39,525), but higher than the 2020 (23,202) and 2018 (19,294) survey estimates (GNWT unpubl. data; see *Population - Abundance*).

Similar to Bluenose East harvest, resident, non-resident and commercial harvesting for Bathurst caribou were closed within Wek'èezhìi and in all the North Slave and South Slave regions on January 1, 2010 (Table 14, GNWT 2015, WRRB 2019b). Also in January 2010, all harvesting of Bathurst caribou was closed, then in December 2010 an Indigenous harvest level of 300 or less (80% males or 60 or less females) was implemented in barren-ground caribou management zones R/BC/02 and R/BC/03, which included the main NWT Bathurst winter range (GNWT 2011; Adamczewski *et al.* 2016). With the population at a very low level, the Mobile Core Bathurst Caribou Management Zone was established in January 2015, and a limited harvest of up to 15 males was implemented for community and ceremonial purposes, on a proposal basis (GNWT 2015). Harvesting of any type of caribou is not permitted in the Mobile Core Bathurst Caribou Management Zone, which moves around on the landscape depending on where Bathurst caribou are located (see example in Figure 16). With a further decline in caribou numbers, Indigenous total allowable harvest (TAH) in the NWT was reduced to zero in Wek'èezhìi starting in the 2016/17 harvest season (WRRB 2019b), and a TAH of 30 males was implemented in Nunavut for the 2017/18 harvest season (GN 2017b). The TAH in Nunavut was further reduced to 10 males in 2020/21 (GN 2020b).

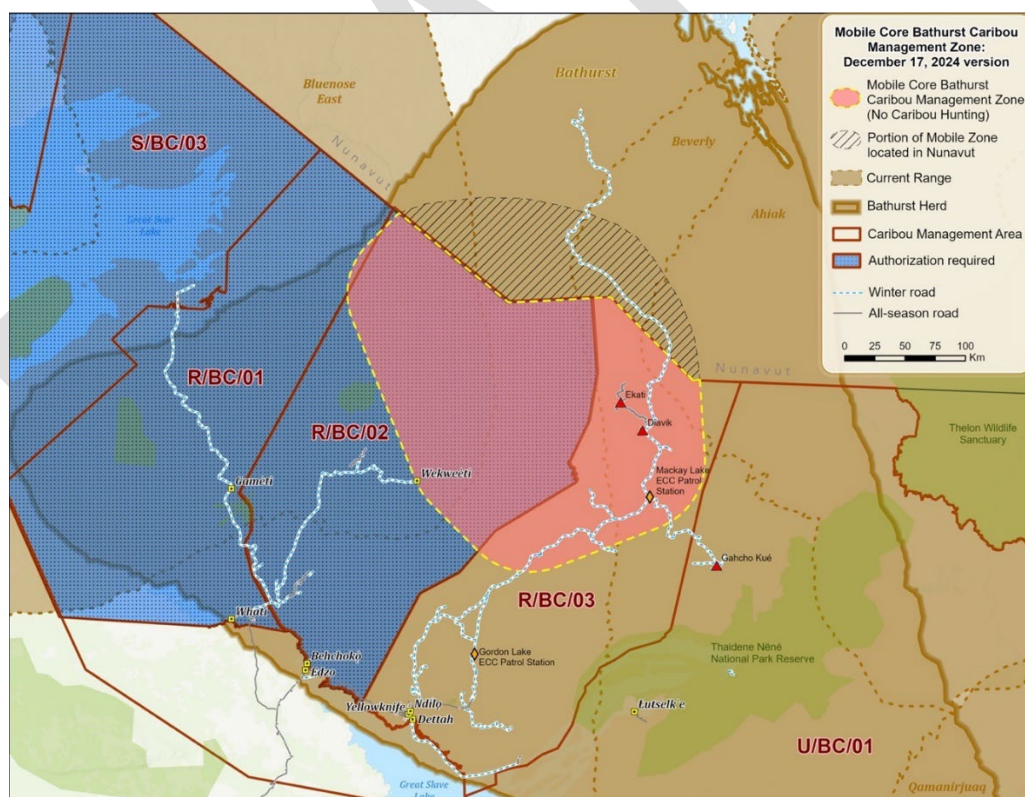


Figure 16. An example of the Mobile Core Bathurst Caribou Management Zone from December 17, 2024 (Cluff *et al.* 2026). The zone is based on a minimum convex polygon around all satellite collared Bathurst caribou with a buffer of at least 20 km. The NU portion of the mobile zone is shown but it has no legal standing in NU.

Limited information is available on total harvest of individual barren-ground caribou subpopulations in the NWT over the long term. Deriving harvest numbers for individual subpopulations can be challenging. For example, harvesters of Cape Bathurst, Bluenose-West, and Bluenose-East caribou come from 18 communities in six land claim/regional areas in two Territories. Also, most harvest occurs in winter, but annual use of winter ranges by caribou can be variable and overlap between neighbouring subpopulations may be substantial.

Formal subsistence harvest studies were conducted between the late 1980s and early 2000s for the Inuvialuit Settlement Region and Sahtú and Gwich'in settlement areas of the NWT, and in Nunavut through the Nunavut Harvest Study (Table 15; summarized in Davison 2016). However, reported results often combined several ecotypes of caribou, and did not always specify which subpopulations were targeted, making it difficult to determine how many barren-ground caribou were harvested from individual subpopulations.

Estimates of total harvest for the Porcupine caribou subpopulation requires harvest data from Canada (Yukon and NWT) and the United States (Alaska), however, data have not always been available from both countries in the same year. From 2010/11 to 2017/18, estimated total harvest from Canada and Alaska ranged from about 1,400 to 4,400 caribou/year, making up 0.7-2.1% of the total subpopulation (Caikoski 2020). Estimated Canadian harvest ranged between about 300 to about 3000 from 2010/11 to 2023/24, with an average of 71% of the harvest consisting of males (PCTC 2024).

Available information on subpopulation-specific harvests for other barren-ground subpopulations in NWT is summarized in Table 16. Recently, harvest data have been more consistently summarized as part of annual reviews of information collected and actions taken associated with recently developed management plans (see *Positive Influences*). However, harvest data are incomplete for some years. The Advisory Committee for Cooperation on Wildlife Management (ACCWM) includes information on harvest levels in their annual status meeting summaries and annual action plans for the Cape Bathurst, Bluenose West and Bluenose East subpopulations as part of implementation of the 'Taking Care of Caribou' plan (ACCWM 2014). Harvest data for Bluenose East and Bathurst caribou has been summarized annually by the Barren-ground Caribou Technical Working Group since 2011/12 although reports since 2020/21 are not available (Table 16). The Beverly and Qamanirjuaq Management Board (BQCMCB) compiled and reported estimates of total annual harvests from the Beverly and Qamanirjuaq subpopulations from 2004/05 until 2007-08.

Although harvest data are limited, overall, recent estimated harvests of Cape Bathurst/Tuktoyaktuk Peninsula, Bluenose West, Bluenose East and Bathurst caribou are

lower than estimated harvests in the mid to late 2010s, and for the Bathurst subpopulation, much lower than estimated harvests in the early 1990s (Table 16). These reduced harvests not only affect sustenance use by Indigenous people, but also their social, cultural, spiritual and economic well-being.

Estimated harvests for the Cape Bathurst subpopulation usually include a combined estimate for Cape Bathurst and Tuktoyaktuk Peninsula, which often use the same area during winter. Although the sex of the caribou is not always reported for Bluenose West harvests, NWT Environment and Climate Change believes that the 80% males target is not being met (ACCWM 2025).

Table 15. Summary of Indigenous caribou harvests collected during harvest studies in the Northwest Territories and Nunavut, 1988/89 to 2003/04.

Year	Communities	Inuvialuit Harvest Study ^{1,2}	Gwich'in Harvest Study ³		Sahtú Harvest Study ⁴	Nunavut Harvest Study ⁵		
		Inuvik Tuktoyaktuk Paulatuk	Aklavik Fort McPherson Inuvik Tsiigehtchic		Colville Lake Déliņę Fort Good Hope Norman Wells Tulit'a	Kugluktuk	Bathurst Inlet Cambridge Bay Gjoa Haven Kugaaruk Taloyoak Umingmaktok	Arviat Baker Lake Chesterfield Inlet Rankin Inlet Repulse Bay Whale Cove
		Barren-ground Porcupine Peary Woodland	'Blue-nose'	Porcupine	Barren-ground	Barren-ground Dolphin and Union	Barren-ground Island Peary	Barren-ground
1988/89		3,257						
1989/90		1,626						
1990/91		1,993						
1991/92		2,358						
1992/93		2,567						
1993/94		1,723						
1994/95		1,880						
1995/96		1,242	135	1,906				
1996/97		1,541	84	1,638		1,561	3,692	10,758
1997/98		1,307	153	2,206		1,462	2,484	8,942
1998/99			113	1,093	2,681	1,913	2,289	8,499
1999/00			128	452	3,049	1,584	2,879	7,412
2000/01			25	2,054	3,141	1,355	2,568	7,255
2001/02			78		2,148			
2002/03			72		1,774			
2003/04			79		2,566			

¹ Data summarized by calendar year in the study. In this table the study year corresponds to the first year in the Year column (e.g. 1988/89 = 1988)

² Source: Joint Secretariat (2003) summarized in Davison (2016); Woodland caribou = Boreal or Northern Mountain

³ Source: 'Bluenose' data from McDonald (2009) summarized in Davison (2016) – includes revisions based on a review, and reported harvest for 2001/02 to 2003/04; Porcupine data from McDonald (2009)

⁴ Source: data summarized in Davison (2016)

⁵ Source: Priest and Usher (2004)

Table 16. Estimated harvest of barren-ground caribou subpopulations in the Northwest Territories. Harvest is Indigenous harvest except where otherwise indicated.

Year	Cape Bathurst/Tuk Peninsula ^{1,2}	Bluenose west (BNW) ^{1,3,4}	Bluenose east (BNE) ^{1,5}	Bathurst ⁶	Beverly ⁷	Qamanirjuaq ⁸
1988/89				7,924		
1989/90				8,585		
1990/91				17,220		
1991/92				21,699		
1992/93				18,731		
1993/94				20,819		
1994/95						
1995/96						
1996/97						
1997/98						
1998/99						
1999/00						
2000/01						
2001/02						
2002/03						
2003/04						
2004/05					3,634 ⁹	7,970 ⁹
2005/06	703 ¹⁰	1,900 ¹⁰			3,772 ⁹	10,308 ⁹
2006/07					4,746 ⁹	9,724 ⁹
2007/08		270		5,000-7,000 ¹¹	4,155 ⁹	9,070 ⁹
2008/09		231		5,000-7,000 ¹¹		9,460-9,960 ⁹
2009/10		309	3,466	300	1,046	
2010/11		319	2,918	213	240	
2011/12		336	1,766	170 ¹²		
2012/13		340	2,562	202 ¹²		
2013/14		162	3,016	234 ¹²		
2014/15		257	~985	~100 ¹²		
2015/16	117 ¹³	293	~790	~70 ¹²	0 ¹⁴	
2016/17		265	~305	~70 ¹²	~3,000 ¹⁴	
2017/18	171 ¹³	305	~185	~65 ^{12,15}	~500 ¹⁴	
2018/19	166 ¹³	322 ¹⁶	204	79 ^{12,15}		
2019/20	221 ¹³	347 ¹⁶	164	69 ^{12,15}		
2020/21	141 ¹³	261 ¹⁶	246			
2021/22	179 ¹³	382 ¹⁶	≥76 ¹⁷			
2022/23	160 ¹³	313 ¹⁶	≥170 ¹⁷			
2023/24	223 ¹³	310 ¹⁶				
2024/25						

- ¹ CB/TP = Cape Bathurst/Tuktoyaktuk Peninsula, BNW = Bluenose West, BNE = Bluenose East
- ² Sources: 2005/06: J. Nagy (unpubl. Data) in Adamczewski *et al.* (2020); 2015/16: ACCWM (2017a); 2017/18: ACCWM (2019); 2018/19: ACCWM (2020); 2019/20: ACCWM (2021); 2020/21: ACCWM (2022); 2021/22: ACCWM (2023); 2022/23: ACCWM (2024); 2023/24: ACCWM (2025)
- ³ Sources: 2005/06: J. Nagy (unpubl. Data) in Adamczewski *et al.* (2020); 2007/08 – 2019/20: ACCWM (2021); 2020/21: ACCWM (2022); 2021/22: ACCWM (2023); 2022/23: ACCWM (2024); 2023/24: ACCWM (2025)
- ⁴ Sahtú harvest was not available for most years; the only estimated harvest for Sahtú (300 in 2018/19; ACCWM 2021) is not included in the 2018/19 estimate in this table
- ⁵ Sources: 2009/10 – 2010/11: Adamczewski *et al.* (2016); 2011/12 – 2013/14: BGC TWG (2014); 2014/15: BGC TWG (2015); 2015/16: BGC TWG (2016); 2016/17 BGC TWG (2017); 2017/18: BGC TWG (2018); 2018/19 – 2022/23: TG & GNWT (2024)
- ⁶ Sources: 1988/89 – 1993/94: Dogrib Harvest Study summarized in Adamczewski *et al.* (2020); 2007/08 – 2008/09: Adamczewski *et al.* (2020); 2009/10 – 2010/11: Adamczewski *et al.* (2016); 2011/12 – 2013/14: BGC TWG (2014); 2014/15: BGC TWG (2015); 2015/16: BGC TWG (2016); 2016/17: BGC TWG (2017); 2017/18: BGC TWG (2018); 2019/20: BGC TWG (2020)
- ⁷ Sources: 2004/05: BQCMB (2005); 2005/06: BQCMB (2006); 2006/07: BQCMB (2007); 2007/08: BQCMB (2008); 2009/10 – 2010/11: SARC (2017); 2015/16 – 2017/18: TG & GNWT (2019)
- ⁸ Sources: 2004/05: BQCMB (2005); 2005/06: BQCMB (2006); 2006/07: BQCMB (2007); 2007/08: BQCMB (2008); 2008/09: BQCMB (2009)
- ⁹ Includes Indigenous, resident, non-resident and commercial (meat) harvest
- ¹⁰ Primarily females; type of hunter not specified (e.g. Indigenous, resident, non-resident)
- ¹¹ Estimated 4,000–5,000 females, 1,000–2,000 males; includes Indigenous, resident (male only) and non-resident harvest (male only)
- ¹² Includes Nunavut harvest
- ¹³ I/BC/06 tags possibly used in the Cape Bathurst/Tuktoyaktuk Peninsula caribou wintering areas
- ¹⁴ North Slave Region harvest only; 2015/16 – Beverly caribou wintered in Nunavut; 2016/17 – estimated 80% males; 2017/18 – estimated 100% males
- ¹⁵ Includes some illegal harvest in the Mobile Core Bathurst Caribou Management Zone but illegally harvested caribou were not necessarily Bathurst caribou: 35 in 2017/18, 49 in 2018/19, 39 in 2019/20
- ¹⁶ From 2018/19 to 2023/24, GNWT (Environment and Climate Change) believes that the 80% males target is not being met (ACCWM 2020, 2021, 2022, 2023, 2024, 2025)
- ¹⁷ Harvest from Déline not reported for 2021/22 or 2022/23 (but assumed low due to limited winter access); harvest from Kugluktuk not reported for 2021/22 (but assumed low due to limited winter access)

Estimated harvests for the Bluenose East subpopulation decreased from an average of about 2,700 caribou/year from 2009/10 to 2013/14, to less than 1,000 caribou/year (Table 16) following a recommended NWT harvest target of 1,800 (80% males) in 2014/15 (see Table 15). Total allowable harvests were implemented for Wek'èezhìi, Sahtú and Nunavut (Kugluktuk) in 2016/17, and reductions to TAH were implemented in Wek'èezhìi and Nunavut in 2019/20 and 2020/21 respectively. Estimated harvest has been less than about 300 caribou/year since 2016/17 (Table 16). Although the 2021/22 and 2022/23 Bluenose East harvest estimates are currently incomplete, the declining harvests over the last few years reflects the distribution of the Bluenose East subpopulation during winter, in that they have not been using areas that are easily accessed by harvesters, so hunters have focussed more on the Beverly subpopulation, which can be accessed along the winter roads to the mines (ACCWM 2025).

For the Bathurst subpopulation, the Dogrib Harvest Study (summarized in Adamczewski *et al.* 2020) collected information specific to the Bathurst subpopulation from 1988 to 1993 (Table 16). Total harvest ranged from 7,924 to 21,699 with females comprising 42–63% of the harvest. No data were available after the end of the study. In the winters of 2007/08 and 2008/09, total Bathurst harvest (including Indigenous, resident and non-resident harvest) based on check-station data, hunter interviews and an assumption that true harvest was about twice the reported numbers, was estimated to be 5,000–7,000 caribou, predominantly females (Adamczewski *et al.* 2020). In those years, the subpopulation was declining but remained readily accessible on winter roads, progressively amplifying the effect of a fairly constant harvest from a declining subpopulation (Boulanger *et al.* 2011). Following the harvest restrictions implemented in 2010, harvest levels dropped substantially to ≤ 300 caribou. However, in some winters Bathurst collared caribou wintered east and west of the protected zones; notably in 2013 when several Bathurst collared females wintered in the Hottah Lake area where larger harvests of Bluenose-East caribou occurred. In such winters the Bathurst harvest may have been greater than 300. Overlap on the winter range, particularly for the Bluenose-East and Bathurst subpopulation, and limited numbers of collared caribou have complicated estimation of winter harvest levels (Adamczewski pers. comm. 2013a in SARC 2017). Since the implementation of the Mobile Core Bathurst Caribou Management Zone in January 2015, harvest of Bathurst caribou in NWT has dropped to near-zero; there has been some illegal harvest in the mobile zone every winter but the estimated numbers have been low. In addition, extensive mixing in winter of the Bathurst subpopulation with the neighbouring much larger Beverly subpopulation have diluted the effect of any illegal harvest. Estimated harvest of about 70–100 caribou from 2014/15 to 2016/17 was from Nunavut. From 2017/18 to 2019/20, Nunavut harvest was about 30 males (the TAH that was implemented in 2017/18) and the remainder was due to illegal harvest in the Mobile Core Bathurst Caribou Management Zone, although caribou harvested illegally were not all necessarily Bathurst caribou (ACCWM 2019, 2020). Since 2020, NU harvest of Bathurst caribou has been limited to 10 caribou/year.

Total harvest data for the Beverly and Qamanirjuaq subpopulations is limited to the data collected by the Beverly and Qamanirjuaq Caribou Management Board from 2005/06 to 2008/09, with an average harvest of about 4,100 caribou/year for the Beverly subpopulation and of about 9,300 caribou/year for the Qamanirjuaq subpopulation (Table 16). Harvest data for the Beverly subpopulation for other years represented only portions of the harvest (SARC 2017; TG and GNWT 2019). Based on collared Beverly and Ahik caribou, their winter ranges overlapped suggesting that the 2005/06 to 2007/08 harvest estimates for the Beverly subpopulation likely include Ahik caribou (BQCMB 2009). Harvest of Qamanirjuaq caribou has remained substantial in NU in recent years, in part because the subpopulation is readily accessible on the late winter range and harvest

is not limited, and in part because limited caribou harvest elsewhere in NU (e.g. Baffin Island) has increased harvest pressure on the Qamanirjuaq subpopulation (Adamczewski pers. comm. 2026, based on notes from M. Campbell, GN). Caribou meat can legally be sent elsewhere in NU. An estimated 10,000 to 11,000 Qamanirjuaq caribou are thought to be harvested annually (Campbell *et al.* 2023).

Reported harvest of barren-ground caribou by resident hunters in the NWT peaked in the early 1990s, and has declined to near-0 since about 2010, even before bag limit restrictions and closures implemented in the mid to late 2000s (Figure 17). Before harvest restrictions were put in place, resident hunters from the Inuvialuit, Gwich'in and Sahtú Settlement areas hunted primarily Cape Bathurst, Bluenose-West and Bluenose-East caribou. Resident hunters from Yellowknife and the North/South Slave regions hunted primarily Bathurst caribou and possibly some Bluenose-East caribou (Adamczewski *et al.* 2020).

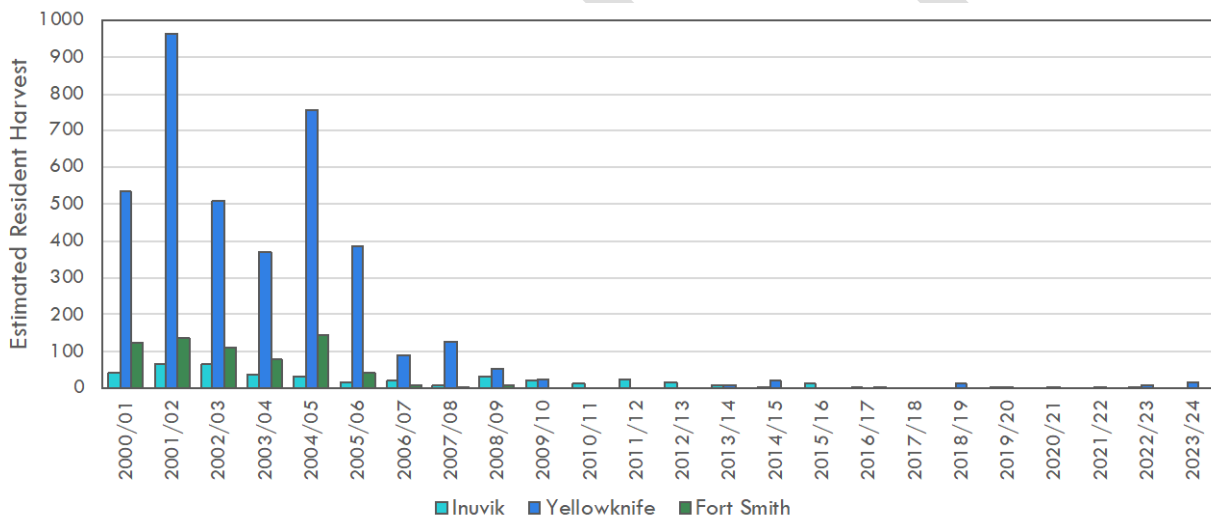


Figure 17. Estimated numbers of barren-ground caribou harvested by resident hunters in the NWT from 2000/01 to 2023/24. Regions (Fort Smith, Inuvik and Yellowknife) are where hunters reside, not where they hunted. The Inuvik Region consists of hunters from the Inuvialuit, Gwich'in and Sahtú Settlement areas, and the Fort Smith Region consists of hunters from the North Slave (except Yellowknife), South Slave and Dehcho regions (ECC unpubl. Data).

Outfitter harvesting was mostly quota-based, guided, non-resident hunting focused on prime males, with outfitter camps accessing mostly Bathurst caribou, with some access to Bluenose-East caribou. The average annual harvest of caribou males by outfitters on the Bathurst subpopulation was 828 between 1997-2009, peaking in 2001 at 1,166 males. Quota changes between 2005 and 2009 (see Table 14) reduced the commercial harvest (Adamczewski *et al.* 2020). The termination of non-resident hunting in 2010 was due to concerns about declining subpopulation numbers and due to land claim requirements when Indigenous harvest is restricted (SARC 2017).

PLACE

Distribution

World, Continental, or Canadian Distribution

Migratory caribou subpopulations are found across the northern portion of North America, from Alaska in the west to Labrador in the east and to Baffin Island in the northeast (Figure 18).



Figure 18. Distribution of migratory caribou in North America.

Barren-ground caribou (defined as the Committee on the Status of Endangered Wildlife in Canada [COSEWIC] Designatable Unit 3 [DU3]) in Canada are restricted to the Northwest Territories (NWT), Nunavut (NU) and Yukon with winter use of northern regions of Manitoba, Saskatchewan, and (historically) Alberta (Figure 19). Their distribution overlaps with: Northern Mountain (DU7) caribou in Yukon; Boreal (DU6) caribou in Yukon, the NWT and Saskatchewan; Dolphin and Union (DU2) caribou in NU; and Peary (DU1) caribou on the Boothia Peninsula in NU.

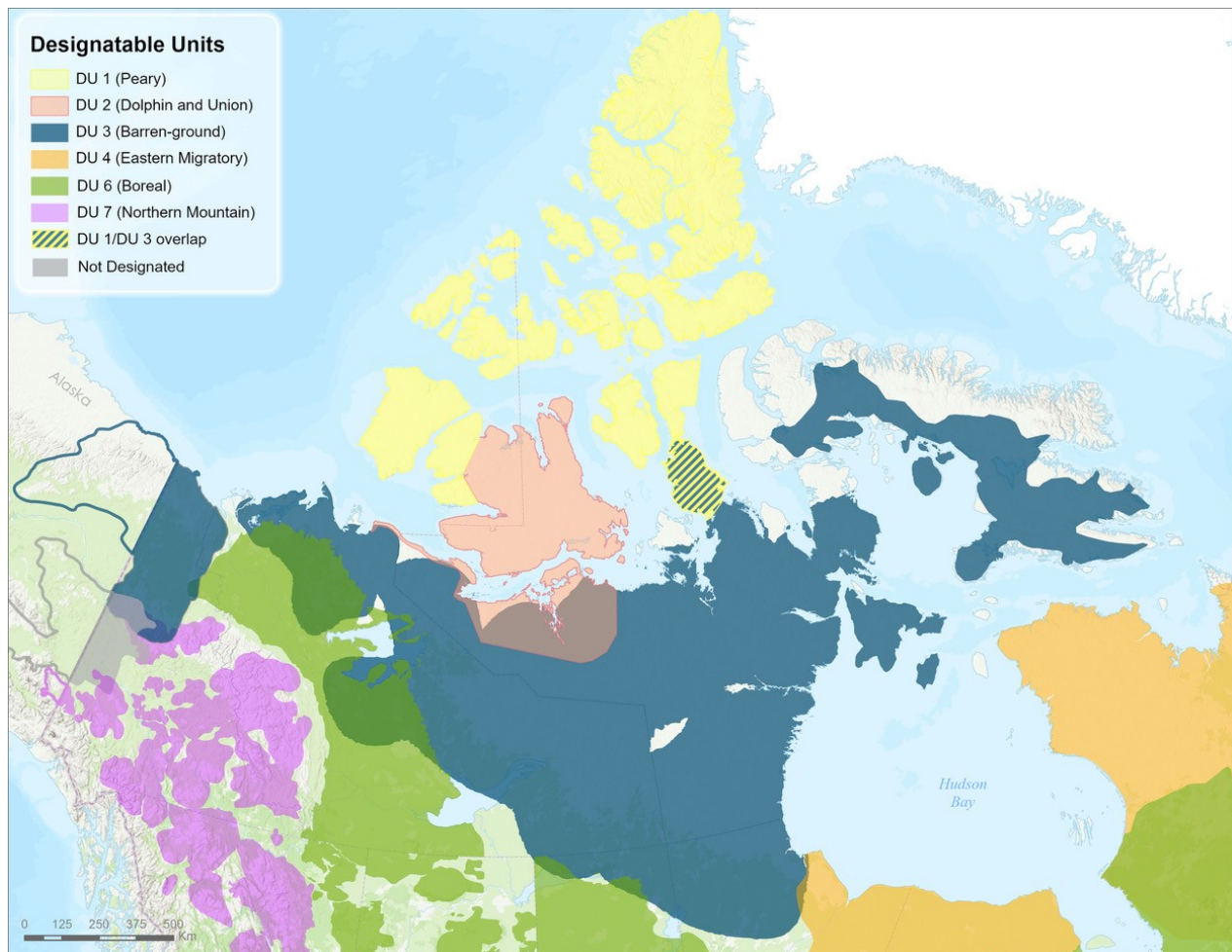


Figure 19. Designatable Units for caribou (*Rangifer tarandus*) in northern Canada (COSEWIC 2011).

NWT Distribution

(Please note that work is currently underway to update range use and boundaries.)

In the NWT, Porcupine caribou are found west of the Mackenzie River, and are separated from the other NWT barren-ground caribou in the NWT by the Mackenzie River valley and delta (Figure 20). The other barren-ground caribou in the NWT are distributed from the Mackenzie River east to the NWT-NU boundary and southeast to the Saskatchewan border. Barren-ground caribou are not found in the southwest corner of the NWT (approximately west of the Slave River to the Mackenzie Mountains) (Figure 20). Range boundaries for the subpopulations east of the Mackenzie River are based on satellite collared caribou from 1993 to 2009 (Nagy *et al.* 2011). Range boundaries that include more recent satellite collar information were not available.

The annual distribution of the Tuktoyaktuk Peninsula, Cape Bathurst and Bluenose-West subpopulations is almost entirely within the NWT whereas the Porcupine subpopulation's

range includes Alaska, Yukon, and the NWT. For the Bluenose-East, Bathurst, Ahik, Beverly, and Qamanirjuaq subpopulations, calving and summer distribution is mostly within NU, and these subpopulations are found in the NWT mostly during winter. The Wager Bay and Lorillard subpopulations spend most of their time in NU, but also use the northeastern portion of the NWT, primarily during winter.

Barren-ground caribou subpopulations in NU with ranges that do not extend into the NWT include Boothia Peninsula, Southampton Island, Coats Island and Baffin Island. Tundra-migrating subpopulations in Alaska include Central Arctic, Teshekpuk, Western Arctic and Porcupine. The George River and Leaf River subpopulations in northern Quebec/Labrador are ecologically similar to migratory tundra subpopulations in NWT, NU and Alaska, but were identified as a separate Designatable Unit by COSEWIC (2011).

The longer-term annual distribution of barren-ground caribou is relatively continuous across the NWT although the calving, post-calving, and early-summer distribution tends to be more discontinuous and subpopulation-specific. Calving grounds are the smallest seasonal ranges, although post-calving and early summer ranges are also relatively small; <5% of the annual range for the Bathurst subpopulation compared to 77% of the annual range for the rut to spring migration (Gunn *et al.* 2013a). The barren-ground caribou population distribution in the NWT is currently not considered to be severely fragmented.

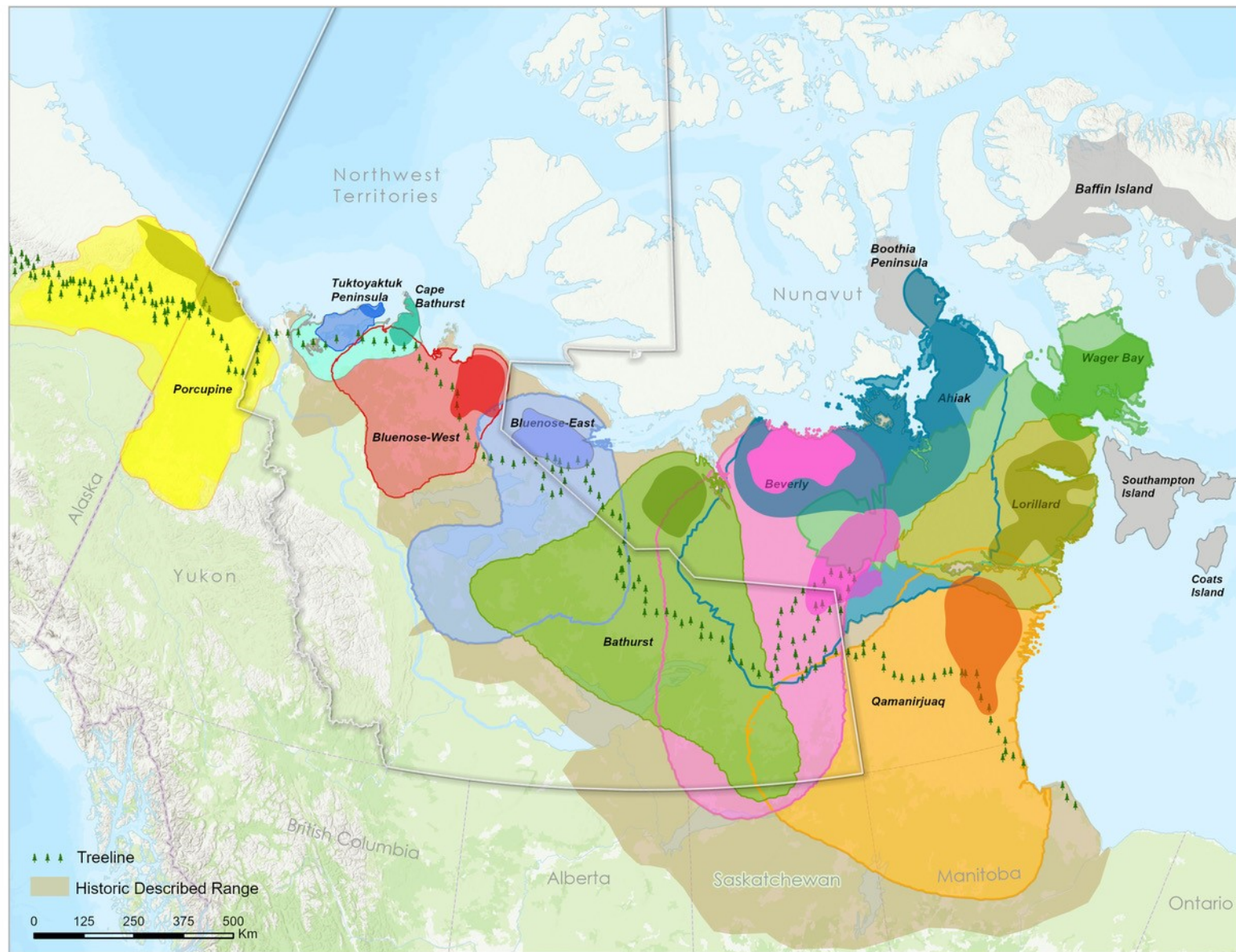


Figure 20. ****Please note that work is currently underway to update barren-ground caribou range use and boundaries**** Distribution of barren-ground caribou range (pale colours) and calving grounds (dark colours) in the NWT from 1996-2009. The NU barren-ground caribou subpopulations that are referenced in this report (Southampton Island, Coats Island, Boothia Peninsula, Baffin Island) are displayed in grey scale for completeness only but are not a part of this assessment. Range shape files from Nagy *et al.* (2011) with data from Government of Nunavut and GNWT. For the Tuktoyaktuk Peninsula subpopulation, all data from GNWT. For the Porcupine subpopulation, all data courtesy of Government of Yukon.

Extent of Occurrence/Area of Occupancy

(The Extent of Occurrence and Area of Occupancy will be updated with new range boundaries)

SARC defines the 'extent of occurrence' (EO) as 'the area included in a polygon without concave angles that encompasses the geographic distribution of all known populations of a species' (SARC 2024). An updated annual range map was only available for the Porcupine subpopulation (Couriot *et al.* 2025). The EO for the Porcupine subpopulation calculated using a single minimum convex polygon encompassing the annual range excluding the portion of the annual range not within the NWT, and based on telemetry location data from 1982 to 2024 (Couriot *et al.* 2025) was 11,698 km². This is lower than what was reported in SARC (2017; 21,337 km²), but the decrease reflects revised methods for delineating the range rather than an actual reduction in distribution. The EO for the ten central/eastern subpopulations of the NWT (Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose-West, Bluenose-East, Bathurst, Beverly, Ahiak, Qamanirjuaq, Wager Bay, Lorillard), calculated in a similar manner and based on data from 1996 to 2008 (Nagy *et al.* 2011), was approximately 787,473 km².

'Area of occupancy' (AO) is 'the area within the extent of occurrence that is occupied by a species, excluding cases of vagrancy'. This measure reflects the fact that the EO may contain unsuitable or unoccupied habitats. In some cases (e.g. irreplaceable colonial nesting sites, or crucial feeding sites for migratory species), AO is the smallest area essential at any stage to the survival of existing populations. In such cases, AO does not need to occur within the NWT. For the purposes of this report, calving grounds have been identified as the smallest area essential for survival. Updated calving ground maps were not available for any subpopulations. The summed AO (area of the calving grounds) for the ten central/eastern subpopulations of the NWT (Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose-West, Bluenose-East, Bathurst, Beverly, Ahiak, Qamanirjuaq, Wager Bay, Lorillard), minus overlap in the Beverly and Ahiak calving grounds based on data from 1996 to 2008 (Nagy *et al.* 2011), is 161,852 km². The AO for the Porcupine subpopulation, based on data from United States Fish and Wildlife (SARC 2017), is 23,952 km². Note that because AO includes essential habitat not within the NWT, AO for the Porcupine subpopulation (which calves in Alaska and the Yukon) is larger than its corresponding NWT-only extent of occurrence.

The 'index of area of occupancy' (IAO) 'is a measure that aims to provide an estimate of area of occupancy that is not dependent on scale. The IAO is measured as the surface area of 2 x 2 km grid cells that intersect the actual area occupied by the wildlife species (i.e., the biological area of occupancy). Due to the large extent of the calving grounds of barren-ground caribou, AO and IAO are the same.

Locations

SARC defines 'location' as 'a geographically or ecologically distinct area in which a single threatening event can rapidly affect all individuals of the species present. The size of the location depends on the area covered by the threatening event and may include part of one or many subpopulations. Where a species is affected by more than one threatening event, location should be defined by considering the most serious plausible threat' (SARC 2024).

Female caribou from a single subpopulation aggregate together on their calving ground, which means that most females of any one subpopulation could be exposed to a single threatening event. Central and eastern barren-ground caribou have ten extant locations in the NWT, based on subpopulation-specific threats and concentration of individuals at calving grounds (described in *Threats and limiting factors*). The Porcupine caribou subpopulation is considered one location, with its calving ground located in Yukon and Alaska. Calving grounds for the Tuktoyaktuk Peninsula, Cape Bathurst and Bluenose West subpopulations are in the NWT. Calving grounds for all other NWT barren-ground caribou subpopulations are in NU.

Search Effort

Barren-ground caribou range in the NWT is based on systematic aerial caribou surveys that have taken place since the early 1980s, satellite collar information⁶, and large winter range surveys and ear tags prior to the 1980s.

Aerial surveys

Aerial surveys are usually flown for a particular seasonal range, such as calving grounds or winter ranges, for the individual subpopulations. Over time, the most consistent search effort is for calving grounds. Less frequently, larger areas are surveyed; for example, in 2007 and 2008 the calving grounds of seven subpopulations were covered during systematic aerial surveys to map all the calving distributions at one time (Environment and Natural Resources [ENR] 2013; Poole *et al.* 2014).

Between 2000 and 2006, the tundra regions had a substantial amount of survey effort for some calving grounds (e.g., Nagy and Johnson 2006; Nagy *et al.* 2008), but in 2007 and 2008 survey methodologies were improved, and calving distribution was more systematically surveyed over larger areas, and densities were measured for calving grounds (Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose-West, Bluenose-East, Bathurst, Beverly, Ahikak, and Qamanirjuaq) across the NWT and NU. The 2007 and 2008 surveys

⁶ 'Collars' refer collectively to very high frequency (VHF) collars, GPS collars, and/or satellite collars, which have all been used to track caribou movement (Fisher *et al.* 2009.).

are summarized (Poole *et al.* 2014) with assessment of the sampling and data recording. Some of these calving grounds were also surveyed in subsequent years.

The comparability of annual and seasonal distribution data collected during aerial surveys has improved as surveys have become more standardized, including use of Geographic Positioning Systems (GPS) to record locations (Adamczewski *et al.* 2014; Poole *et al.* 2014).

Ear tags

Between 1959 and 1979, Beverly, Bathurst and Qamanirjuaq caribou caught during summer river crossings were individually marked with ear tags. Between 5-7% of the ear tags from 7,463 Beverly caribou, 678 Bathurst caribou, and 2,552 Qamanirjuaq caribou were returned by hunters, along with the location in which the caribou was harvested, providing some indication of distribution and movements (Heard 1984).

Collars

In the NWT between 1986 and 1988, females from the Bluenose-East and Bluenose-West subpopulations were fitted with VHF radio-collars and radio-tracked to map calving locations (McLean and Fraser 1992). The use of radio-tracking continued after 1988, mainly to locate caribou aggregations for photographic counts for the Cape Bathurst, Bluenose-West, Bluenose-East, and Tuktoyaktuk Peninsula subpopulations (Nagy 2009a). After 1996, the use of satellite telemetry became more widespread and was used to track the movements of individual caribou (mostly females). Until the use of satellite collars, descriptions of caribou winter distribution from aerial surveys could not always be attributed to a specific subpopulation unless the surveys were continued into May to track the direction of pre-calving migration. Once satellite collars were available, use of VHF collars was phased out. Use of GPS collars with satellite uplink, which allows for much higher accuracy and more locations per day, started in 2006 (Beverly, Ahiak) and 2008 (Bathurst). Programming of the collars varies but most collars are programmed to last 3-4 years, after which a programmed breakaway parts the collar and they fall to the ground. (Adamczewski pers. comm. 2026).

Sample size and representation of the collared animals for a subpopulation limit the ability to describe distribution. Prior to the mid-2000s, annual satellite collar sample sizes were mostly low (<20 collars and more often <10 collars per subpopulation). In addition, it is mostly mature females that are fitted with satellite collars so distribution mapped from satellite locations may under-represent subpopulation distribution (especially during calving as early post-calving and winter, male and female caribou differ in range use). For example, caribou males are frequently further south during the winter (e.g., Thomas *et al.* 1998) and most males are well south of the calving grounds in June. VHF collars were placed on males from the Cape Bathurst and Bluenose-West subpopulations

sporadically during the mid-1980s to mid-2000s in preparation for post-calving surveys (Nagy and Johnson 2006; Nagy 2009a), and by the mid-2000s male collars comprised roughly 20-30% of the collars on the Cape Bathurst, Bluenose-West and Bluenose-East subpopulations (Nagy and Tracz 2006; Nagy *et al.* 2008; Nagy 2009a). Satellite collars have been placed on males from the Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose-West and Bluenose-East subpopulations since 2007-09 (ENR 2013b). Satellite collars were first placed on Bathurst subpopulation males (20) in 2015, along with increased collars (30) on females (Adamczewski pers. comm. 2015 *in* SARC 2017). In recent years, there were over 50 collared female caribou in the Porcupine (2023), Bluenose East (2023), Beverly (2023) and Qamanirjuaq (2022) subpopulations, 30 in the Bathurst subpopulation (2023), and 24 each in the Cape Bathurst (2024) and Bluenose West (2024) subpopulations (Campbell 2023; Boulanger *et al.* 2024a; PCTC 2024; ACCWM 2025). As part of an ongoing collaring program, female caribou in the Ahiak (30), Wager Bay (35) and Lorillard (25) subpopulations were collared in 2022 and 2023 (Campbell 2024).

Analyses to examine the representation of collars relative to overall distribution require aerial surveys to compare the distribution of collared caribou to the overall caribou subpopulation, and these surveys are relatively infrequent. However, D'Hont *et al.* (2009) mapped barren-ground caribou distribution in late winter 2004 in the western NWT (Great Slave Lake to the Mackenzie delta and east to the Coronation Gulf area of NU), and found that while non-collared caribou are associated with collared females, there are also areas with caribou but no collared caribou, indicating that collared caribou may not be entirely representative of the distribution of the whole subpopulation. The concentration of females on their calving grounds means that the satellite-collared females are more representative of calving distribution (Nagy and Johnson 2007a and b; Gunn *et al.* 2008).

Typically, the locations of satellite-collared caribou are analyzed using statistical techniques such as minimum convex polygons or kernel density estimation techniques, which require a minimum sample size of 30-50 individually marked animals (Seaman *et al.* 1999). Otto *et al.* (2003) observed that the number of satellite collars needed to represent a subpopulation's distribution during different seasons ranged from 23-68 collars at the 75% probability level, to 36-181 collars at the 95% probability level, with calving having the lowest estimated required collar sample sizes and late summer-early fall and winter seasons having generally the highest estimated required sample sizes. Mapping cumulative distribution over a number of years reduces the effect of reduced sample sizes but loses information on the scale of annual variation.

In the NWT, the systematic effort and extent of coverage make it unlikely that there are unexplored areas (at the scale of 100 km²) that could harbour substantial numbers of

barren-ground caribou. The negative data (areas searched and barren-ground caribou not found) are available in the individual survey reports.

The information is sufficient across the NWT to describe the overall and seasonal distribution of individual subpopulations (BQCMB 2000; Nagy *et al.* 2005, 2011; Nagy 2009b; Nagy and Campbell 2012; Gunn *et al.* 2013a); however, it is uneven among subpopulations and over time, especially to describe seasonal distribution for some subpopulations or trends in cumulative annual and seasonal distribution. The uncertainties partly arise from the limitations of satellite-collar locations (representativeness and sample size) as well as gaps and time lags in the analysis and reporting of surveys and telemetry data, which reduces the probability of detecting changes, especially trends in distribution.

Movements

Migration

The annual migrations are one of the most conspicuous characteristics of barren-ground caribou. Reasons for migration are complex and likely involve access to higher abundance or quality of forage (McCullough 1985) and/or reduction of the risk of predation (Fryxell and Sinclair 1988; Bergerud *et al.* 2008) or parasitism (Folstad *et al.* 1991; Hughes *et al.* 2009). The annual reproductive cycle is marked by the females' annual and often extensive pre-calving migration to the calving ground where almost all pregnant females in a subpopulation congregate at relatively high densities (depending on subpopulation size). The timing of arrival on the calving ground varies annually and appears to reflect the condition of the females and travelling conditions such as snow depth and hardness (Bergerud *et al.* 2008). In each subpopulation, most calves are born during the peak of calving, which is only a few days, although it may extend over a period of 10-14 days (Bergerud 1975; Bergerud *et al.* 2008). Evidence of late-born calves was found by Nagy and Johnson (2007a and b) in the Cape Bathurst and Bluenose-West subpopulations in the early 2000s. The dates for the peak of calving are annually variable and differ among subpopulations (see Table 9). The males and juveniles that do not migrate to the calving grounds overlap in distribution with the females and calves during the summer. In late October fall migration is underway and the rut (mating season) begins.

Using the rates of individual movements of satellite-collared females from all subpopulations (1993-2009), Nagy (2011) identified 12 activity periods for migratory barren-ground caribou, the timing of which was largely synchronized among the NWT and NU subpopulations. There were three peaks when daily mean rates of movements were highest: pre-calving, early summer (insect harassment season) and the rut. The mean daily rates of movements differed among the subpopulations (Nagy 2011). Trends

in movements and migrations may be affected by changes in population size. For Bathurst caribou, as the subpopulation declined the winter range contracted and shifted to the northwest while there was little change in the calving range, resulting in shorter migrations between the winter and calving range (Mennell 2021).

Following winter 2022/23 when Bluenose East, Bathurst and Beverly caribou winter ranges overlapped (see *Trends in winter distribution*), spring migration paths for some collared caribou from each subpopulation appeared to converge, including some Beverly and Bathurst caribou initially moving west toward the Bluenose East calving ground before heading east towards their own calving grounds, and some Bluenose East caribou travelling east towards Bathurst Inlet before turning west and migrating to the Bluenose East calving ground in late May and early June (Figure 21, Boulanger *et al.* 2024a).

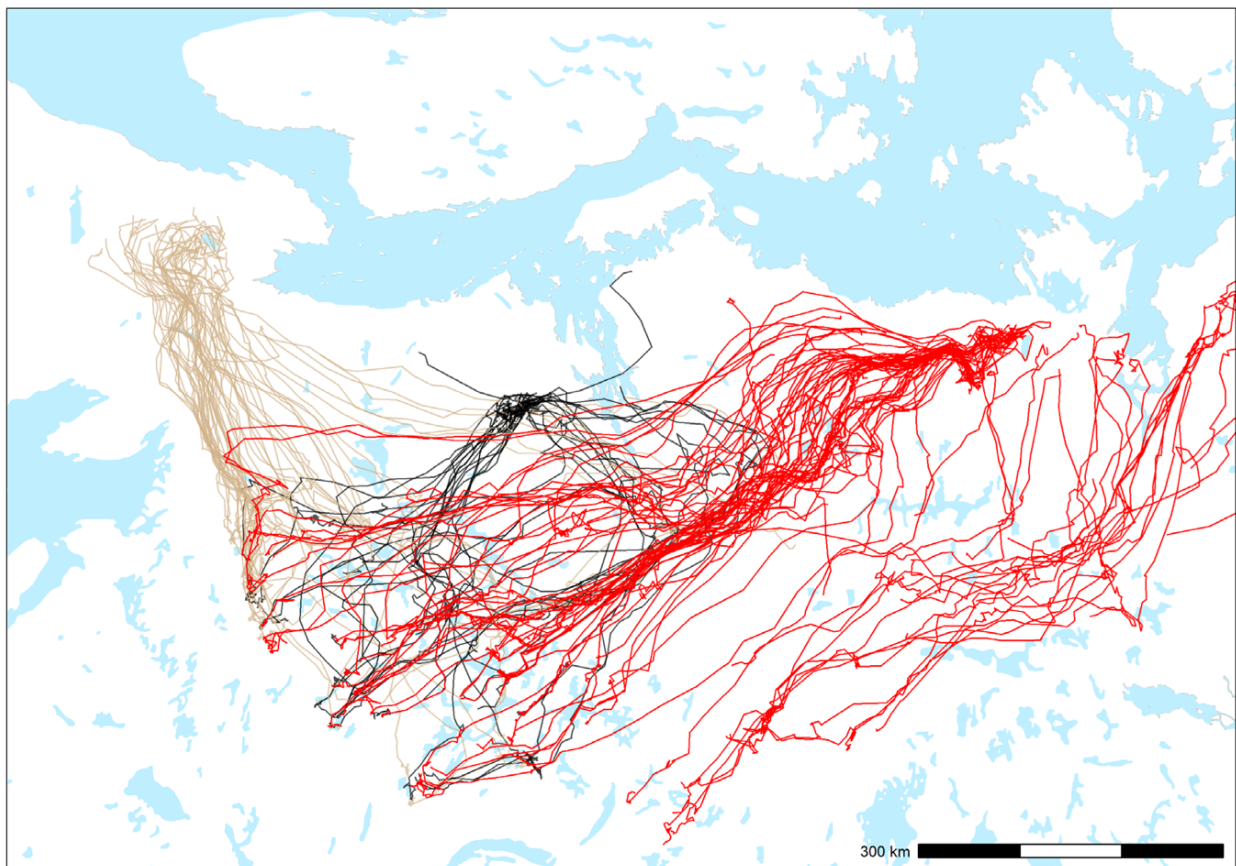


Figure 21. Migration paths of the Beverly satellite-collared caribou (red) in comparison to Bluenose-East caribou (tan) and Bathurst caribou (black) from April to May 2023 (reproduced from Boulanger *et al.* 2024a).

Similar intermixing on winter ranges and sharing of migration paths was observed for some Beverly, Ahiak, Wager Bay and Lorillard collared caribou, which may have influenced switching of calving grounds by female caribou (Campbell *et al.* 2025a; see next section: *Spatial fidelity and switching*).

Effects of human activities and roads on migration are discussed in *Threats – Disturbance from Human Activities*.

Spatial fidelity and switching

In general, barren-ground caribou show long term fidelity to calving grounds, pre-calving migratory routes, post-calving ranges, summer ranges, and water-crossings despite large changes in the abundance of caribou (e.g., Gordon 2005; Zalatan *et al.* 2006, Nagy 2011, Mennell 2021). The basis for determining spatial fidelity for entire subpopulations in short-time frames (a few decades) is through mapping annual range use during aerial surveys and from satellite-collared caribou. Spatial fidelity is described from the amount of overlapping distribution between consecutive surveys and individually from the movements of collared animals, although how the boundaries and overlap are determined potentially influences how fidelity will be measured (Nagy and Johnson 2007a, b; Poole *et al.* 2014). Considerable interest has centered on describing subpopulation spatial fidelity based on year-round affiliation of females (Nagy *et al.* 2011) or only fidelity to calving grounds (Thomas 1969; Gunn and Miller 1986; Roffler *et al.* 2012).

At the subpopulation scale, calving grounds do not usually completely overlap year to year. If the unoccupied area each year is in a consistent direction, it is deemed a directional shift, but if there is no consistency in direction, it is deemed a non-directional shift. Caution should be used in comparing calving ground boundaries determined only by aircraft surveys with locations determined by use of satellite telemetry as criteria for determining boundaries differ. For example, for the Cape Bathurst, Bluenose-West, and Bluenose-East subpopulations, Nagy (2009a and b) showed cumulative overlap in calving grounds based on satellite-collared females (1996-2006) relative to areas mapped during aerial surveys in the mid-1970s (Hawley *et al.* 1979). Overlap had persisted for the Cape Bathurst and Bluenose-West subpopulations while the calving grounds of the Bluenose-East subpopulation appear to have rotated about a central axis as it shifted southeast then northwest (A. Gunn, pers. comm. 2026).

The length of the period for which there is information may partially influence the likelihood of detecting whether there are periods of directional as well as non-directional shifts in calving ground locations. There was no evidence for a directional shift in the Cape Bathurst, Bluenose-West, Beverly (1957-94), and Qamanirjuaq (1974-2008) calving grounds. The Bathurst subpopulation had two periods (1966-84 and 1996-2012) when the annual shifts in overlap were non-directional (Fleck and Gunn 1982; Gunn *et al.* 2008; Sutherland and Gunn 1996). Then, between 1984 and 1996, the consecutive overlap was consistently westward and the calving ground shifted approximately 250 km from east to west of Bathurst Inlet to an area where calving had been recorded in the 1950s (Gunn *et al.* 2008).

The satellite-collared females also reveal fidelity⁷ at the individual scale. Based on satellite-collars, annual fidelity of individual females to a single calving ground is high for the Tuktoyaktuk Peninsula (93% for 2005–2013), Cape Bathurst (98% for 2010–2024), Bluenose West (99% for 2010–2024) and Bluenose East subpopulations (97–99% for 2018–2023) (Davison 2016; ACCWM 2025).

Females in most subpopulations have a low (<5%) annual rate of switching between neighbouring calving grounds. Gunn and Poole (pers. comm. 2014 *in* SARC 2017) noted two of 63 pairs (3.2%) of consecutive calving locations were switches between Bathurst and Bluenose-East subpopulations, while Adamczewski *et al.* (2020) calculated Bathurst rates of switching at 3–4% between 1996 and 2009.

Switching rates for the Bathurst subpopulation from 2010 to 2015 were 4% (2/52) to Bluenose East, and 2% (1/52) to Beverly (Adamczewski *et al.* 2019). Since 2018, higher switching rates have been documented at 27.2% (3/11) in 2018, 17.6% (3/17) in 2019, 17.6% (6/34) in 2021 and 19.0% (4/21) in 2023 while the subpopulation has continued to decline (Adamczewski *et al.* 2022; Boulanger *et al.* 2024a). Nearly all females that switched moved to the Beverly calving ground, but a few moved to the Bluenose-East calving ground. As of 2025, Beverly caribou outnumbered Bathurst by about 43:1 and Bluenose-East caribou outnumbered Bathurst by about 8:1 (see Table 17).

For the inland-calving Beverly subpopulation, nine of 21 collared females (43%) that calved on the traditional inland calving ground (Beverly South) switched to the coastal Queen Maud Gulf (where the Ahiak subpopulation also calves) between 2007 and 2010 at a time when the densities on the traditional inland Beverly calving ground had sharply declined (Gunn *et al.* 2012; Adamczewski *et al.* 2015). In comparison, switching of females that had calved on the coastal Queen Maud Gulf calving ground to the Beverly traditional inland calving ground was low (2%) (Adamczewski *et al.* 2015). Adamczewski *et al.* (2015) also estimated the probability of Beverly females returning to their traditional inland calving ground was 28% (CI 13–47%) and the probability of Ahiak females returning to their coastal Queen Maud Gulf calving ground was 78% (CI 65–87%). More recently, the estimated fidelity rate for the Beverly subpopulation was 90% for 2011–2018 and 96% for 2019–2023 (Campbell *et al.* 2025a). Estimating trends in switching is complicated for the subpopulations east of Bathurst Inlet as the understanding of calving

⁷ 'Fidelity' and 'switching' are reverse concepts, where fidelity implies the same defined behaviours occurred from year to year (e.g. females returning to the same calving ground each year), and switching implies a difference in behaviours (e.g. females using a calving ground different from the one used the previous year).

grounds and consequently subpopulation names has changed over time (see Table 8, Gunn et al. 2013b, Campbell et al. 2019)

Fidelity of Ahiak female caribou to their calving grounds is low, estimated at 42% for 2011-2018 and 62% for 2019-2023 (Campbell et al. 2025a). Female Ahiak caribou switched primarily to the Beverly calving ground and to a lesser extent to the Wager Bay calving ground. Data were insufficient to use methods to derive robust period-specific estimates for the Wager Bay and Lorillard subpopulations, but fidelity for both subpopulations were higher than for the Ahiak subpopulation (Lorillard: 93% (25/27) for 2011-2018, 73% (16/22) for 2019-2023; Wager Bay: 53% (8/15) for 2011-2018, 81% (26/32) for 2019-2023); Campbell et al. 2025a). Although sample sizes were small, Wager Bay females switched primarily to the Lorillard calving ground and to a lesser extent to the Ahiak calving ground, and Lorillard females switched to both Wager Bay and Ahiak calving grounds.

There is no evidence for spatial fidelity to specific rutting areas, in part because rut generally coincides with fall migration when the caribou are in relatively large aggregations and movements are rapid. However, information about the pattern of annual use of rut areas is limited, although Nagy (2009b) mapped the cumulative rut areas for the Cape Bathurst, Bluenose-West, and Bluenose-East subpopulations. The rutting seasonal range of the Beverly subpopulation has also been mapped (Campbell et al. 2019). Gunn et al. (2013b) examined the relationship between calving location and rut locations along the Queen Maud Gulf from 2006 to 2010 and found that cows that calve together also rut together.

Satellite-collaring can also reveal quite large movements by some individual females. Nagy (2009b) described how a Cape Bathurst female, one of 82 satellite-collared females, moved south to the Colville Lake area following a coastal icing event in fall 2003. The female remained in the central portion of the Bluenose-West range for the following two years before it returned to calve on the Cape Bathurst Peninsula in 2005, which suggests the movement was a temporary dispersal. An environmentally-forced movement that followed freezing rain and heavy snowfall occurred along the coast of Hudson Bay in November 2004 (Campbell pers. comm. 2005 in Gunn 2013). Collared females that had calved northwest of Wager Bay (NU) and on the Qamanirjuaq subpopulation's calving grounds moved more than 1,000 km to winter east of Great Slave Lake during the 2004-05 winter. Limited collar data also suggests that at least some Qamanirjuaq caribou females have wintered east and southeast of Reliance during winters 2011-12 to 2013-14 (ENR 2013b).

Further discussion of trends in annual subpopulation distribution is included in *Distribution Trends*.

Barriers to movement or dispersal

Most of the NWT tundra and taiga do not appear to have significant natural barriers limiting movements or dispersal. Large lakes likely cause detours when they are not frozen (see *Habitat Requirements*) and the Mackenzie River is likely a barrier limiting the movements of the Porcupine, Tuktoyaktuk Peninsula, Cape Bathurst, and Bluenose-West subpopulations.

Deep soft snow during migration can delay and hinder cows from reaching their typical calving ground (Couriot *et al.* 2023)

Water crossings and 'tata' are discussed in *Habitat Requirements*. Effects of human activities and roads on movement are discussed in *Threats – Disturbance from Human Activities*.

Distribution Trends

Typically, as barren-ground caribou subpopulations fluctuate in abundance, their distribution also changes (Virgl *et al.* 2017; Mennell 2021; Brose and Gurarie 2025). Assessing trends in distribution also requires consideration of annual variation in some seasonal distributions as barren-ground caribou characteristically shift their winter distribution among years (Mennell 2021), and winter ranges often overlap between neighbouring subpopulations (Thomas *et al.* 1998; Nagy and Campbell 2012; Gurarie *et al.* 2024a).

Most information on distribution of barren-ground caribou in the NWT focusses on either winter or calving ranges. Information available to assess winter distribution trends consists largely of irregular aerial surveys, especially in the 1950s and 1960s. In the 1980s, there was relatively regular coverage of the late winter distribution, especially for the Bathurst and Beverly subpopulations. Considerably more information is available to describe trends in calving distributions through aerial surveys since the 1960s.

After 1996, information on trends in annual distribution was supplemented by the use of satellite-collared females on the Bathurst, Cape Bathurst, Bluenose-West and Bluenose-East subpopulations. Collaring of the Ahiak and Beverly subpopulations began in 1995 but sample sizes were only between one and five females annually until 2005. Satellite-collaring of Wager Bay and Lorillard subpopulations began in 1995 (Campbell 2005).

Trends in annual distribution

The current Porcupine Caribou Herd Long-term Core Range includes the area that the Porcupine caribou subpopulation has regularly used based on collared caribou data from April 1985 to November 2024 and seasonal distribution estimated by Russell and Nixon (1986; Couriot *et al.* 2025). Differences between the current range boundary and

previous ones are primarily due to revised methods for delineating the range and do not reflect a change in annual distribution.

The cumulative winter distribution of satellite-collared females in the four western NWT subpopulations (Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose-West and Bluenose-East) from 1996 to 2004 (Nagy *et al.* 2005) suggested the distribution limits were similar to the generalized historic 'usual' winter ranges (Map 1 in Kelsall 1968). However, subsequent to Nagy *et al.*'s (2005) review, abundance for the Cape Bathurst and Bluenose-West subpopulations sharply declined (see *Abundance*), but satellite collar data has not yet been analyzed to determine whether there is a corresponding reduction in the winter range.

Overall, the trend for the southern and southwest portion of barren-ground caribou range is a contraction since the late 1960s (Banfield 1961; Kelsall 1968, see Figure 20). For the Beverly subpopulation, Thomas *et al.* (1998) summarised historic information to suggest a longer-term trend toward a reduced southern distribution with a reduction of at least 200 to 300 km between the 1950s and the 1980s (both periods of peak abundance). Although this somewhat contradicts the pattern of range size, especially the winter range, reflecting subpopulation size, major fires in northern Saskatchewan and the southern NWT in the early 1980s may have contributed to the range retraction. The Bathurst caribou annual range contracted 80-90% from 1997 to 2020, shifting about 200 km northwards (Mennell 2021; Gurarie *et al.* 2024a; Brose and Gurarie 2025; see sections below on trends in seasonal distributions). Based on satellite-collared caribou from 2012-2023, Beverly caribou currently spend most of their time north and east of Great Slave Lake (BQCMB 2024a). For the Qamanirjuaq subpopulation, a similar northward retraction of their southern distribution has been observed, with satellite collar locations showing the greatest use in NU, and some use of northern Manitoba, northeastern Saskatchewan and southeastern NWT, sometimes nearing the southeast of Great Slave Lake (BQCMB 2024a).

Trends in winter distribution

In northwestern NWT in the early 1950s, barren-ground caribou were reported as far west as Norman Wells and large numbers of caribou wintered from Fort Norman (Tulita) to south of Wrigley (Kelsall 1968). In 1954, caribou crossed the Mackenzie River by the Horn Plateau near Fort Providence (J. Antoine reported in Beaulieu 2012). In winter 2002, barren-ground caribou were reported near Wrigley for the first time in 20 years (T. Lennie pers. comm. in Gunn *et al.* 2004). Those locations are similar to mapped distributions used during two or three of 10 winters between 1948 and 1960 (Kelsall 1968). Kelsall (1968) reported wintering on the tundra-forest transition north of Great Bear Lake extending on to the tundra in the vicinity of Bluenose Lake during 1950-60. The areas used by the Bluenose-East and West subpopulations and the areas used in 1996-2004 by the Cape

Bathurst subpopulation for wintering (Nagy *et al.* 2005) do not completely overlap the distribution mapped by Kelsall (1968) based on a visual inspection of the maps. Currently, there is some mixing of Tuktoyaktuk Peninsula, Cape Bathurst and some Bluenose West caribou during winter in the area of overlap of the three ranges (ACCWM 2025).

For the Bathurst subpopulation, information on the winter distribution prior to 1996 is from aerial unsystematic reconnaissance surveys from 1985-95 (Williams and Fournier 1996). Overlapping areas used annually indicated a high frequency of late winter distribution north and west of Great Slave Lake (Williams and Fournier 1996). Subsequent trends based on satellite-collared females during 1996-2005 suggest first an expansion in the winter range to south of Great Slave Lake in the forested southeast NWT (1997-2001) (Figure 22), then, based on the southern edge of the 90% winter range for the Bathurst subpopulation during 2001-2010, females wintered progressively further north of the 60th parallel (Gunn *et al.* 2011a). This trend toward wintering north of the East Arm of Great Slave Lake is reflected in a shift to wintering northwest of Great Slave Lake after winter 2000-01 (Figure 22; Gunn *et al.* 2011a, 2013a).

Bathurst caribou wintering southeast of Great Slave Lake in 2000 may have been part of the expansion and/or shift of the winter distribution south and west into the taiga and tree-line transition zone since the late-1990s. In April 1996, five females collared on the tundra east of Bathurst Inlet subsequently migrated east and calved along the Queen Maud Gulf coast (Gunn *et al.* 2000). During winter 1997-98, those females shifted their distribution south from the tundra to the tree-line transition zone southeast of Great Slave Lake. Based on females collared in 2000 and 2001, the winter distribution of collared females that calve along the coastal Queen Maud Gulf appears to have increased since 1998, further south and west (Gunn and D'Hont 2002). In 2005 (Gunn *et al.* 2013a) and 2006-08 (Johnson *et al.* 2008; Adamczewski *et al.* 2015), more collars were fitted to females and those females and the winter distribution overlapped that recorded in 2001-02 (Gunn *et al.* 2011b). Between 1996 and 2005, there was no trend in the size of the winter range based on the satellite-collared females (Gunn *et al.* 2013a).

Between 1997 and 2019, the Bathurst caribou winter range decreased in size by 88% with the core of the winter range shifting to the northwest and a reduction in use of the southeastern portion (Mennell 2021).

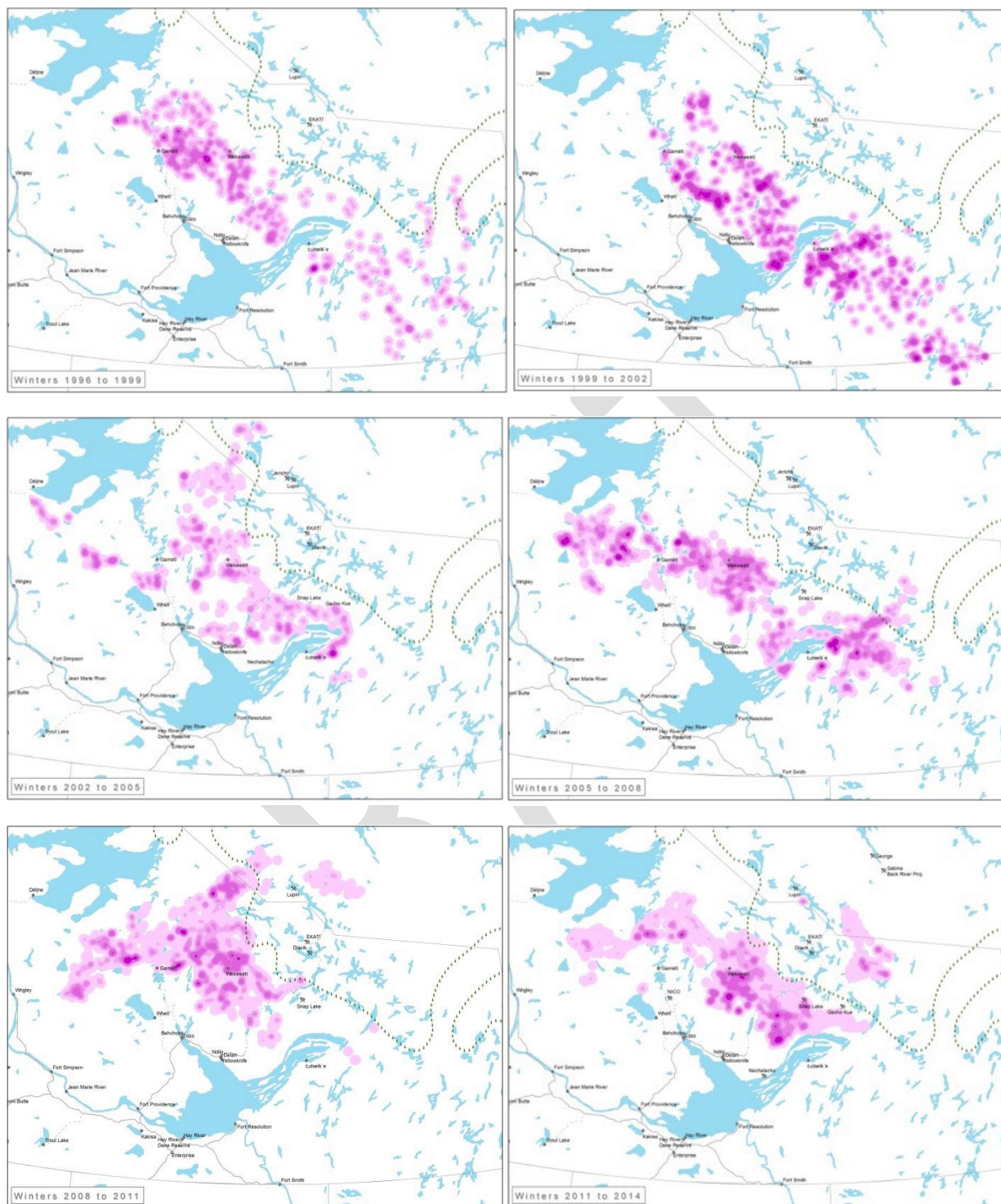


Figure 22. Location of winter (6 December -14 April) range for the Bathurst caribou subpopulation, 1996 to 2014, based on collared females (from left to right, winter range for 1996-99, 1999-2002, 2002-05, 2005-08, 2008-11, and 2011-14) (map by B. Fournier, ENR). Note the general retraction of the southern extent of winter range over time.

Overlapping winter ranges of the Bathurst and Beverly subpopulations has been recognized from ear-tagging (Heard 1985), aerial surveys (Thomas *et al.* 1998) and satellite collars on females (Gunn *et al.* 2013a, Boulanger *et al.* 2024a). Thomas *et al.* (1998) described winter distribution of the Beverly subpopulation for five winters between 1982 and 1987 based on a series of aerial surveys. They had noted an east to west movement during the winter in relation to snow conditions. Although they commented that the Beverly winter range extended further east and west than expected during the 1980s, they were unable to identify which subpopulation (Beverly or Bathurst) was involved without marked individuals. Even with marked individuals, different interpretations on designating subpopulation identity can still result in uncertainty about the number of subpopulations and whether the subpopulations have been lost.

From 2006-07 to 2020-21, the Bathurst caribou winter range shifted north and east resulting in increased overlap with the Beverly subpopulation, especially in the latter years, and less overlap with the Bluenose East subpopulation (Figure 23; Gurarie *et al.* 2024a). Overlap began in early winter (October). Satellite-collar locations from 2018 to 2023 show increased winter overlap of Bluenose East, Bathurst and Beverly subpopulations since 2020, and especially in April 2023 (Figure 25; Boulanger *et al.* 2024a). Some collared caribou from the Ahiak subpopulation also overlapped with the Beverly subpopulation, and to a lesser extent with the Bluenose and Bathurst subpopulations in winter 2024 (Adamczewski *et al.* 2024c).

While the overall pattern for winter ranges is complicated by the overlap between neighbouring subpopulations, the trend for the Bathurst winter range was to contract northwards from the south as subpopulation size declined.

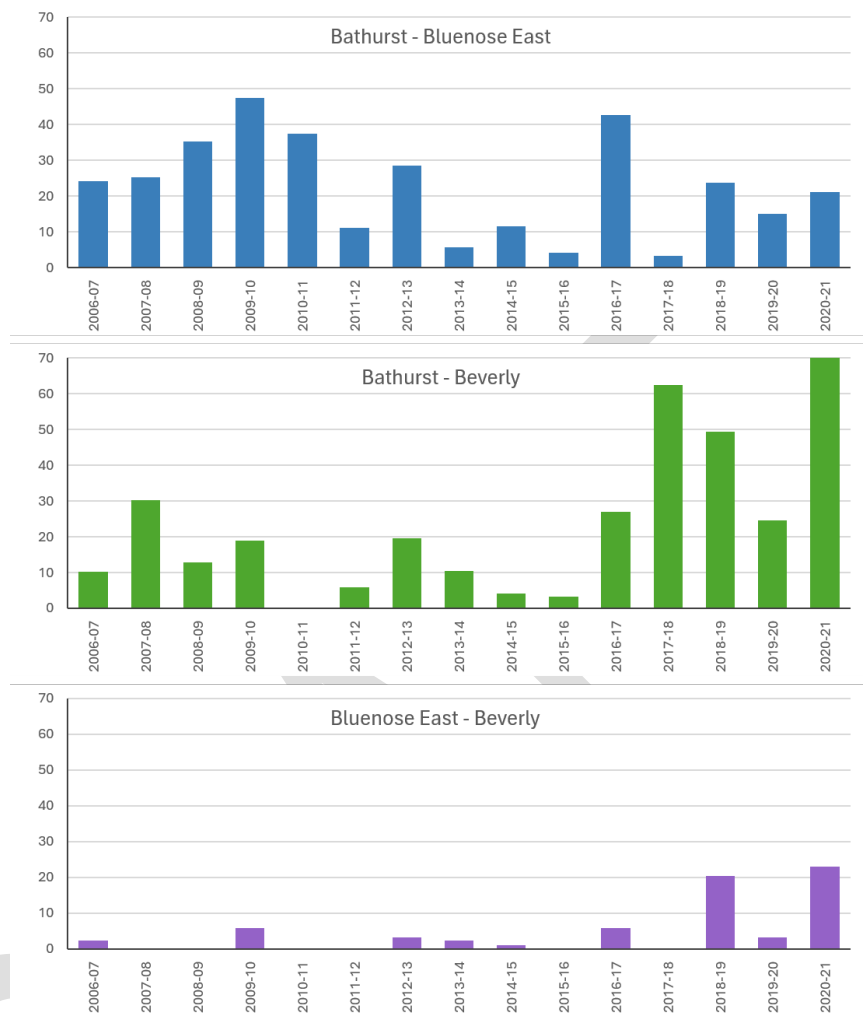


Figure 23. Estimated index of overlap between the Bathurst, Bluenose East and Beverly subpopulations during winter, using the Volume of Intersection Statistic (VI) based on collared caribou locations from 2006-07 to 2020-21 (values from Gurarie *et al.* 2024a).

Trends in calving ground distribution and location

More is known about trends in calving distribution as aerial surveys have been relatively frequent and sampled for a relatively long period for some subpopulations. For example, for the Bathurst subpopulation, 24 calving grounds were mapped over a 42-year period between 1996 and 2007 based on aerial surveys and satellite collared females (Gunn *et al.* 2007, 2012). Since 2007, additional calving ground distribution surveys and calving ground photo surveys have been undertaken. Trends in distribution of calving and summer ranges are less marked than for the winter ranges as caribou typically show stronger fidelity to both calving and summer ranges (Schaefer *et al.* 2000; Gunn *et al.* 2001; Nagy 2009a and b). The calving grounds are termed 'traditional' as successive generations of females typically use the calving grounds.

Nagy (2009b) summarized surveys of Cape Bathurst, Bluenose-West and Bluenose-East subpopulation calving grounds since 1974. The earlier surveys were systematic surveys to map distribution and numbers; methods to define boundaries varied and were not always reported. More recent systematic aerial transect surveys of the Cape Bathurst and Bluenose-West calving grounds were conducted between 2000 and 2006 (Theberge and Nagy 2001a); (Nagy and Johnson 2007b); Davison 2016) to estimate calf: female ratios (Nagy and Johnson 2007a and b). Figure 24 shows Bluenose West female caribou calving distributions for 2002-2005 from Nagy and Johnson (2007b) as an example of overlapping annual distribution of calving). In June 2005, the technique was changed to photographing groups with a radio-collared female (Nagy and Johnson 2007b). Nagy (2009b) mapped the percentage overlap between calving grounds from 1974-76 compared to 1996-2007 for the Bluenose-West and Cape Bathurst subpopulations. Nagy (2009a) noted that it was unclear whether the Bluenose-East subpopulation had shifted its calving grounds further east as the extent of sampling of the area in the 1970s was unknown.

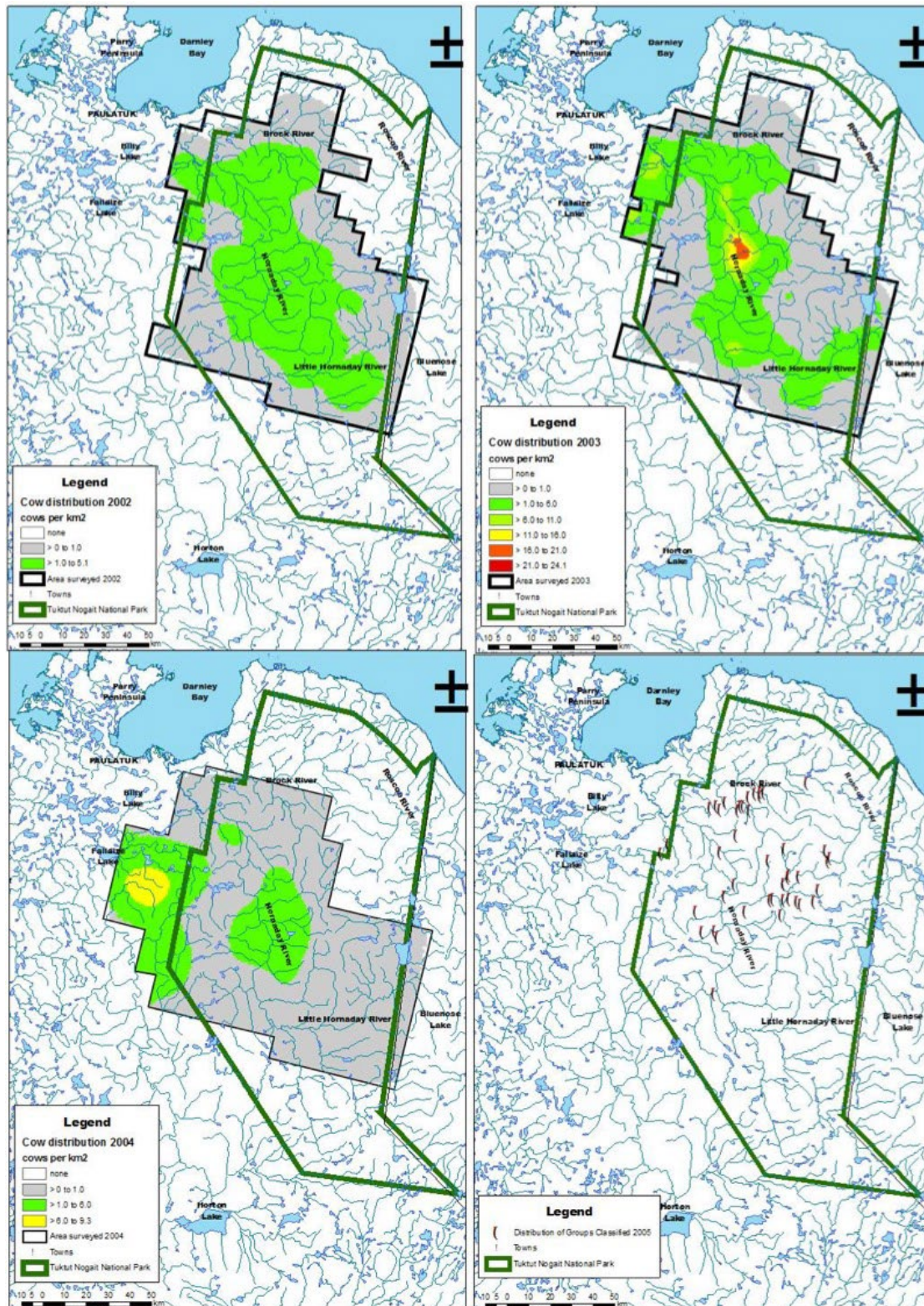


Figure 24. Distribution of females during calving on the Bluenose-West calving ground June 2002-05. Gray is <1.0 females/km²; light green to red is 1.0-24 females/km² based on ordinary kriging analysis to extrapolate between point observations (figure reproduced from Nagy and Johnson 2007b).

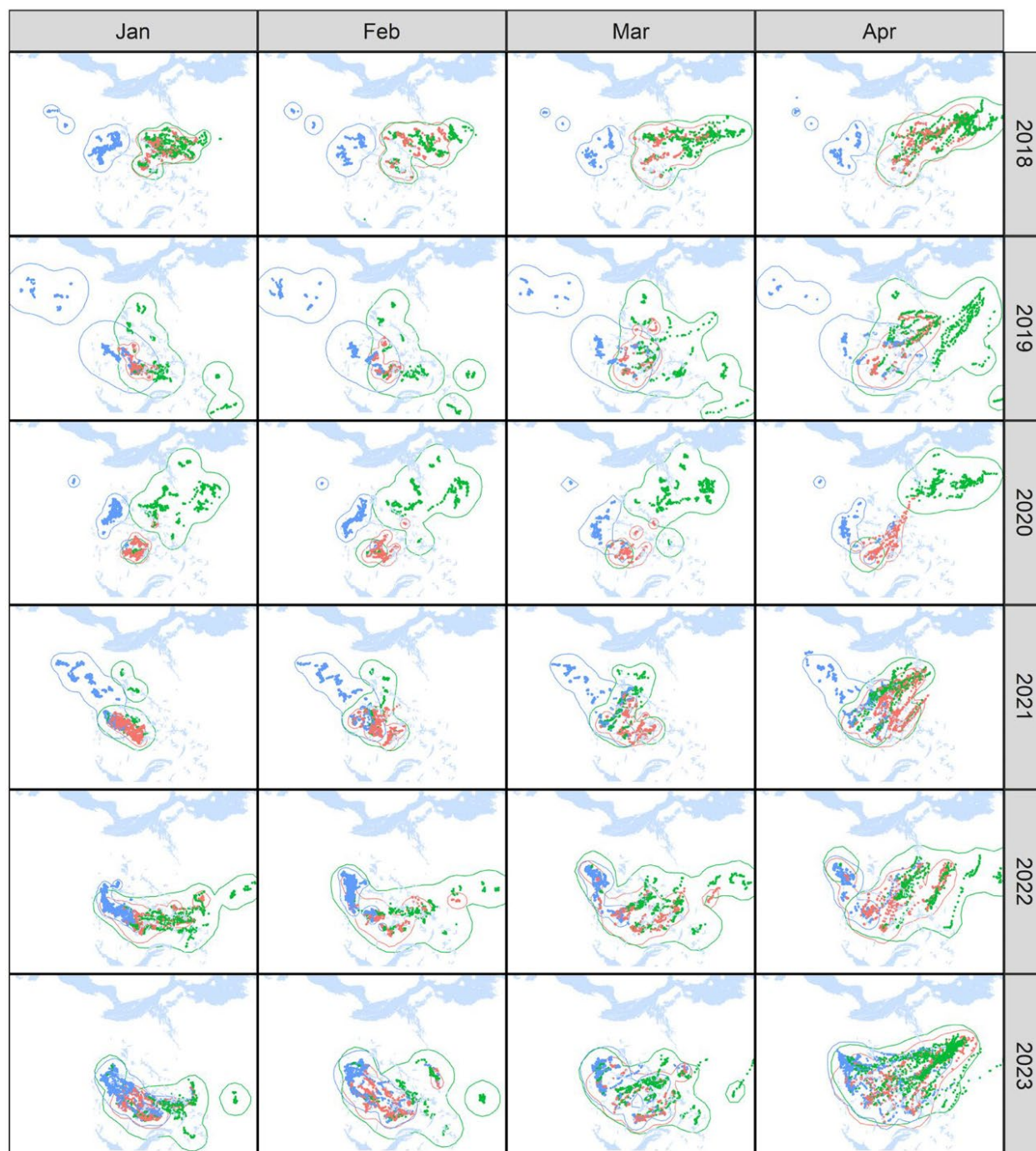


Figure 25. Overlap of Bluenose-East (blue), Bathurst (red) and Beverly (green) collared caribou locations and 95% kernel polygons around the collars. Year is calendar year (reproduced from Boulanger *et al.* 2024a).

For the Bathurst subpopulation, there was a directional shift of the calving ground between 1985 and 1995 from east to west of Bathurst Inlet, moving about 250 km (Figure 26; Gunn *et al.* 2008). The shift was during a period when the subpopulation numbered 350,000 or more (peak densities in the high-density stratum of 100-200 caribou/km²;

Gunn *et al.* 1997; Gunn *et al.* 2012), which led Gunn *et al.* (2012) to suggest that the shift to an unused calving ground was a consequence of the high densities of breeding females. From 1996 to 2014, the calving range remained west of Bathurst Inlet (Gunn *et al.* 2008, McNight 2025). Between 1997 and 2019, when all other Bathurst caribou seasonal ranges decreased in size by at least 76%, the calving range decreased by only 35%, and caribou distribution within the calving range stayed relatively consistent except for a decrease in use in the southwest and an increase in use in a small area in the northeast (Mennell 2021).

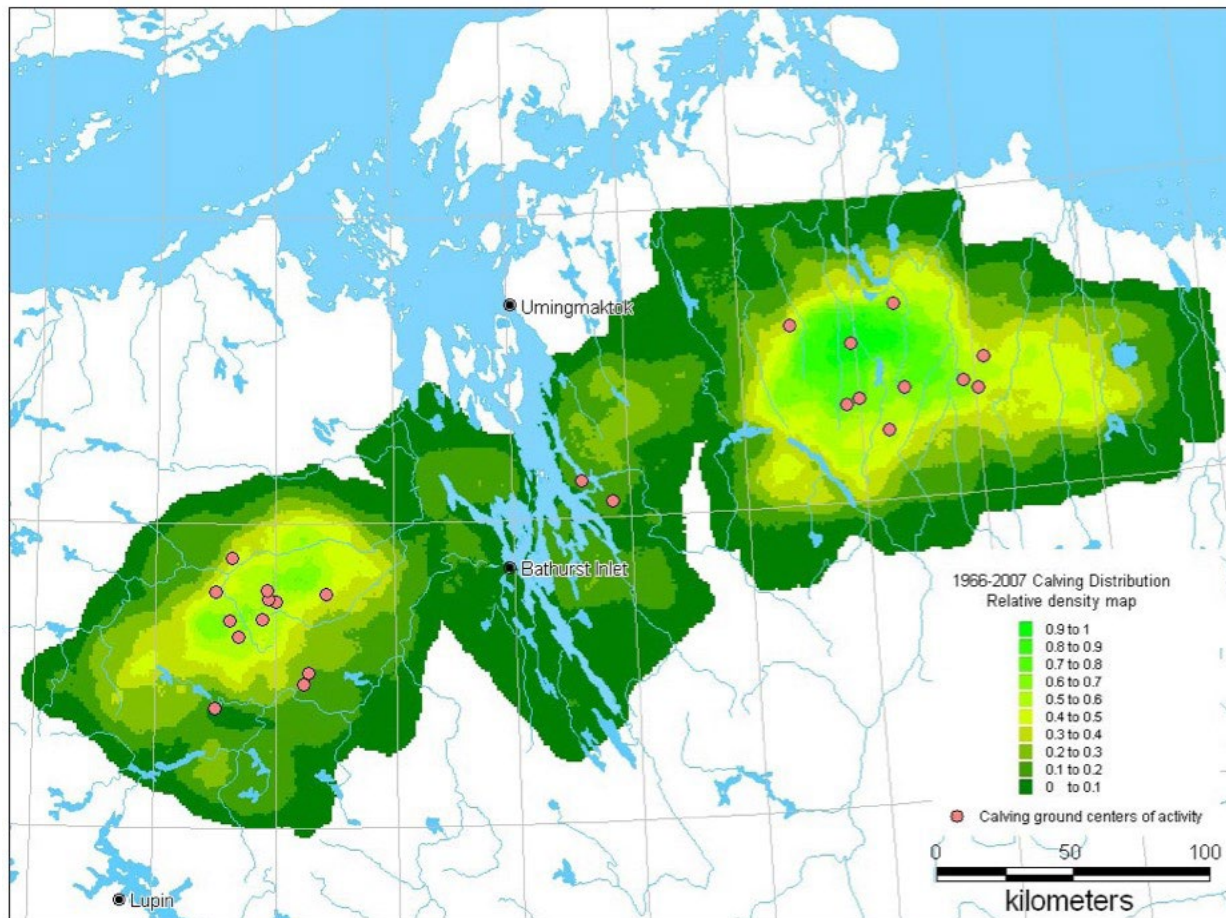


Figure 26. The cumulative density of peak calving grounds based on a moving window analysis of relative densities for the Bathurst subpopulation aerial surveys (1966-90) and satellite telemetry (1996-2007) (reproduced from Gunn *et al.* 2008). Years of calving ground centres of activity associated with three areas within the total area of the peak calving grounds: east of Bathurst Inlet (1966-1984); Bathurst Inlet (1986, 1990); west of Bathurst Inlet (1996-2007).

Spatial analyses for the Beverly and Ahik subpopulations reveal long periods (decades) when consecutive calving grounds overlap (Gunn *et al.* 2007, 2008, 2013a and b). Based on 23 aerial surveys conducted in 1957-94, the location of the Beverly subpopulation's traditional inland calving grounds displayed varying levels of overlap (Figure 27). The

area south of Beverly Lake was mostly used by non-breeders and by females in 1957 and 1958, when calving was delayed by a late snow melt (Gunn and Sutherland 1997). It was unknown how much calving was typically south of Beverly Lake between 1957 and 1974, but by 1978 breeding females were not found immediately south or north of Beverly Lake. After 1978, the location of the calving ground was mapped using the distribution of the breeding females, and between 1978 and 2002 there was a high degree of cumulative overlap (Gunn and Sutherland 1997; BQCMB 2000; Johnson and Mulders 2009). This pattern of overlap continued with the 2006–09 calving grounds, although numbers of breeding females were extremely low (Johnson and Williams 2008; Adamczewski *et al.* 2015). By June 2009 and 2010, there were so few breeding females on the traditional inland calving ground that concentrations could not be defined and by June 2011, no newborn calves were observed (Williams pers. comm. *In* Adamczewski *et al.* 2015).

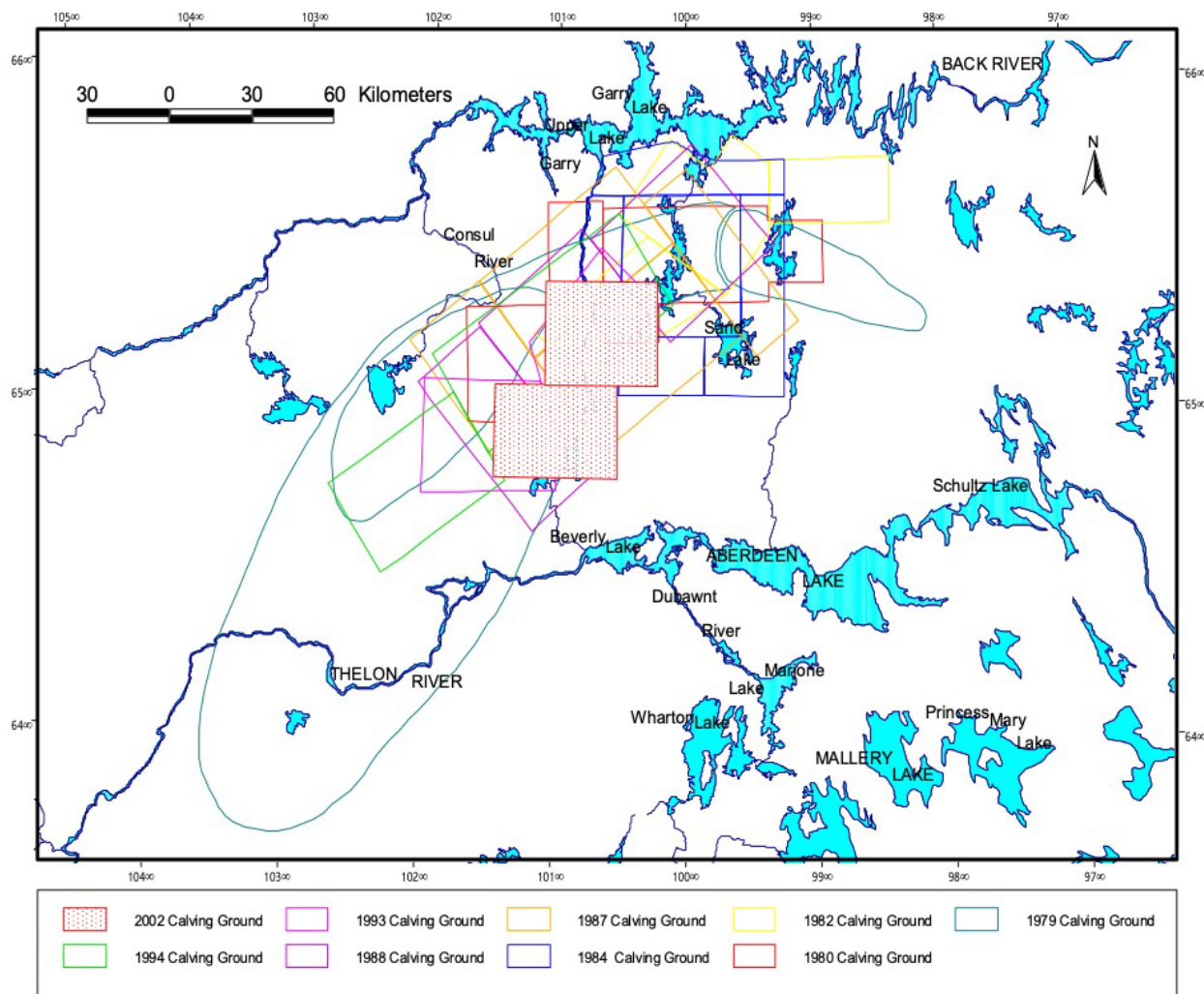


Figure 27. The locations of the Beverly subpopulation's traditional inland calving grounds between 1979 and 2002 (reproduced from Johnson and Mulders 2009).

While the evidence for the 1994-2009 trend in the use of the traditional inland Beverly calving ground is based on measurable and declining densities, evidence for what happened to calving Beverly caribou since 1994 is less clear and results in two differing explanations of how the decline occurred (see *Subpopulation names clarification*).

The Ahiak subpopulation's calving ground was mapped in June 1986 and 1996. The two systematic aerial surveys and four satellite-collared females (1996-98) indicated a trend for the calving grounds to have elongated to the west along the coast of the Queen Maud Gulf and extended east across Adelaide Peninsula to Chantrey Inlet (Gunn *et al.* 2000). Subsequent surveys between 2006 and 2008 indicated that the location of the calving ground was similar to 1996 (Johnson *et al.* 2009).

Locations of satellite-collared female caribou and calving ground surveys from the Qamanirjuaq subpopulation show a northerly expansion of the calving range since 2014, with the most northerly locations occurring in 2022 (Campbell 2023, Campbell *et al.* 2023). Advanced green-up on the Qamanirjuaq calving range coincided with earlier migration and calving by caribou (Mallory *et al.* 2020).

Trends in distribution during other seasons

Trends in distribution during seasons other than winter and calving are only available for the Bathurst subpopulation (Virgl *et al.* 2017; Mennell 2021; Cross 2025). Virgl *et al.* (2017) found that between 1996 and 2013, post-calving and fall ranges contracted, but spring and winter ranges did not. Mennell (2021), with a longer dataset (1997-2019) that included a further decline in population size, detected decreases of 90% in the spring migration range, 76% in the post-calving range, 83% in the late summer range, 87% in the fall rut range and 77% in the fall migration range. The geographic centres of the spring migration range, fall rut range and fall migration range progressively shifted to the northwest (Mennell 2021). Similarly, Cross (2025) found that the summer range contracted and shifted northward, with an increase in use in the Contwoyto Lake area.

Habitat Requirements

A conspicuous habitat requirement for barren-ground caribou is the use of large annual ranges. The large ranges are a consequence of migrations between seasonal ranges and large population sizes. Migration and gregarious behaviour is likely linked to the trade-off between the need to minimize the risk of predation and the need for forage (McCullough 1985; Fryxell and Sinclair 1988; Bergerud *et al.* 2008).

Nutritional requirements for caribou are high during spring and early summer when body reserves are depleted from the long winter and females have the additional energetic costs of pregnancy, pre-calving migration and lactation (Russell *et al.* 1993). Most information about barren-ground caribou nutrition is related to the requirement for

protein and carbohydrates (energy) rather than micro-nutrients such as minerals like sodium and potassium (White and Trudell 1980; White 1983; Russell *et al.* 1993). However, barren-ground caribou are known to use mineral-rich overflow on lakes during spring migration and females use sodium-rich mineral licks on at least the Bathurst calving ground and the Beverly inland calving ground (Fleck and Gunn 1982; Heard and Williams 1990a). Estimated minimum daily requirements of minerals increase from parturition to the end of summer (Oster *et al.* 2024).

Caribou are generalist foragers (Kelleyhouse 2001) and select for nutrient content according to the stage of plant growth rather than plant species (Kuropat and Bryant 1980). Plant nutritional value peaks as leaf and flower buds start to open; barren-ground caribou time their migrations to the tundra to take advantage of the peak nutritional value of the plants relative to the timing of their peak needs, which differ between males and females (White and Trudell 1980; Russell *et al.* 1993; Heard *et al.* 1996). Further discussion on nutritional adaptations and interactions with plants, in particular lichens, can be found in *Physiology and adaptability* and *Interactions*.

During calving, females will sacrifice the higher plant quality and biomass available to males that are further south to reduce predation risk (Fancy and Whitten 1991; Russell *et al.* 1993; Heard *et al.* 1996; Bergerud *et al.* 2008). When females reach their calving grounds, typically the snow-cover is melting, leaving patchy mottled ground that is various shades of tan and brown, which means newborn, brown-coloured calves are less conspicuous (Bergerud *et al.* 2008). As snowmelt accelerates and plant green-up rapidly advances, a female's nutritional needs increase to support her growing calf until about three weeks after birth. By then, calves are foraging as well as suckling (White and Trudell 1980). On the calving ground, the timing of snowmelt and the amount of greening vegetation available to lactating females (as measured through satellite imagery) is related to early calf survival (Griffith *et al.* 2002).

On summer ranges, features that allow caribou to reduce exposure to insect harassment represent key habitat requirements based on studies in Alaska (White and Trudell 1980; Russell *et al.* 1993) and Scandinavia (Skarin *et al.* 2004, 2008). Mosquito species and warble fly (*Hypoderma tarandi*) harassment can be reduced by caribou selecting remnant snow patches, eskers or coastal flats and shallow water to gain relief through increased exposure to winds and cool temperatures. However, summer habitat use patterns at broad or fine scales are unreported for NWT subpopulations, except for the Bathurst subpopulation, where the same pattern of insect avoidance was observed (Witter 2010; Witter *et al.* 2012a). Summer range indicators of forage availability explained 59% of the variation in late-winter calf-female ratio one and half years later on Bathurst subpopulation range (Chen *et al.* 2014). Good summer range appears to

contribute to high pregnancy rates the following winter, then to high calving rates in spring, and higher calf survival the following late winter.

By late August and September, plants are starting to senesce (die back) and the insect harassment season is finished. Caribou rebuild their body reserves of protein and fat through feeding on shrub leaves, grasses and sedges and especially mushrooms (Skoog 1968; Russell *et al.* 1993). Habitat requirements have not been detailed in the NWT during and after the October rut except that most barren-ground caribou subpopulations return to the taiga in early winter in search of forage and shelter (Bergerud *et al.* 2008). The ability to digest lichens is a key adaptation as lichens are high in digestible carbohydrates and are readily available in the winter taiga. However, since lichens are low in protein, caribou must also seek out evergreen leaves and sedges as well as dried leaves and twigs of shrubs (Russell *et al.* 1993). Anderson and Johnson (2014) found that wintering Bathurst caribou largely preferred older lichen-rich forest stands, but also made considerable use of recently burned areas, likely for the regenerating vascular plant growth in those areas.

The winter range of the Porcupine subpopulation is in the Taiga Cordillera. The Tuktoyaktuk Peninsula, Cape Bathurst, and Bluenose-West subpopulations' winter ranges are largely within the Taiga Plains ecozone. The winter range of the Bluenose-East subpopulation is partly in the Taiga Plains and partly in the Taiga Shield. Typical ranges of the Bathurst, Beverly, Ahlak, and Qamanirjuaq subpopulations are largely in the Taiga Shield ecozone, while the winter ranges of the Wager Bay and Lorillard tundra-wintering caribou are in the Southern Arctic ecozone. These zones are differentiated by climate and under-lying geology (e.g., Precambrian Shield). While generalized descriptions of vegetation, climate and terrain at the ecozone scale for the tundra and forested regions are available (Ecosystem Classification Group 2007 (rev. 2009), 2008, 2010, 2012), there have been few analyses specific to the NWT on identifying attributes that are critical for barren-ground caribou winter habitat. The winter habitat attributes for the Bathurst calving and winter ranges and for the Beverly winter ranges are the best known (Thomas and Kiliaan 1998a, b; Thomas *et al.* 1998; Griffith *et al.* 2001; Barrier 2011; Barrier and Johnson 2012).

The taiga in the NWT is mostly black spruce (*Picea mariana*), white spruce (*P. glauca*), and jack pine (*Pinus banksiana*) trees (Ecological Stratification Working Group 1996). The understory includes shrubs such as Labrador tea (*Ledum* spp.), willow (*Salix* spp.), dwarf birch (*Betula glandulosa*) and blueberry/cranberry (*Vaccinium* spp.). The lowest level vegetation consists of extensive mats of lichens and mosses. Caribou use of those forests is strongly influenced by forest fires and snowfall at the landscape scale. On the eastern winter ranges of the Taiga Shield in the NWT, the caribou of the Beverly subpopulation selected stands of black spruce mostly 150-250 years old and with high amounts of foliose lichens (leaf-like lichens) (Thomas and Kiliaan 1998a, b). As snow depth and hardness

changed during the winter, the caribou changed their movement patterns to areas with less snow (Thomas *et al.* 1998). For the Bathurst subpopulation, also wintering within the Taiga Shield, Barrier and Johnson (2012) reported how caribou avoided areas of the winter range with a high density of forest fire burns and selected the older patches of forest (>40 years old), which have more favourable snow conditions, higher cover of lichens and herbaceous forage as well as lakes nearby, which caribou use to reduce the risk of predation (Barrier and Johnson 2012). Barrier and Johnson (2012) relied on the movements of satellite-collared females to describe their selection of winter habitats and commented on the extent of individual variation among collared females in their trade-offs between foraging and predation risk. The winter habitat selection for the Cape Bathurst, Bluenose-West, and Bluenose-East subpopulations varies among years. In recent years, the Cape Bathurst subpopulation appears to be wintering around the Tuktoyaktuk Peninsula and Husky Lakes. Bluenose-West caribou are wintering from the southern Tuktoyaktuk Peninsula and Husky Lakes to Paulatuk and south to Great Bear Lake, and the Bluenose-East subpopulation is largely wintering south, east, and northeast of Great Bear Lake (D'Hont *et al.* 2009). Wintering habitat for the Tuktoyaktuk Peninsula and Qamanirjuaq subpopulations has not yet been described.

Whether caribou winter on the tundra, in the tree-line transition zone or in the taiga, the wintering range is not a fixed characteristic of a subpopulation and can vary from year to year (Gunn *et al.* 2013b).

At the macro-climate scale, the climate within overall barren-ground caribou range is characterized by a short plant growth season whose onset is annually variable (Arctic Climate Impact Assessment [ACIA] 2005; Federal, Provincial and Territorial Governments of Canada 2010). Winters are long and cold. The climate is dry and the snow pack accumulates mostly in the fall, typically followed by light snow falling from December to March. Regionally, the climate has west-east and north-south gradients and as well, the climate is influenced by the corridor formed by the Mackenzie River, linking the Beaufort Sea to the continental interior, and the shadowing effect of the Mackenzie Mountains. Great Slave and Great Bear lakes impose further regional variation as these large lakes melt and freeze up weeks later than surrounding smaller lakes. Regional climate variation is also influenced by proximity to coastal areas.

Imposed on this general climate pattern is the effect of global weather circulation patterns, which are recurring and persistent large-scale pressure and circulation anomalies on a sub-continental scale (Bonsal and Shabbar 2011). These patterns, which include the Arctic Oscillation, are characterized by episodic (recurring trends) patterns roughly at the decadal scale in winter temperatures and snowfall that subsequently impose patterns on river flow. Biological signals of climatic oscillations are extensive and include changes in plant growth, tree-growth, and the timing of freeze-up and break-up.

Krezek-Hanes *et al.* (2011) described how the global circulation patterns modify the prevalence of large forest fires with runs of years with large fires and runs of years with smaller areas burnt. The Arctic Oscillation's phases coincide with changes in caribou abundance, suggesting that climate has a role in caribou cycles through cumulative effects on habitat (Zalatan *et al.* 2006; Joly *et al.* 2011). However, effects of the Arctic Oscillation and Pacific Decadal Oscillation varied among individual Alaskan subpopulations (Joly *et al.* 2011).

During migration and movements, barren-ground caribou use traditional water crossings across rivers and lakes, and narrow 'bridges' of land (called 'tata' in Tłı̨chǫ terminology) between two lakes, which have been used for thousands of years (Tłı̨chǫ Research and Training Institute 2013, GNWT 2019). During summer and fall movements, caribou swim or wade across water crossings, which are typically located in areas of shallower water or at narrow points along waterbodies (GNWT 2019). Some water and ice crossings have been identified for the Beverly and Qamanirjuaq subpopulations including along the Thelon River (BQCMB n.d.; Williams and Gunn 1982; Gordon 2005). For the Beverly subpopulation, one of the Thelon River crossings in the Thelon Wildlife Sanctuary in the northeastern corner of the NWT has been ranked as critically important (BQCMB n.d.). Migration routes identified by Traditional Knowledge on the Bathurst range also reflect land bridges and water crossings (GNWT 2019). During spring, caribou migrating in the Contwoyto Lake area tended to cross the lake when ice conditions permitted (53 events), but circumnavigated the lake when they did not (13 events; Liao *et al.* 2026). During fall migration, when lake ice was not present almost all caribou circumvented the lake (94 events) rather than crossed it (3 events; Liao *et al.* 2026).

Habitat Availability, Fragmentation, and Trends

Habitat availability

At the scale of seasonal ranges, as population abundance increases and decreases, there are changes in range use (Skoog 1968; Hinkes *et al.* 2005), especially in the winter range (see *Distribution Trends*). During the 2000s, the Bathurst subpopulation reduced its use of ranges southeast of Great Slave Lake and a general northward contraction continued until at least 2019 (Gunn *et al.* 2013a; Mennell 2021). A reduction in range use as a subpopulation declines suggests that there are currently unoccupied or less heavily used habitats because winter range boundaries have contracted. Few analyses have been conducted at different spatial and temporal scales for other seasons or subpopulations in the NWT to determine if there is unoccupied habitat and how that relates to habitat availability or changes in the numbers of caribou (see *Distribution trends*), which limits the ability to assess trends.

Categorizing what is 'available' habitat is not a simple matter as habitat is not just vegetation types (see *Habitat Requirements*). Habitat availability varies annually due to effects of weather (timing of plant green up, snow or ice) and risks of predation and parasitism (summarized in *Habitat Requirements*). Forest fires affect forage availability, especially slow-growing organisms like lichen (Thomas 1998; see *Habitat fragmentation*), as do the caribou themselves (Manseau *et al.* 1996); these effects are over decadal timescales. Caribou, while cratering through snow, fragment and disturb lichen and thus create a mosaic of lichens at different stages of succession (Boudreau and Payette 2004a, b; Gaio-Oliveira *et al.* 2006; Joly *et al.* 2009). Even at relatively low population size browsing pressure on shrubs can be sufficiently strong to cause substantial biomass and nitrogen losses from the dominant shrub species (Zamin and Grogan 2013). During high population levels, impacts by the George River subpopulation (Quebec) on lichen flora were ubiquitous and extensive in some areas (Bergerud *et al.* 2008). The George River subpopulation at its peak at the beginning of the 1990s reached 600,000 or possibly more (Bergerud *et al.* 2008), which led to measurable grazing-related effects (Manseau *et al.* 1996). However, other subpopulations have rarely approached these numbers and have rarely remained at high numbers over extended years. Thus, potential large-scale grazing effects have rarely been documented. Conversely, Dearborn and Danby (2021) examined changes to vegetation on the Bathurst caribou range while the subpopulation experienced a dramatic decline in numbers. They found that the forested portions of the range were primarily influenced by forest fires, and that increased productivity and advanced phenology on tundra and forest-tundra portions of the range reflected widespread Arctic greening occurring globally. It was more difficult to ascertain whether the loss of herbivory by caribou due to a decline in population size also contributed to increased primary productivity (Dearborn and Danby 2021). Habitat availability is likely also influenced through caribou interactions with forage plants, which would include fertilization, compensatory growth and change in vegetation community structure. However, the extent and frequency of these effects is not monitored.

Information on seasonal habitat availability is limited, except for the Beverly subpopulation during the late 1980s (BQCMB 1994; Thomas *et al.* 1998; Thomas and Kiliaan 1998b) and the Bathurst subpopulation in the late 2000s (Barrier and Johnson 2012). In both cases, winter habitat availability was assessed as adequate, although monitoring for the size and frequency of forest fires was considered necessary to ensure that habitat availability was maintained.

Habitat fragmentation

The most conspicuous natural fragmentation of caribou habitat, other than the large lakes and major rivers, is caused by wildfires. On forested winter ranges, wildfires promote a mosaic of differently aged patches. Lichens take decades to recover after fire and

caribou tend to avoid recently burned areas (Thomas and Kiliaan 1998b). However, caribou may still move through recent burns early in the winter (Thomas *et al.* 1998; Barrier and Johnson 2012) and may also select habitats adjacent to the burn boundary (Barrier 2011, Anderson and Johnson 2014). When caribou use burns, they use areas close to the burn perimeter (Anderson and Johnson 2014) and display increased movement behaviours and virtually no foraging behaviour, suggesting that caribou are using the burns primarily for travel (Rickbeil *et al.* 2017). Anderson and Johnson (2014) found that Bathurst caribou made use of early-seral vegetation recovering after fire more than expected, potentially to access greening vegetation growing after fires. Large contiguous fires could possibly fragment winter ranges, but currently there are no analyses measuring the level of habitat fragmentation. Shifts in winter range, including unusual movements, suggest caribou are not currently limited in dispersing within or through fragmented habitat at the scale of the overall winter range. Shifts of individually marked females between calving grounds indicates that suitable habitat for dispersal exists between subpopulations (see *Population*).

The annual burn rate and the severity of fires are higher in the western Taiga Shield and Taiga Plains than in other areas of the NWT (Krezek-Hanes *et al.* 2011, Coops *et al.* 2018). For the Porcupine caribou, most of the area burned is outside of their range in Alaska and in the central part of the Canadian portion of their range (Figure 28).

For the Tuktoyaktuk Peninsula, Cape Bathurst and Bluenose West caribou, most of the area that has burned is south and west of those ranges; whereas for the Bluenose-East and Bathurst subpopulations, fires have been prevalent within the south and west of their range (Figure 28). Fires have also been prevalent in the southern portion of the Beverly, Ahik and Qamanirjuaq ranges, and in the historic described range in Saskatchewan. Whether those large burns restrict the extent of the winter ranges is unknown. Burned areas are mapped as contiguous polygons, but burn severity varies widely and unburned areas within burns can be extensive; thus, maps of burns are somewhat misleading to simple interpretation.

Habitat fragmentation associated with human activities has been identified as a major threat to the conservation of other migratory ungulates (Berger 2004; Benítez-López *et al.* 2010). Most information relative to the NWT indicates that habitat fragmentation could be tied to heavily used roads and transmission corridors (which act as partial barriers to movement), with reduced activity near active mines (e.g., Boulanger *et al.* 2012), communities, and roads also representing a degree of functional habitat loss (see *Threats and limiting factors – Disturbances from human activity*).

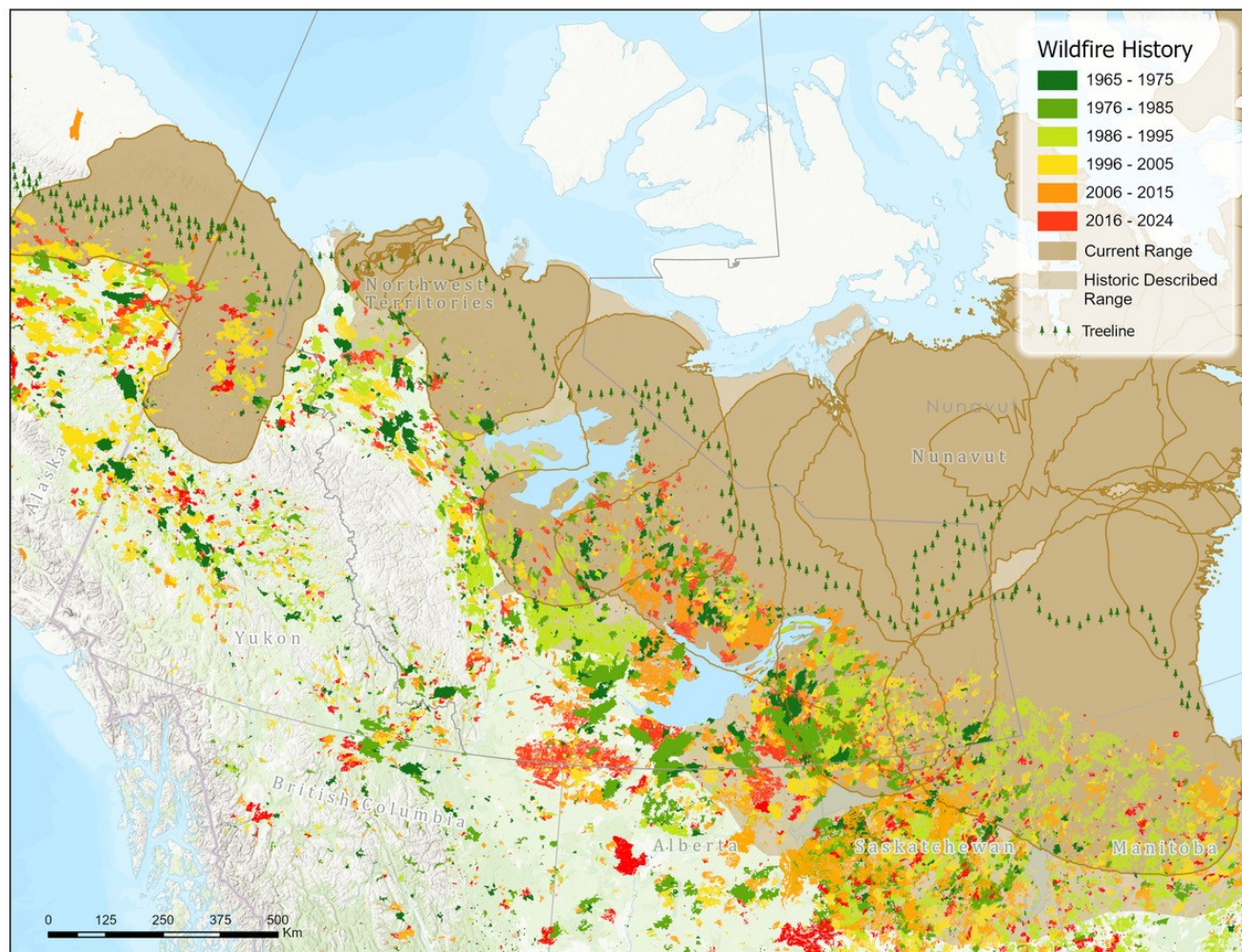


Figure 28. Fire history from 1965 to 2024 in barren-ground caribou ranges in Canada.

Habitat trends

Recent trends in suitable habitat are being described given that trends for global warming are exceeding some earlier predictions for the Arctic (Derksen and Brown 2012). While trends in weather and vegetation are being measured related to a changing climate, it is more difficult to relate those trends to caribou habitat. The trends for habitat change, and how change relates to habitat loss, depend on the adaptability of caribou and the availability of alternative habitats. While caribou are adaptable based on the diversity of habitats that they occupy, little is known about their adaptability at individual scales. In another Arctic herbivore (geese), recent research reveals limits to adaptability. Geese goslings adapted their diet to survive but not to the extent necessary to prevent their body size becoming smaller (Winiarski *et al.* 2012). Thus, the effects of changes in habitat on caribou ecology and population dynamics are poorly understood.

Superimposed on the longer-term trends of a warmer climate since the 1970s are decadal climatic patterns, which are the result of larger scale atmospheric patterns such as the Arctic Oscillation. This increases the complexity of interactions between a generally

warming climate and decadal climatic patterns. Decadal oscillation phases coincide with changes in caribou abundance, suggesting that climate has some role in caribou cycles through cumulative effects on habitat (Zalatan *et al.* 2006; Joly *et al.* 2011); however, the relationships between decadal patterns and caribou abundance differed among Alaskan subpopulations (Joly *et al.* 2011). Decadal patterns in habitat trends can be seen in trends in winter habitat. The long-term trend in area burned for the Taiga Plains and Taiga Shield increased from the 1960s until the 1990s and decreased in the 2000s.

The total area burned as a result of lightning ignitions increased over the last 40 years (Krezek-Hanes *et al.* 2011), possibly due to warmer temperatures during the fire seasons in the 1990s. No reports were found relating the decadal trends in caribou winter habitat to the decadal trends in areas burnt. The frequency of large fire years like 2014 and 2023 in the NWT may become a larger concern in the future as a warming climate may lead to a higher frequency of drought years when large fires are common, with possible negative implications to caribou winter ranges in the north (e.g., Alaska, Joly *et al.* 2012).

Trends in caribou calving and post-calving habitat can be measured through satellite imagery. Across the western Arctic there is an increasing trend in shrub cover (Cornelissen *et al.* 2001; Hudson and Henry 2009), which could displace important forage species like lichen. For the Bathurst subpopulation, trends in habitat have been assessed over a time frame closer to the duration of three generations (Chen *et al.* 2012; Chen *et al.* unpubl. data; Chen *et al.* 2014). When the Bathurst subpopulation females arrive on the calving ground, lichens are a large part of their diet (Griffith *et al.* 2001). Lichen coverage decreased significantly from 44% to 22% of the total calving ground area from 1990 to 2000, possibly because of shrub encroachment and accumulated grazing potential. Immediately after calving (11–30 June), females switch to greening vegetation. Although there is high annual variation of greening vegetation and no significant trend, it increased 55% from 1985 to 2006. During summer (11 Jun–20 Sep) in 1985–96 there was a significant increase in mean foliage biomass, but forage quality (using leaf nitrogen as an index) decreased during that time. Chen *et al.* (2014) developed a composite indicator for summer range condition using data from satellite imagery and climate records that explained 59% of the variation in late-winter calf: female ratio for the Bathurst subpopulation between 1985 and 2012 (Figure 29). Similar trends are likely for the ranges of the more western subpopulations in the NWT because climate trends, especially warmer springs and winters, are similar for the Arctic and Taiga Plains and Taiga Shield ecozones (Zhang *et al.* 2011).

Snow conditions like depth, density and ice content, influence forage availability for caribou. Chen *et al.* (unpubl. data) reported that the Bathurst winter range has a trend toward warmer fall and late winter air temperatures, which, while reducing the annual maximum snow depth, increases the probability of thaw-freeze events (which influences

the ice-in-snow indicator). Overall, the ice-in-snow indicator had a significant positive relationship with April-October air temperature, indicating an increase in 'hard' snow or icy crust in the snowpack under a warming climate (Chen *et al.* unpubl. data). Studies are currently examining the influence of changing snowpack characteristics on caribou distribution (Tait Consulting 2013).

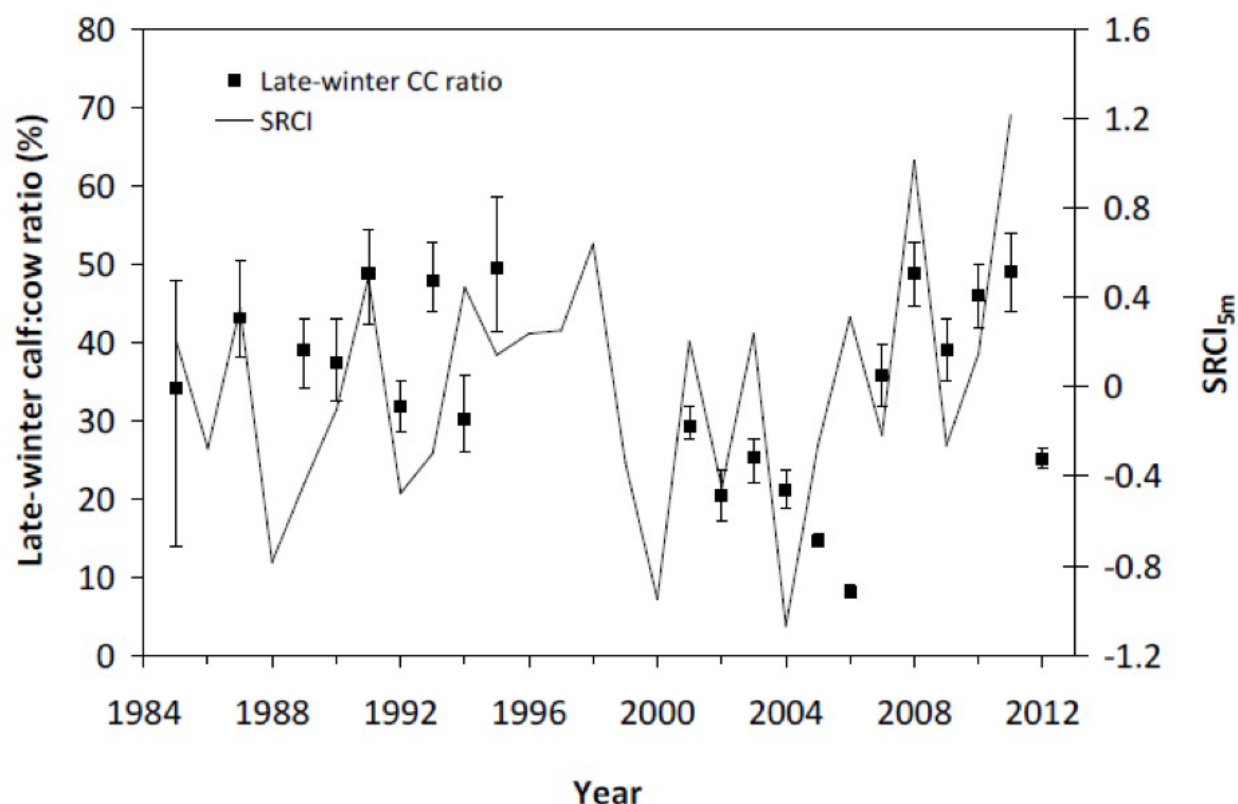
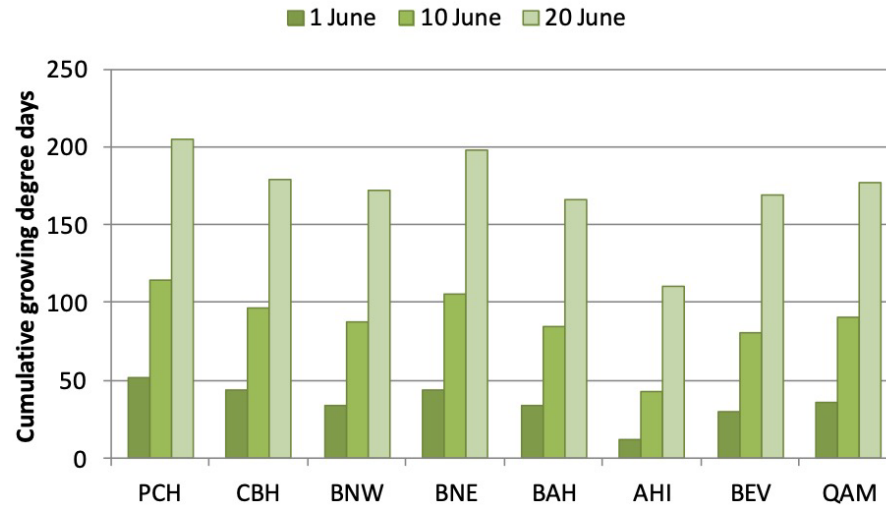


Figure 29. Summer range condition index (SRCI; higher values indicate better condition, June 11-20) and late-winter calf:female ratio for the Bathurst caribou subpopulation during 1985 to 2012. Changes in late-winter calf:female ratio correspond to previous summer's range conditions with a time lag of about two years. Note that late winter calf:female ratios from 2007-2012 are likely inflated because of a change in adult female survival during the time series. Reproduced from Chen *et al.* 2014.

Predicting the consequences of trends in habitat will be subpopulation-specific as trends will be superimposed over a marked northwest-southeast gradient in climate across the NWT. The western NWT, being more subject to Pacific maritime influences, is warmer when compared to the more continental climate in the eastern NWT. This can be seen from data on cumulative plant growing degree days on calving grounds (Figure 30). The geographic trends for the number of days with freezing rain and rain-on-snow for the winter ranges indicates that the winter range east of Bathurst Inlet toward Hudson Bay have more days with freezing rain or rain-on-snow as they are not quite as cold as the continental interior (Figure 30).

a)



b)

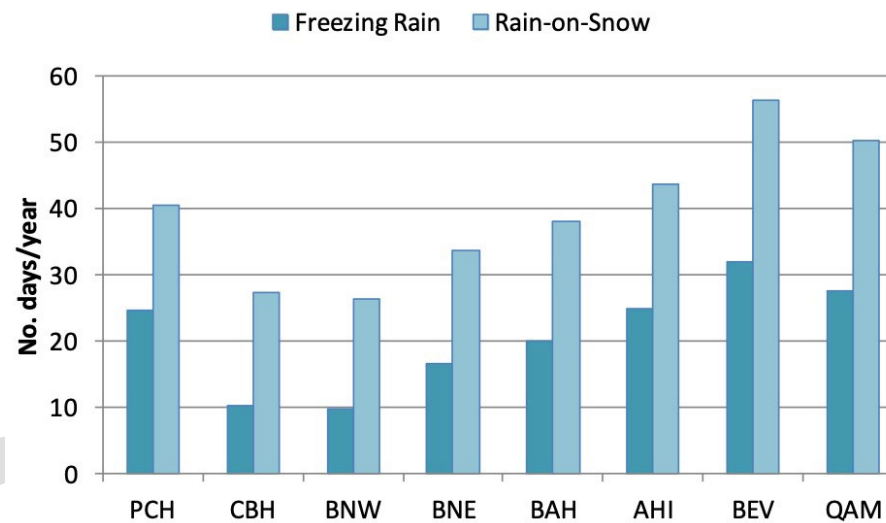


Figure 30. (a) Cumulative plant growth degree days for 1, 10 and 20 June for NWT and NU caribou calving grounds and (b) number of days with freezing rain and rain-on-snow (1987-2005) for winter ranges (annual MERRA data from CARMA 2014). Subpopulation abbreviations: PCH = Porcupine; CBH = Cape Bathurst; BNW = Bluenose-West; BNE = Bluenose-East; BAH = Bathurst; AHI = Ahik; BEV = Beverly; QAM = Qamanirjuaq.

POPULATION

Abundance

The size of barren-ground caribou subpopulations changes over periods that span decades (Morneau and Payette 2000; Zalatan *et al.* 2006). The most recent estimate of population size for the Porcupine caribou subpopulation is 143,135 (2025) (Table 17). Roughly 587,000 barren-ground caribou are found in the remaining subpopulations, which range in size from about 2,800 to about 253,000 (Table 17, Figure 31).

Table 17. Current estimates of size of barren-ground caribou subpopulations that regularly spend at least a portion of their time in the NWT. Numbers provided are for non-calf animals except the Porcupine subpopulation, which includes calves.

Subpopulation	Year	Estimate	95% Confidence Interval	Survey type	Source
<i>Porcupine</i>					
Porcupine	2025	143,135	122,974 – 173,087	Post-calving	PCTC (2026)
<i>Other Northwest Territories subpopulations</i>					
Tuktoyaktuk Peninsula	2024	2,798	2,642 – 2,954	Post-calving	GNWT, unpubl. data
Cape Bathurst	2025	8,533	7,120–9,946	Post-calving	ACCWM (2026)
Bluenose West	2025	20,476	13,749 – 27,203	Post-calving	ACCWM (2026)
Bluenose East	2025	28,759	25,997 – 31,816	Calving	GNWT, unpubl. data
Bathurst	2025	3,609	3,203 – 4,067	Calving	GNWT, unpubl. data
Beverly	2023	152,131	124,704 – 179,558	Calving	Campbell <i>et al.</i> (2025a)
Qamanirjuaq	2022	252,892	188,050 – 340,092	Calving	Campbell <i>et al.</i> (2023)
Ahiak	2021	39,131	33,385 – 45,867	Calving	Campbell <i>et al.</i> (2022)
Wager Bay	2021	45,005	38,732 – 52,293	Calving	Campbell <i>et al.</i> (2022)
Lorillard	2021	33,454	22,503 – 49,735	Calving	Campbell <i>et al.</i> (2022)
Total Other NWT subpopulations		586,788	460,085 – 743,531		

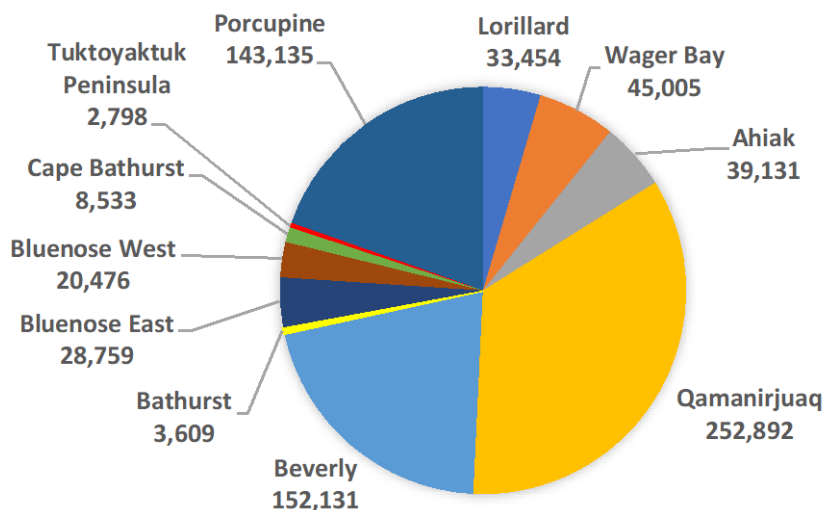


Figure 31. Contribution of each barren-ground caribou subpopulation to the total barren-ground caribou population in the Northwest Territories.

Globally, barren-ground caribou extend from Alaska to western Greenland, although naming conventions vary with jurisdictions. This includes the 11 NWT subpopulations considered in this report, as well as those in Nunavut, Alaska and western Greenland. Caribou subpopulations in Alaska are considered to be *R. t. granti*, including the 4 tundra-migratory subpopulations and several mostly smaller mountain subpopulations. Caribou in Russia are considered to be a different subspecies (*Rangifer tarandus sibiricus*) and called reindeer, although there are subpopulations ecologically similar to North American tundra migratory subpopulations. The two tundra-migratory caribou subpopulations in Quebec and Labrador, although displaying similar migratory behaviour, are considered to be phylogenetically distinct from barren-ground caribou (COSEWIC 2011). In Canada, up to 62,832 barren-ground caribou are estimated in other subpopulations in Nunavut including less than about 1,000 on the Boothia Peninsula (Leclerc *et al.* 2024), 12,651 on Southampton Island (Campbell and Boulanger 2024), 48,681 on Baffin Island (Campbell *et al.* 2025b) and about 500 on Coats Island (COSEWIC 2016). Excluding the Porcupine subpopulation, there are roughly 208,811 barren-ground caribou in three tundra-migratory subpopulations in Alaska (Gunn *et al.* 2026). Two of the three Alaskan subpopulations have declined and the third has been recently increasing (Gunn *et al.* 2026). The size of the Western Arctic Caribou Herd in Alaska declined to 120,000 in 2025 and is considered Critically Low (WACHTWG 2025). In Greenland, barren-ground caribou total approximately 128,913, but population trend is unknown (Gunn *et al.* 2026).

Given approximately 143,135 Porcupine caribou and 586,788 other barren-ground caribou with ranges that are fully or partially contained in the NWT, the NWT supports

about 92% of the Canadian population of barren-ground caribou, about 73% of the North American population, and about 65% of the global population.

Search Effort

The two main methods used to estimate the number of caribou in NWT barren-ground caribou subpopulations are centered on a sample count on the calving grounds or an estimate based on photographed counts of post-calving aggregations (Heard 1985; Heard and Williams 1990b; Adamczewski *et al.* 2014). As only calving females are likely present in these sample counts, they are modified by data on sex ratio (to include males) and on pregnancy rates to (to include non-calving females).

Subpopulation size for the Bluenose East, Bathurst, Beverly, Ahiak, Qamanirjuaq, Wager Bay and Lorillard subpopulations is currently estimated from a sample count based on stratified calving ground strip transect surveys. Up until 2010, population estimates for the Bluenose East subpopulation were based on photographed counts of post-calving aggregations (see below). Since 2010, when a comparison of the two survey methods (on calving vs. post-calving areas) was conducted on the Bluenose East subpopulation and both were found to have similar results (Adamczewski *et al.* 2014, 2017), population estimates for the Bluenose East subpopulation have been based on stratified calving ground strip transect surveys. Visual counting was used up to the early 1980s for the Bathurst, Beverly and Qamanirjuaq subpopulations, after which continuous strip transect photography replaced visual counting to increase accuracy, except when the females are relatively dispersed or at low densities. Comparisons of visual-only and photo-including calving ground surveys on the inland-calving Beverly subpopulation in the 1980s showed that visual-only methods widely under-estimated caribou abundance, mostly because observers were unable to count larger groups from the survey aircraft, whereas photos of higher-density areas could count these groups reliably (Heard and Jackson 1990). The 2011 and 2018 surveys of the Beverly subpopulation were visual with double-counting and video-assisted counting. Visual counting is still used for the Ahiak, Wager Bay and Lorillard subpopulations where group sizes tend to be smaller. Calving ground surveys are timed for close to the peak of calving when female movement rates are minimized. Reconnaissance surveys are flown to map the distribution of breeding females (females with calves or females with hard antlers that are not shed until a few days after birth). The flight lines extend well beyond the distribution of breeding females to ensure that no areas of calving are missed. The location and movements of collared individuals support mapping the caribou distribution. Based on the pattern of density and composition, the distribution of breeding females is then stratified into high, medium and low density strata. All high density strata and some medium density strata are surveyed by a specialised photo plane flying at a relatively high altitude and at least 30-40% coverage, although there are some exceptions (there was over 70% coverage for the

Bathurst subpopulation in 2012 and over 50% covered for both the Bathurst and Bluenose-East subpopulations in 2015; Croft pers. comm. 2015 in SARC 2017). Low density strata are surveyed using visual surveys and the same methodology as the reconnaissance surveys, but at roughly 20% coverage. For the 2023 Beverly calving ground survey, a video-assisted strategy was implemented due to mechanical issues with the photo plane, together with finding high-density areas where groups were too large to count reliably using only visual methods (Campbell *et al.* 2025a).

The proportion of 1+ year old caribou that are breeding females is determined from surveys conducted immediately after the photographic survey to estimate the proportions of breeding and non-breeding caribou based on antlers, calves and distended udders. The number of 1+ year old caribou is counted on the photos and combined with the visual counts and the proportion of breeding females from the composition surveys to estimate the number of breeding females on the calving ground. Since about 2000, estimates of adult females (breeding and non-breeding) are also generated from the calving ground survey strata; the assumption is that with higher collar numbers and sufficient survey flying, breeding and non-breeding females can be counted. Subpopulation size is then estimated by extrapolating from the estimate of adult females (Adamczewski *et al.* 2017) and by adjusting for males based on one or more estimates of sex ratio obtained from fall composition counts. The extrapolation to subpopulation size is carried out to adjust for males, very few of which are on the calving ground.

Post-calving aggregation photo surveys were developed in Alaska during the 1960s and were first applied to the Bluenose subpopulation in 1986 and 1987 (McLean and Russell 1992). The post-calving aggregation surveys are possible because all sex and age classes of a subpopulation form large aggregations in late June through July in response to insect harassment (Valkenburg *et al.* 1985). This technique requires relatively large numbers of satellite or GPS-satellite collars to locate the aggregations (VHF collars are no longer used). Caribou movements and group size are monitored using collars and reconnaissance flights, and when the caribou are aggregating, the groups are located from the collared caribou and photographed using hand-held or mounted cameras from fixed-wing aircraft. Some groups are contained within a single photo and some of the larger groups are photographed with successive overlapping frames to frames provides full coverage of the aggregation. Ground features are used to identify areas overlapping on successive photos, to avoid duplication. The search effort is to ensure that a high proportion of caribou (>90%) are found in groups with at least one satellite collar, and large groups usually have several collars. The number of caribou on either printed or digital photographs is counted, although methods for this have varied.

As the calving ground strip transect survey methodology only samples a portion of the calving females, the precision of the estimate is measured by its variance or uncertainty around the mean (often provided as 95% confidence intervals or standard errors). The precision can be increased by reducing variations in density within a stratum (Mowat and Boulanger 2000). Considerable effort has been applied to increasing precision and how the estimates can be used to statistically determine trends in the number of calving females and hence subpopulation size (Nishi *et al.* 2007, 2010).

Post-calving photo surveys were initially designed as total counts and as such, did not have estimated confidence intervals; caribou observed outside of photographed groups, often through visual counts, were simply added to the total. Counts from post-calving photo surveys done on the winter ranges of the Cape Bathurst, Bluenose-West, Bluenose-East and Tuktoyaktuk Peninsula subpopulations may include confidence intervals, which are calculated from the total number of radio-collared caribou available, and the number of caribou and number of radio-collared caribou in all aggregations observed during the survey (Nagy and Johnson 2006). A Lincoln-Petersen based estimator has been used in the NWT to estimate caribou groups missed, based on the number of collars found in photographed groups as a proportion of the collars available (e.g., Nagy and Johnson 2006). The method depends first on when the caribou aggregate (which is weather dependent and by no means predictable), on the collared caribou being representative of the entire subpopulation, locating a high proportion of the collared caribou and of caribou aggregations, and accuracy in counting the caribou. These uncertainties have at times caused difficulties in estimating the trend in abundance. Nagy (2009a) provided a detailed appraisal of post-calving aggregation surveys for Cape Bathurst, Bluenose-West and Bluenose-East subpopulations.

More recently, estimation of subpopulation size from post-calving surveys has been carried out using calculations described by Rivest *et al.* (1998), initially in Quebec for the George and Leaf River subpopulations and more recently for the migratory tundra subpopulations in Alaska (Porcupine, Teshekpuk, Central Arctic and Western Arctic; Alaska Department of Fish and Game 2011). This method provides a more robust way of calculating likely population number and variance around the estimate. The estimation uses photographed groups with at least one collar as samples of the subpopulation (see Adamczewski *et al.* 2014, 2017 for a synopsis). Rivest *et al.* (1998) estimates back-calculated for the Western Arctic subpopulation suggested that where collar numbers are sufficient (usually 100+ in the Western Arctic subpopulation) and survey coverage is high, total counts and Rivest *et al.* (1998) estimates are very similar because the likelihood of substantial portions of the subpopulation being missed is very low (Alaska Department of Fish and Game 2011). In 2010, GNWT tested the Lincoln-Peterson and Rivest *et al.* (1998) estimation methods for post-calving aggregations and determined that the Rivest *et al.* (1998) was the preferred method as the Lincoln-Peterson method tended to

underestimate population numbers (Adamczewski *et al.* 2017). A meta-analysis was carried out for accumulated post-calving surveys on the Cape Bathurst, Bluenose-West and Bluenose-East subpopulations (Boulanger *et al.* 2018); this analysis confirmed the more reliable estimates of subpopulation size and variance of Rivist-generated survey results. This analysis also confirmed the importance of adequate collar numbers for reliable post-calving surveys. Since then, Rivist-based population estimates have been used for post-calving surveys for the Tuktoyaktuk Peninsula, Cape Bathurst and Bluenose West subpopulations. The main weakness of the post-calving survey remains the potential for significant portions of the subpopulation not aggregating sufficiently for photos; under these conditions a reliable survey estimate is not possible, as has been found in multiple attempted surveys of the Bluenose-East and Porcupine subpopulations.

Population Dynamics

Much of the information used to describe subpopulation structure and vital rates is collected during aerial and ground surveys, the frequency of which is quite variable among subpopulations and over time. The variability hinders describing trends in abundance and the underlying rates of births and deaths.

In the NWT, the amount of information on population structure and vital rates (e.g. birth rates, death rates) varies between barren-ground caribou subpopulations. Understanding birth and death rates (which depend on life history traits such as age of maturity, longevity and fecundity) is needed to determine why subpopulations decline and to estimate the probability of subpopulation recovery.

Information on pregnancy rates, body condition and health (contaminants, diseases and parasites) has been collected from almost all subpopulations at various intervals. However, much of the information has been only partially reported. Experience has also shown that some hunters are reluctant to report on caribou health and condition (Adamczewski pers. comm. 2026). Information from small numbers of caribou varying widely in sex and age also creates challenges for assessing temporal trends.

Some information on the physical condition of barren-ground caribou has been collected for most subpopulations including Porcupine, Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose West Bluenose East, Bathurst and Beverly (PCTC 2024; ACCWM 2026; Adamczewski *et al.* 2020).

The Sahtú Wildlife Health Monitoring Program produced back fat data for the Bluenose-West and Bluenose-East subpopulations in the Sahtú region between 2005-2008 (Bluenose-West) and 2004-2014 (Bluenose-East) (Carlsson *et al.* 2015a, b). For the Bluenose-West subpopulation, back fat depths for both sexes averaged 3.3 mm in 2005 (range = 0-12.7; n = 14), 37.8 mm in 2007 (range = 5-70; n = 19), and 35.8 mm in 2008 (range = 20-70; n = 12). Samples were weighted in favour of males, both as a function of

hunter preference at the time of year harvest took place and also because of programs promoting majority male harvest (Carlsson *et al.* 2015b). The large majority of back fat samples taken for the Bluenose-East subpopulation were from males (75 out of a total of 87 samples). Between 2004-2013, average back fat depth in males varied between around 3 mm and 6 mm. In 2007, the only year for which there were female samples ($n = 10$), average back fat depth measured less than 1 mm. In 2014, average back fat depth increased to approximately 19 mm for males and 14 mm for females, although samples sizes this year were quite small ($n = 4$ males and 2 females) (Carlsson *et al.* 2015a).

Age structure

In caribou, shifts in age structure can accelerate rates of decline and influence recovery (Eberhardt and Pitcher 1992). The extent of variability within age classes (cohorts – animals born in a given year; Caughley 1977) for barren-ground caribou is likely high given annual variations in productivity (Boulanger *et al.* 2011). Age structure influences rate of change in caribou populations and the probability of persistence, but there are few data or population models to assess the age structure for caribou as these models depend on age-specific rates of survival and productivity. To estimate age-specific rates requires relatively large numbers of harvested animals that can be aged from their teeth. The lone study with a large sample size was for Beverly caribou sampled in the late 1980s (Thomas and Barry 1990b). This analysis showed the importance of middle-aged females as the age-specific fecundity rates indicated that 54% of all calves born were from females aged three to six years.

Bergerud *et al.* (2008) reported that in the George River caribou subpopulation, the mean age of females increased by 13 months from the increasing phase to the decline phase of population cycles (1974-93). A shift to more older females likely would lead to a greater frequency of breeding pauses if the older females were more nutritionally stressed. For the Bathurst subpopulation, information on age structure was collected in 1992 and again in 2008 (Elkin pers. comm. 2012 *in* SARC 2017; data from CARMA 2014). These data could suggest an older age structure in 2008 but sample sizes were small (Figure 32).



Figure 32. Comparison of percent females by age class for the Bathurst subpopulation in 1992 ($n = 97$) and 2008 ($n = 37$). Data from CARMA (2014) and B. Elkin (pers. comm. 2012 in SARC 2017).

A shift in age structure (Figure 32) towards an older mean age was considered to be a factor in the later (2006–09) stages of the decline of the Bathurst subpopulation (Boulanger *et al.* 2011). This suggestion was based on demographic modeling and acknowledges the problem caused by the low sample sizes for age-class rates of pregnancy and survival. Despite the importance of age structure, especially in diagnosing causes of declines and the probability of recovery, there is relatively little current information on age structure and impact of senescence on adult survival and productivity for NWT barren-ground caribou subpopulations.

Birth rate

Pregnancy rate is used as an approximation of birth rate (natality). If intra-uterine mortality (foetus aborted or absorbed) is rare, pregnancy rates are a suitable index of calves born in June. Russell *et al.* (1998) found that intrauterine loss was associated with poor body condition. Pregnancy rates can vary annually in barren-ground caribou as females may undergo reproductive pauses if they have insufficient body reserves to conceive (Cameron 1994). This proportion of females may be enough to change the subpopulation's pregnancy rate (Cameron 1994). Pregnancy rates of barren-ground caribou are assessed by several methods: documenting presence of foetuses from harvested female caribou, assessing progesterone levels in blood samples from female caribou captured during collaring sessions, surveying parturient females during the

calving period and detecting a drop in movement rates of satellite-collared females when the calf is born. More recently, Adamczewski *et al.* (2024d) evaluated a technique for assessing pregnancy rate from progesterone levels in fecal samples in late winter, and determined that about 300 samples from a representative range of sites would be needed to obtain a sample of subpopulation-specific pregnancy rate in about 116 females ≥ 33 months old.

Working with harvesters to determine pregnancy (presence of a foetus) has been used in the NWT for some subpopulations. Hunter-harvested caribou on the late winter range of the Beverly subpopulation in the late 1980s were examined for age specific pregnancy rates (Thomas and Barry 1990a). The overall pregnancy rate was 87% (Thomas and Barry 1990a). Annual pregnancy rates in females at least four years old varied from low averages of 76% and 78% to high averages of 98% and 100% during those years (Thomas and Kiliaan 1998b).

From the 1990s to the mid 2000s, available data on pregnancy rates for barren-ground caribou in the NWT were based on samples from hunter kits/collections. By the mid 2010s, available pregnancy rate data were based solely on progesterone levels from blood samples taken from female caribou that were captured and collared **Error! Reference source not found.** (Table 18). This in part reflected harvest restrictions on the Cape Bathurst, Bluenose-West, Bluenose-East and Bathurst subpopulations. A sample of 150 females from the Bathurst subpopulation collected by hunters in winter 2005 showed that pregnancy rates differed across the winter range and averaged an unusually low level of 63% (Gunn 2013). Samples based on females captured for collaring may not reflect a full cross-section of the subpopulation, as individuals captured are likely to be mature or older and in relatively good condition.

Table 18. Pregnancy rates of barren-ground caribou in the Northwest Territories. Rates are based on pregnancy testing of collared caribou during captures (red), samples from hunter kits/collection (black), or both (blue).

Year	Cape Bathurst		Bluenose West		Bluenose East		Bathurst		Beverly	
	% Pregnant	N	% Pregnant	N	% Pregnant	N	% Pregnant	N	% Pregnant	N
1990							100	10		
1991							60	10		
1992							79	14		
1993										
1994							92	116		
1995	96	47					77	13		
1996										
1997										
1998										
1999										
2000										
2001										
2002										
2003										
2004										
2005							63	150		
2006									71	7
2007										
2008							100	26	45	29
2009							89	28		
2010					68	57	79	28		
2011					100	11	82	39		
2012					69	71	93	14	56	18
2013					81	21	100	5	100	1
2014					88	58	69	13	87	23
2015					93	14	75	16	38	8
2016					85	13	100	5		
2017					100	5	100	7	100	11
2018					100	9	100	9	88	8
2019					70	10	82	11	69	13
2020					100	18	97	31		
2021	96	24	73	33	87	30	90	10		
2022					55	9				
2023	73	15	76	34	96	25				
2024					100	17				

Warble fly harassment in summer is one factor that can potentially reduce body reserves and influence pregnancy rates. Based on very small sample sizes of the Bathurst subpopulation, pregnancy rates of >2-year-old females varied between 20% and 100% (Table 19). In some years the warble fly activity index (Russell *et al.* 1993) was relatively high and females had little backfat in late winter (factors that may increase stress and adversely impact birth rates), but no consistent trend was apparent. All studies on warble fly activity index involved very small sample sizes and the results should be interpreted with caution.

Table 19. Number of adult females, pregnancy rate, back fat (mm) and number of warbles for the Bathurst subpopulation 1990–2009 (data for 2008 and 2009 from Adamczewski *et al.* 2020, other data from CARMA 2014).

Year	# Adult females	# Pregnant	% Pregnant	Back fat		Warbles				Warble index ¹
				Mean (mm)	SE	Mean	SE	Min.	Max.	
1990	10	2	20	19.0	3.47	16.8	3.57	11	27	24
1991	18	11	61	1.7	1.08	61.0	24.8	10	320	13
1992	28	22	79	5.0	1.49	61.3	16.5	2	226	23
1995	13	10	77	3.6	1.15	70.0	18.3	0	192	22
2000	14	13	93	21.4	13.2	29.9	8.5	4	126	16
2008	26	26	100	12.5						15
2009	25	28	89	6.6						17

¹ The warble fly activity index (Russell *et al.* 1993) is based on daily wind speed and temperature 1957–2009 averages 15.7 ± 0.80 SE (range 8–24) as reported in Gunn *et al.* (2013a).

On the calving grounds, post-partum and pregnant females are identifiable by the presence of their calf, or at least one hard antler and/or a distended udder (Bergerud 1964; Whitten 1995). Most parturient females (females either pregnant or recently calved) retain their hard antlers until two to three days after the birth of their calf, although Whitten (1995) cautions that on exceptionally good ranges, females may drop their antlers before birth. For subpopulations where the June calving ground survey is used, the calf:female ratio measured during a composition survey is part of the overall survey and the sample of female caribou usually numbers in the thousands. Breeding females include those with newborn calves, those with distended udders and those with hard antlers. Non-breeding females are those lacking any of these features.

For the Porcupine caribou, the parturition rate of 86% for adult females ≥ 4 years of age in 2024 (Table 20) was slightly above long-term averages for the subpopulation (82%), but the rate for 3-year old females had been declining (33% in 2024; $n=12$), resulting in lower rates for adult females ≥ 3 years of age (PCTC 2024).

For the Cape Bathurst and Bluenose West subpopulations, the calves/100 females ratios declined from 1981 and 1983 to a range of 19 to 64 for Cape Bathurst and 39 to 61 for Bluenose West from 2000 to 2006 (Table 20). No new data are available since the mid 2000s.

Parturition rates for the Bluenose East subpopulation were lower in the early 2010s, but have been ≥ 70 calves/100 females for years sampled since 2019/20 (Table 20).

The ratios for the Bathurst subpopulation cover the period from a peak in high numbers to a decline (1986-2009). Since 2004, seven of the ten ratios were ≤ 56 calves/100 females, although the 2022 ratio of 70 calves/100 females, was the highest since 2003. Any trend in pregnancy rates does not appear to coincide with increase and decline phases of subpopulation size, but data may not be sufficient (e.g. sample size, biased samples) for assessing trend.

Calf:female ratios at the peak of calving on the Beverly subpopulation's traditional calving ground showed a declining trend over time based on aerial surveys in 1988-2009, with very low levels from 2007 to 2009, but then an increase in 2023 (Table 20).

For the Ahiak, Wager Bay and Lorillard subpopulations, the parturition rates are available only for 2021, with low levels for Ahiak and Wager Bay, and a higher level for Lorillard (Table 20).

Table 20. Parturition rates (calves/100 females) for barren-ground caribou in the Northwest Territories based on surveys conducted during the peak of calving.

Year	Porcupine	Cape Bathurst	Bluenose West	Bluenose East	Bathurst	Beverly	Qamanirjuaq	Ahiak	Wager Bay	Lorillard
1981		92 ¹	92 ¹	92 ¹						
1982	89					88				
1983	87	82 ¹	82 ¹	82 ¹						
1984	81									
1985	77									
1986	74				73					
1987	78									
1988	84					62				
1989	78									
1990	82				63					
1991	74									
1992	86									
1993	81									
1994	91					69				
1995	69									
1996	89				79					
1997	75									
1998	83									
1999	84									
2000	73	64	39							
2001	84	19	54							
2002	87	32	54			53-75				
2003	87	47	53		74					
2004	82	46	61		54					
2005	64	53	59							
2006	79	33			50					
2007	88					32				

Year	Porcupine	Cape Bathurst	Bluenose West	Bluenose East	Bathurst	Beverly	Qamanirjuaq	Ahiak	Wager Bay	Lorillard
2008	79					15				
2009	77				63	2				
2010	85			56						
2011	86									
2012					51					
2013	86			42						
2014										
2015				34	34					
2016	75			32						
2017	90									
2018	88									
2019	81			70	56					
2020	80									
2021	85			84	49			39	33	64
2022	76			79	70					
2023	83			70	56	73				
2024	86									

¹ Data reported for the 'Bluenose' subpopulation

Recruitment and calf survival

Recruitment to the population is measured by calf survival to one year, after which survival rates are assumed to be similar to those of adults (Boulanger *et al.* 2011). Typically, recruitment is either expressed as the percentage of calves to the total population or as calf to female ratio at one year of age. In the NWT, calf: female ratios have been most commonly assessed at about 10 months of age (late March or early April), following Heard and Williams (1991). While subpopulations can withstand annual variation in calf survival, persistent low calf survival may influence subpopulation trends negatively (Gaillard *et al.* 1998, 2000; Coulson *et al.* 2005; Chen *et al.* 2014). Calf survival is likely less resistant to environmental variation than adult survival (e.g., Russell and White 2000). Calf survival may vary substantially from year to year, which necessitates long-term data sets to detect temporal trends (Chen *et al.* 2014).

Calf survival rates estimated through changes in successive calf:female ratios, which reflect the proportion of calves that have died per 100 females, require an estimate of the birth calf:female ratio with a correction for adult female mortality for the interval between birth and the timing of the composition survey (fall or late winter). Calf:female ratios appear correlated with finite rates of increase in subpopulation numbers ($r = 0.84$), with approximately 25 calves: 100 females during spring required to maintain numbers (Fig. 10.2 in Bergerud *et al.* 2008).

Because of the variability in body condition and sex/age class structure prior to the pre-calving migration, sampling across the distribution of caribou is necessary to determine the calf:female ratio (Thomas and Kiliaan 1998b). Gunn *et al.* (2013a) reported a range of 9-24 calves: 100 females for four areas of the Bathurst subpopulation winter range.

Mean late winter calf:female ratios declined in the Bathurst subpopulation from a rate of 40% (SE 4.8) in 1985-96 to 20% in 2001-04 (SE 1.1) (Gunn *et al.* 2005, Chen *et al.* 2014). Based on fall composition surveys in late October 2000, 2001, and 2004, calf survival rates were lower during the summer than winter (Gunn *et al.* 2005). Subsequent changes in calf survival from 2006 to 2009 (a rebound followed by a decline) may have been affected by the declining adult female survival, which affects the denominator, thus inflating the calf-female ratio (Boulanger *et al.* 2011). A consideration for monitoring caribou subpopulations is that while fecundity, adult female survival and calf survival are all inter-related parameters (through nutritional ecology, Chen *et al.* 2014), measuring only one of those parameters limits interpretation for describing trends in population size.

Heard and Williams (1991) reviewed calf: female ratios for the Bathurst, Beverly, Bluenose (the Cape Bathurst, Bluenose-West and Bluenose-East subpopulations were still considered a single subpopulation at this time) and Qamanirjuaq subpopulations from 1986-89 when these subpopulations were increasing in number; ratios were consistently

above 30 calves: 100 females. Boulanger *et al.* (2011) and Crête *et al.* (1996) noted that the level of calf recruitment, indexed as the calf: female ratio, needed for a stable subpopulation depends on the female survival rate. Fewer calves are needed for stability if the female survival rate is high. "There must be 52 calves per 100 females in autumn in a caribou population for balancing mortality when annual survival of yearlings and adults reaches 0.80; the autumn ratio must be 39 when annual survival is 0.85" (Crête *et al.* 1996). These results suggest caution in interpreting 10-month calf: female ratios; consistently low values (below 30:100) are indicative of a declining natural trend, but higher ratios may be less clearly indicative of subpopulation trend as adult survival may vary. Ratios of 30:100 may not be clearly linked to a stable subpopulation.

Fall and late winter calf:female ratios for each subpopulation are discussed in *Trends and Fluctuations*.

Adult female mortality

Population trend is most sensitive to adult female survival because adult females are usually the largest proportion of the population (Crête *et al.* 1996; Boulanger *et al.* 2011). The most sensitive vital rates are those under the greatest selective pressure so those rates are expected to have the lowest variability (Gaillard and Yoccoz 2003). Despite the importance of describing adult mortality, time series data on adult female survival are currently only available for the Porcupine, Bluenose East, Bathurst and Beverly subpopulations.

Relatively small changes in adult survival rates can change the population trajectory, but detecting such change is difficult. Detecting change in survival rate requires a large sample of marked individuals whose fate is known.

When subpopulations are declining or at low numbers, harvest is additive to natural mortality and can accelerate a decline and limit recovery from low numbers, as found in the Bathurst subpopulation (Boulanger *et al.* 2011) and the Cape Bathurst and Bluenose-West subpopulations (Adamczewski *et al.* 2020) in the 2000s.

Adult female mortality is discussed for individual subpopulations in *Trends and Fluctuations* and harvest is discussed in *Interactions with Humans*.

Immigration and emigration rates

Conventionally, since 1967 (Thomas 1969), barren-ground caribou subpopulations are defined based on the fidelity of females to specific calving grounds, although this approach has long been considered a working model that may require modification (Gunn and Miller 1986). Nagy *et al.* (2011), using satellite tracking locations throughout all seasons, conducted hierarchical and fuzzy clustering analyses to assess the robustness of subpopulations within the NWT and NU. They found that for the Cape Bathurst,

Bluenose-West, Bluenose-East, Bathurst, Beverly, Qamanirjuaq, and Lorillard subpopulations, subpopulation designation was robust and subpopulation structure and spatial fidelity were maintained over time. However, the Ahiak (called Queen Maud Gulf in Nagy *et al.* 2011) and Wager Bay subpopulations were distinct but behaved as individuals.

Genetic variability, based on analyses of nuclear and mitochondrial DNA can measure emigration/immigration between subpopulations over longer durations. However, caution is needed as there is a quite different perception of immigration rates in the context of genetics. Genetic migration refers to at least one individual per generation emigrating to another subpopulation and being a successful breeder. In large subpopulations, even a few migrants will counter a low rate of genetic drift, resulting in subpopulations that are not genetically different (Mager 2012; Mager *et al.* 2014). Current DNA analyses suggest that the current subpopulation structure is a re-sorting, either through migration routes and/or immigration/emigration from pre-glaciation subpopulation structure (McFarlane *et al.* 2016).

Assessment of the genetic variability for the Porcupine, Cape Bathurst, Bluenose-West, Bluenose-East, Bathurst, Ahiak and Beverly subpopulations using microsatellite DNA analysis indicated some subpopulation structure, but the isolation-by-distance pattern was unclear as neighbouring subpopulations were not necessarily more closely related (Zittlau 2004; McFarlane *et al.* 2016). However, the apparent lack of subpopulation structure may also reflect the methods used (Kennedy *et al.* 2010; Roffler *et al.* 2012). Assessment of the genetic variability among the subpopulations of barren-ground caribou relied on neutral genes that do not code for functional proteins (Zittlau 2004). While nuclear DNA did not show differentiation between the Western Arctic, Central Arctic (in Alaska) and Porcupine subpopulations, using the functional gene complex associated with immune function (MHC), the Porcupine and Western Arctic subpopulations both shared and had distinct MHC alleles (Kennedy *et al.* 2010). Also, mtDNA and nuclear DNA analyses may show different patterns since mtDNA is inherited by females and nuclear DNA by both parents.

In summary, the level of emigration and immigration is not normally a significant factor in demography as the rate of switches by females between calving grounds is typically low and about equal between neighbouring subpopulations. Over longer time scales, erratic movements, shifts from traditional ranges, and changes in migratory behaviour can occur (Skoog 1968; Hinkes *et al.* 2005). Largely missing are analyses examining what happens to females that associate together during calving and associate together during the rut and the dispersion of males during the rut. There is no evidence that over the long term NWT barren-ground caribou subpopulations depend on immigration for survival. Demographic analyses indicate rates of fecundity and mortality explain changes in

abundance. Whether subpopulations are genetically distinct or not does not affect whether the subpopulations may be demographically independent. For Alaskan subpopulations, Mager *et al.* (2014) concluded that “population dynamics within each subpopulation may be independent over the time scales relevant to management, even if they experience substantial gene flow from other subpopulations.”

Rates of switching between subpopulations by collared males have had little assessment in the NWT; Roffler *et al.* (2012) described male movement among rutting areas of Alaskan subpopulations with high female philopatry.

Trends and Fluctuations

The NWT Species at Risk Committee’s criteria for considering population declines in the assessment of status follow the recommendation of the International Union for the Conservation of Nature (IUCN) to consider declines over three generations or 10 years, whichever is longer (IUCN 2012; SARC 2024). This equates to roughly 24–27 years given the estimation of an 8–9 year generation time (based on adult survival and fecundity; Boulanger pers. comm. 2011 *in* SARC 2017). Although standardization of monitoring methods started in the mid-1980s (Heard and Williams 1990b, 1991), the length of comprehensive demographic monitoring (population and other surveys) has varied among subpopulations and monitoring of vital rates (such as adult and calf survival) has been limited for most subpopulations, although monitoring of late winter calf recruitment, adult survival and fall adult sex ratios has increased since the early 2000s.

There is evidence for some barren-ground caribou subpopulations that abundance fluctuates at relatively regular intervals but over varying timescales, suggesting a cyclic dynamic (Morneau and Payette 2000; Gunn 2003; Zalatan *et al.* 2006). Advantages of ‘safety in numbers’ for animals that frequently occur in densely packed aggregations include predator-swamping (high population densities reduce the probability of an individual animal being eaten) and increased foraging (likely through reduced need to remain vigilant because of vigilance by conspecifics) (Skoog 1968; Bergerud *et al.* 2008; Gunn *et al.* 2012).

Barren-ground caribou numbers were generally low from the 1950s to the 1970s, when numbers began to increase (Kelsall 1968; Bergerud *et al.* 2008). By the mid-1980s to mid-1990s (timing varied among subpopulations), the subpopulation was peaking in abundance and then declines were underway during the late 1990s into the 2000s (Figure 33, Figure 34). Numbers stabilized for some subpopulations between 2009–2012 but the declines of the 1990s–2000s (70–90%) have continued through until the mid to late 2010s and most NWT subpopulations are either declining further or stable at low numbers, with some showing signs of starting to increase.

As the exact extent of the low numbers in the 1950s to 1970s was not measured at the time, comparisons with the current phase of low numbers are not possible. It is also unknown whether the current low numbers are less than historic minimums. The frequency of hoof scars on spruce roots adjusted for the loss of older trees can provide a measure of past population abundance (Zalatan *et al.* 2006). Spruce roots collected on the Beverly range in 2002 suggested the frequency of hoof scars was below the historic minimum in the 1920s (Zalatan *et al.* 2006), although root collection prior to the accelerated decline in the subpopulation, precluding comparison with the historic low in the 1920s. A reconstruction of the George River subpopulation's abundance from 1800 to the early 2000s suggested that maximum and minimum numbers varied over time and that length of time between peaks also varied (Bergerud *et al.* 2008).

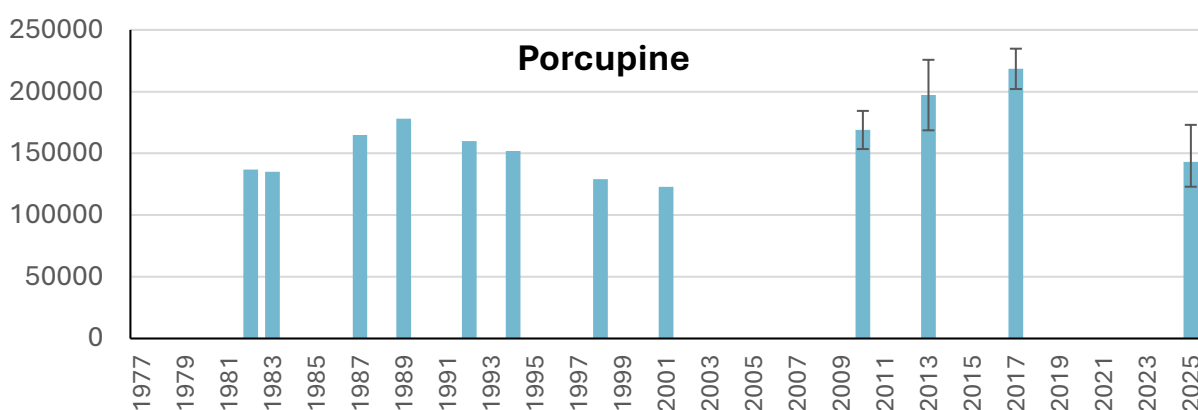


Figure 33. Population estimates for the Porcupine caribou subpopulation 1977-2024. Error bars are 95% confidence limits.

The causes of cyclic changes in abundance are complex and driven by climate interacting with forage availability, predation, harvest and pathogens (Zalatan *et al.* 2006; Bergerud *et al.* 2008). Harvest and predation likely play a stronger role in the later decline phase of the cycle (Bergerud *et al.* 2008; Boulanger *et al.* 2011). The likely causes of declines can only be determined through monitoring of vital rates and environmental conditions during the peak population size as well as during the declines.

The frequency of sampling and certainty of information for measuring trends over the previous 24-27 years (3 generations) based on population surveys has been variable for the NWT subpopulations (Figure 33, Figure 34) and are discussed in the following sections for each subpopulation. Sampling for vital rates including calf survival, pregnancy rates, adult survival and harvest has also been inconsistent among subpopulations. Most is reported as summaries, limiting any assessment of trends. Adult sex ratio and calf survival (reported as a ratio), can be influenced by changes in either the numerator or denominator of the ratio (Caughley 1974). The assumptions associated with these ratios are often overlooked. Boulanger *et al.* (2011) indicated that changes in adult female

survival of the Bathurst subpopulation likely inflated the estimate of calf survival during a few years of low female survival (2006-2009) when harvest rates were still unrestricted and high.

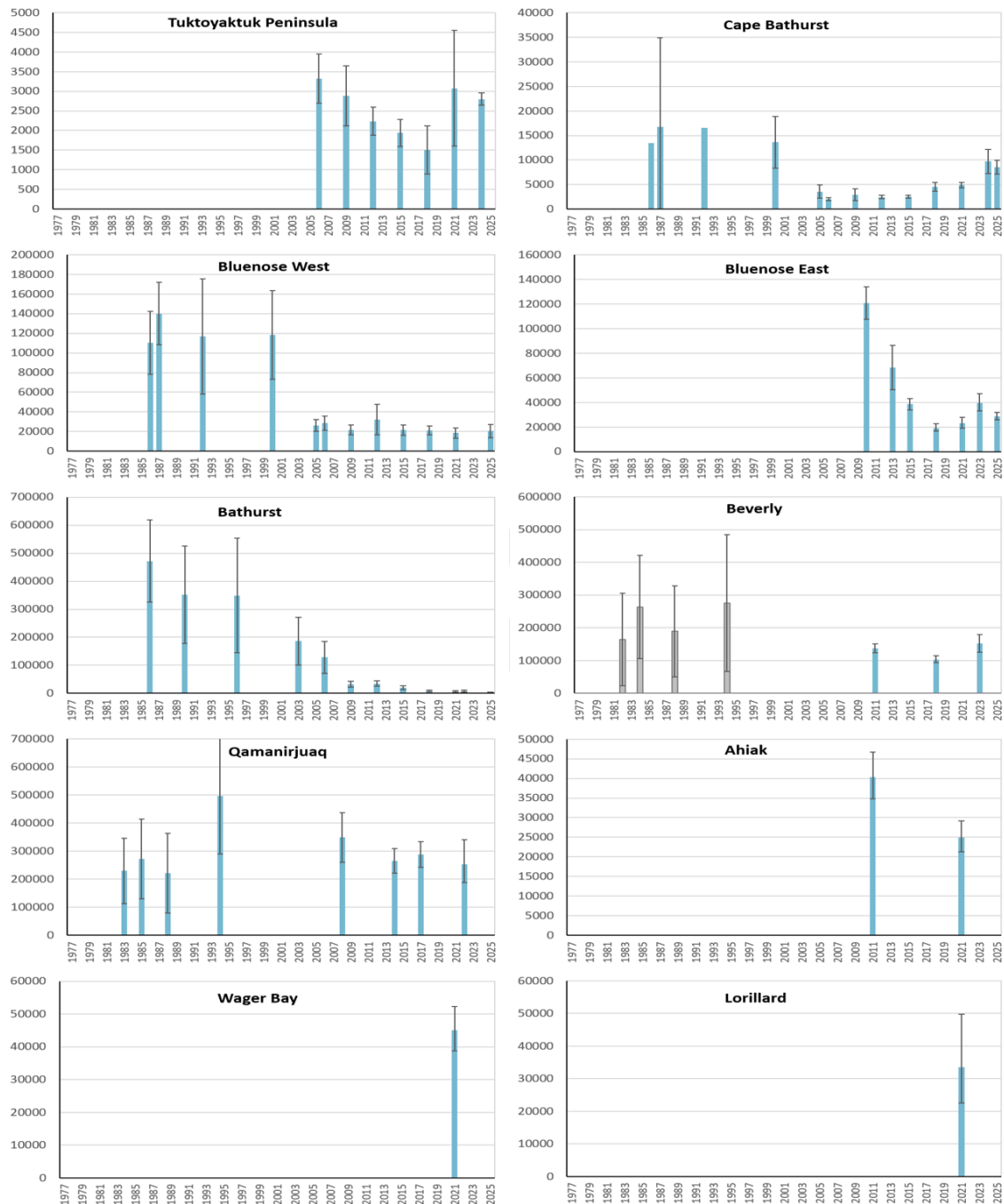


Figure 34. Population estimates for NWT caribou subpopulations east of the Mackenzie River, 1977-2024. Y-axis scales are different for each of the subpopulation. Error bars are 95% confidence limits. The Beverly subpopulation defined more recently as calving in the central and eastern Queen Maud Gulf (2011, 2018 and 2023 surveys) may not correspond exactly to the earlier inland-calving Beverly subpopulation, which is shown as grey bars in the population estimates figure (see Beverly subpopulation).

Porcupine

Population size of the Porcupine caribou subpopulation has been estimated using post-calving photographic census methods since 1972 (PCTC 2024). Population size increased to 178,000 in 1989, followed by a slow decline (3.5% per year) to 123,000 in 2001 (Figure 35). Post-calving surveys were attempted annually from 2003 to 2009 but failed due to unsuitable conditions for aggregations and photography. The 2010 survey was successful, estimating 169,000 (153,493–184,403; 95% CI) caribou (Caikoski 2020). The subpopulation continued to increase to an estimated 218,457 (202,106–234,808; 95% CI) in 2017 (Caikoski 2020). Attempts to conduct population surveys since 2017 had failed until 2025, when the population was estimated at 141,135, indicating that the population declined by 34% or 5%/year (PCTC 2026). A population model predicted that the subpopulation was likely stable from 2023 to 2024 and that it had decreased since the 2017 estimate (PCTC 2024). In general, variation between periods of higher and lower abundance have tended to be less extreme in the Porcupine subpopulation than in subpopulations east of the Mackenzie River (e.g. Bathurst).

Late winter calf:cow ratio estimates from the 1990s to the mid 2000s were variable, ranging from 20 to 40 calves/100 females most years (Figure 35). The most recent estimate in 2017 was 36 calves/100 females (PCTC 2024). Fewer data are available for fall male:female and calf:female ratios, with the most recent estimates from 2009 to 2012 (Figure 35). The male:female ratio from the 2010 survey was 57 males/100 females and was the most reliable estimate from the 2009 and 2010 surveys (PCTC 2024). Average annual female survival estimated from collared females for the Porcupine subpopulation between 2012 and 2023 was 88% ranging from 79% in 2015/16 to 94% in 2017/18 (PCTC 2024). Adult female survival dropped to 80% in 2024/25, which is lower than the 85% minimum threshold for a stable or increasing population, but on average, adult mortality rate was 87% from 2020/21 to 2023/24 (PCTC 2026). The population model suggests that although adult female survival rates were low recently, that calf mortality was likely as high as 90% in some years, contributing to the population decline (PCTC 2026).

Since 2005, average Porcupine subpopulation birth rates (Avg = 0.82; range 0.64–0.90), June calf survival (Avg = 0.75; range 0.48–0.98) and post-calving survival (Avg = 0.86; range 0.59–1.00) have remained relatively strong in most years (Caikoski 2020; PCTC 2024). In 2025, although the birth rate of 93 calves:100 females was high, by three weeks after birth, the calves:females ratio of 55 was lower than average (PCTC 2026). Average 9-month old calf weights in the last 5 years have been lower than weights in the mid-2000s with the average weight of 42 kg in 2025, the lowest recorded since data collection began in 2003 (PCTC 2026). Russell and Gunn (2019) found that early calf survival was linked to forage availability in early June.

Porcupine

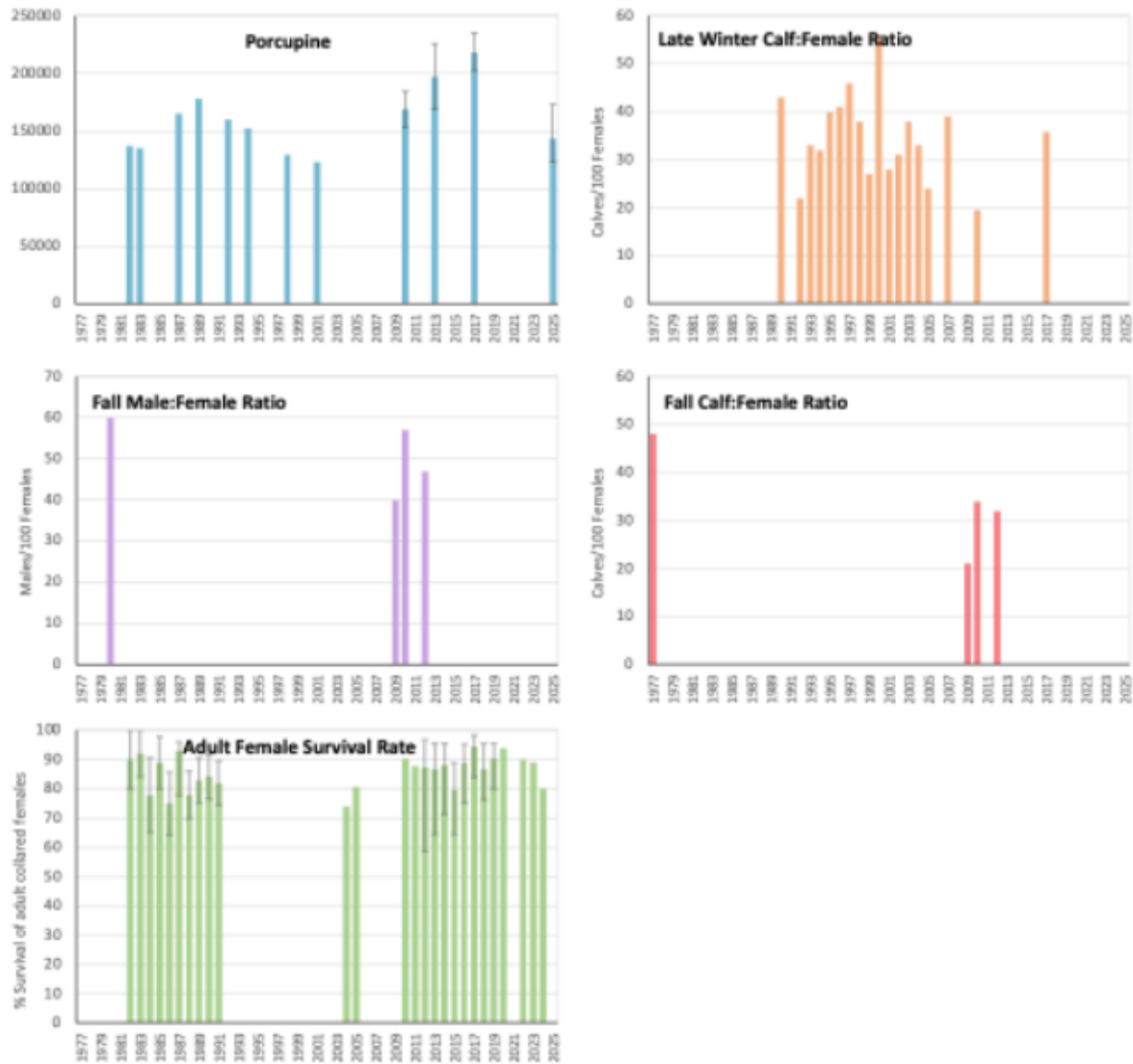


Figure 35. Demographic information available for the Porcupine barren-ground caribou subpopulation: population estimates based on post-calving aggregation surveys (top left), late winter calf:female ratios (top right), fall male:female ratios (center left), fall calf:female ratios (center right), and adult female survival rate (bottom left). Error bars show 95% confidence intervals.

Tuktoyaktuk Peninsula

The Tuktoyaktuk Peninsula subpopulation was only recognized in 2005, therefore longer-term trends are unavailable for this subpopulation. Domestic reindeer inhabited the Tuktoyaktuk Peninsula for most of the 21st century, but the private subpopulation was moved away in about 2001 (Branigan 2005). A systematic aerial count in September 2005 estimated 2,700 reindeer/caribou (including calves), of which about 20% were considered domesticated reindeer (Branigan 2005). A post-calving photographic survey was first conducted in July 2006 and then every three years after that (Figure 36). Population estimates were calculated using the Rivest estimator, including re-calculation of estimates from 2006 to 2015 that were originally determined using the Lincoln-Peterson estimator (Boulanger *et al.* 2018). From 2006 to 2018, the Tuktoyaktuk Peninsula subpopulation experienced a steady decline before increasing in 2021 (Figure 36). The most recent population estimate of $2,798 \pm 156$ (95% CI) is based on a survey conducted in 2024 (GNWT unpubl. data).

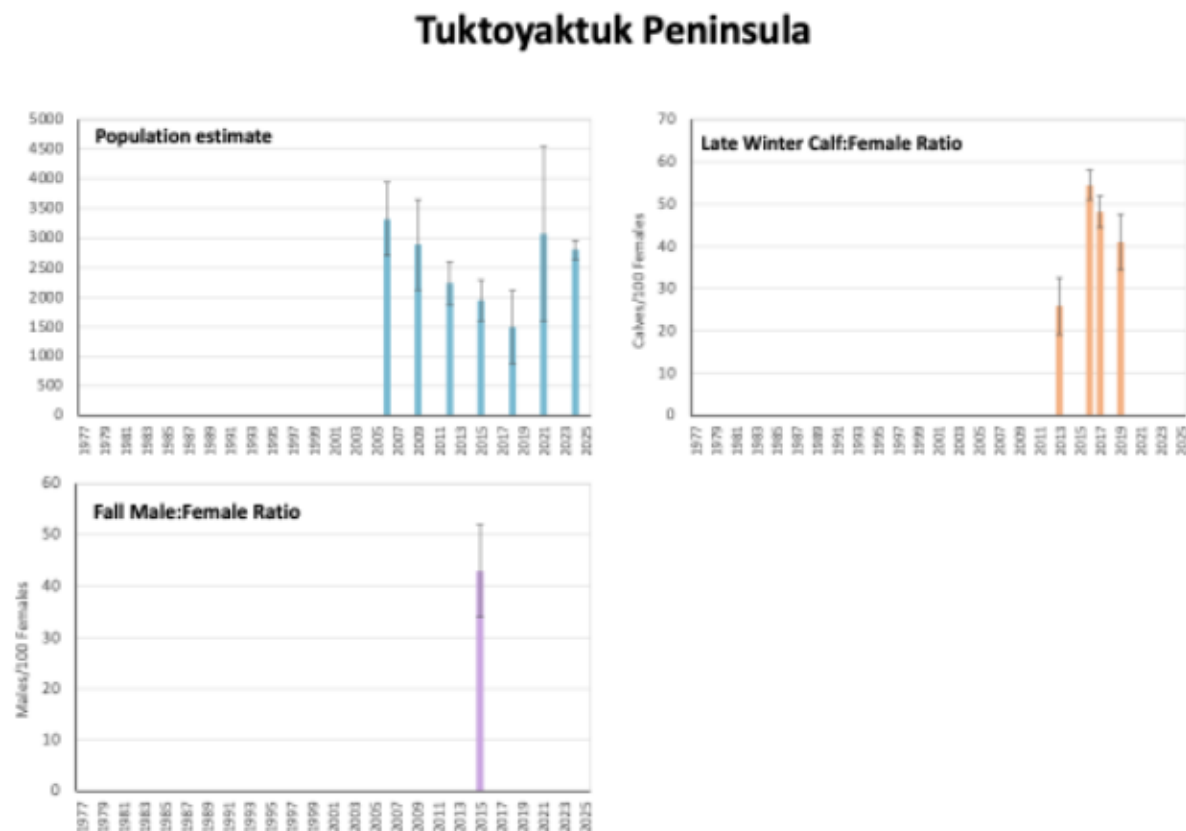


Figure 36. Demographic information available for the Tuktoyaktuk Peninsula barren-ground caribou subpopulation: population estimates based on post-calving aggregation surveys (top left), late winter calf:female ratios (top right) and fall male:female ratios (bottom left). Error bars show 95% confidence intervals. Late winter calf:female ratios and fall male:female ratio estimates include caribou from both the Tuktoyaktuk Peninsula and Cape Bathurst subpopulations.

Late winter calf:female ratios from 2007 to 2011 was high, ranging from about 30 to 50 calves/100 females (ACCWM 2025). Since 2013, late winter calf:female ratio estimates include both Tuktoyaktuk Peninsula and Cape Bathurst caribou since the distributions of the two subpopulations have been overlapping on the winter range during the survey periods (ACCWM 2025). Late winter calf:female ratios for the four most recent late winter surveys (2014, 2016, 2017, 2019) was high, ranging from 41 to 55 calves/100 females. Although calf:female ratio estimates are high, they may be skewed if a large number of females are being harvested and the calves are not, however, total harvest and the sex ratio of the harvest are not known (ACCWM 2025).

The only fall male:female ratio available (43 males/100 females) is from a fall composition survey conducted in 2015, which included both Tuktoyaktuk Peninsula and Cape Bathurst caribou (Figure 36). Other demographic information was not available. Harvest information is summarized in *Interactions with Humans*.

Cape Bathurst

Early population estimates were based on calving ground surveys, which combined the Cape Bathurst, Bluenose-West and Bluenose-East subpopulations (Hawley *et al.* 1979). The method changed to post-calving aggregation photo counts in 1986, 1987 and 1992. Nagy (2009a) re-analyzed surveys conducted in 1986 and 1987 to produce subpopulation-specific counts using a Lincoln-Petersen estimator. Estimates prior to 2000 should be treated with caution due to low collar numbers. Starting in 2000, population surveys were conducted specifically for each of the three subpopulations, and population estimates were calculated using the Rivest estimator, including re-calculation of estimates from 2000 to 2015 that were originally determined using the Lincoln-Peterson estimator (Boulanger *et al.* 2018, ACCWM 2026). The Cape Bathurst subpopulation experienced a rapid decline from 2000 to 2005, followed by a period of relative stability at low numbers between 2005 and 2015, before increasing between 2015 and 2018, remaining relatively stable between 2018 and 2021 then increasing again to 2024 and 2025 (Figure 37, ACCWM 2025, 2026). The most recent population estimate of $8,533 \pm 1,413$ (95% CI) is based on a survey conducted in 2025 (ACCWM 2026). The 2024 estimate may have been biased high because not all collared caribou were found in large aggregations, rather some were found in smaller groups suggesting that many caribou did not aggregate (ACCWM 2025). Although the larger groups were adequately counted, smaller groups may have been missed (ACCWM 2025). The 2025 survey was considered more accurate than the 2024 survey (ACCWM 2026).

Late winter calf survival based on calf:female ratios was low in 2007 (22 calves:100 females), higher for 2008-11 (42-49:100 females), and low again in 2013 (26 calves:100 females) (Davison 2016). Adult survival is unrecorded, although harvest rates were relatively high during the decline (estimated at approximately 500 caribou, mostly

females, in 2005; Nagy 2005). In 2007, the harvest was closed based on recommendations from the Wildlife Management Advisory Council (NWT) (WMAC (NWT)) and Gwich'in Renewable Resources Board (GRRB) (Davison 2016).

Cape Bathurst

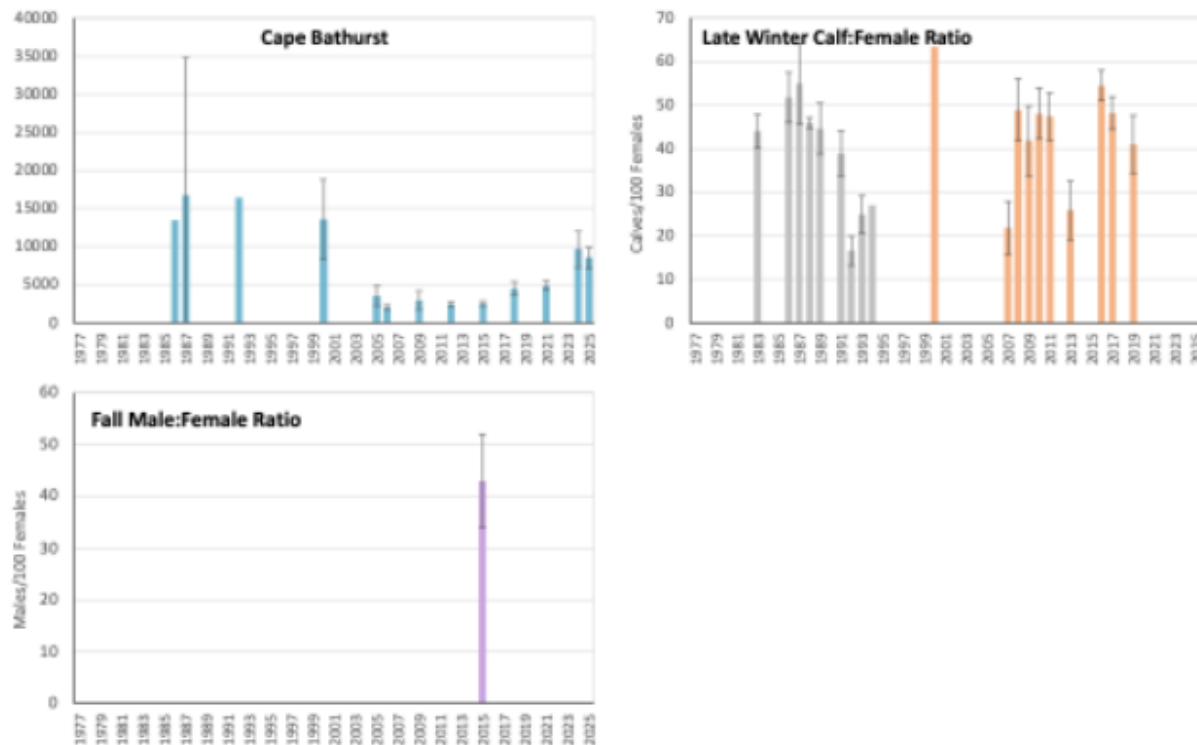


Figure 37. Demographic information available for the Cape Bathurst barren-ground caribou subpopulation: population estimates based on post-calving aggregation surveys (top left), late winter calf:female ratios (top right) and fall male:female ratios (bottom left). Error bars show 95% confidence intervals. Late winter calf:female ratio estimates prior to 2000 are for the 'Bluenose' subpopulation, which included Cape Bathurst, Bluenose West and Bluenose East combined. Late winter calf:female ratio estimates from 2013 to 2019, and the 2015 fall male:female ratio include caribou from both the Tuktoyaktuk Peninsula and Cape Bathurst subpopulations.

Late winter calf:female ratios prior to 2000 were assessed for the Cape Bathurst, Bluenose West and Bluenose East caribou combined and were over 40 calves/100 females for years sampled from 1983 to 1989, then declined to less than 30 for the period of 1992 to 1994 (Figure 37). Since 2000, the late winter calf:female ratios were high (>40 calves/100 females) for eight of the 10 years sampled (ACCWM 2025). From 2000 to 2011, only Cape Bathurst caribou were sampled. Since 2013, late winter calf:female ratios include both Tuktoyaktuk Peninsula and Cape Bathurst caribou since the two subpopulations have been overlapping on the winter range during the survey periods (ACCWM 2025). For

'Bluenose', Bathurst, Beverly and Qaminurjuaq subpopulations, late winter calf:female ratios were consistently more than 30 calves/100 females when the subpopulations were increasing from 1986 to 1989 (Heard and Williams 1991).

The only fall male:female ratio available (43 males/100 females) is from a fall composition survey conducted in 2015, which included both Tuktoyaktuk Peninsula and Cape Bathurst caribou (Figure 37). Other demographic information was not available. Harvest information is summarized in *Interactions with Humans*.

Bluenose-West

The Bluenose-West subpopulation currently appears to be at a low but stable population level (approximately 20% of its peak size) since about 2005, based on the most recent estimate in 2025 (Figure 38).

Similar to Cape Bathurst, population estimates prior to 1986 were based on calving ground surveys, which combined the Cape Bathurst, Bluenose-West and Bluenose-East subpopulations (Hawley *et al.* 1979). Post-calving aggregation photo-census surveys began in 1986, and Nagy (2009a) re-analyzed surveys conducted in 1986 and 1987 to produce subpopulation-specific counts using a Lincoln-Petersen estimator. As with the Cape Bathurst subpopulation, estimates prior to 2000 should be treated with caution due to low collar numbers. Starting in 2000, population surveys were conducted specifically for each of the three subpopulations, and population estimates were calculated using the Rivest estimator, including re-calculation of estimates from 2000 to 2015 that were originally determined using the Lincoln-Peterson estimator (Boulanger *et al.* 2018, ACCWM 2026). The Bluenose West subpopulation experienced a rapid decline of 78% from 2000 to 2005 (Figure 38, ACCWM 2026). The most recent estimate of $20,476 \pm 6,727$ (95% CI) is based on a survey conducted in 2025 (ACCWM 2026). A survey was attempted in 2024, but was unsuccessful due to weather and caribou movements (ACCWM 2025). Between 2005 and 2021, the subpopulation has remained relatively stable (ACCWM 2026).

Late winter calf:female ratios prior to 2000 were assessed for the Cape Bathurst, Bluenose West and Bluenose East caribou combined and were over 40 calves/100 females for years sampled from 1983 to 1989, then declined to less than 30 for the period of 1992 to 1994 (Figure 38). Since 2000, late winter calf:female ratios were high (>40 calves/100 females) for three of the six years sampled (ACCWM 2026). The two most recent estimates from 2011 and 2017 were over 30 calves/100 females but are out-of-date and may not represent the current late winter calf:female ratio. For 'Bluenose', Bathurst, Beverly and Qaminurjuaq subpopulations, late winter calf:female ratios were consistently over 30 calves/100 females when the subpopulations were increasing from 1986 to 1989 (Heard and Williams 1991).

There is only one male:female ratio available for the Bluenose West subpopulation - a fall composition survey in 2009, which estimated 70 males:100 females (Davison 2016). Other demographic information was not available. Harvest information is summarized in *Interactions with Humans*.

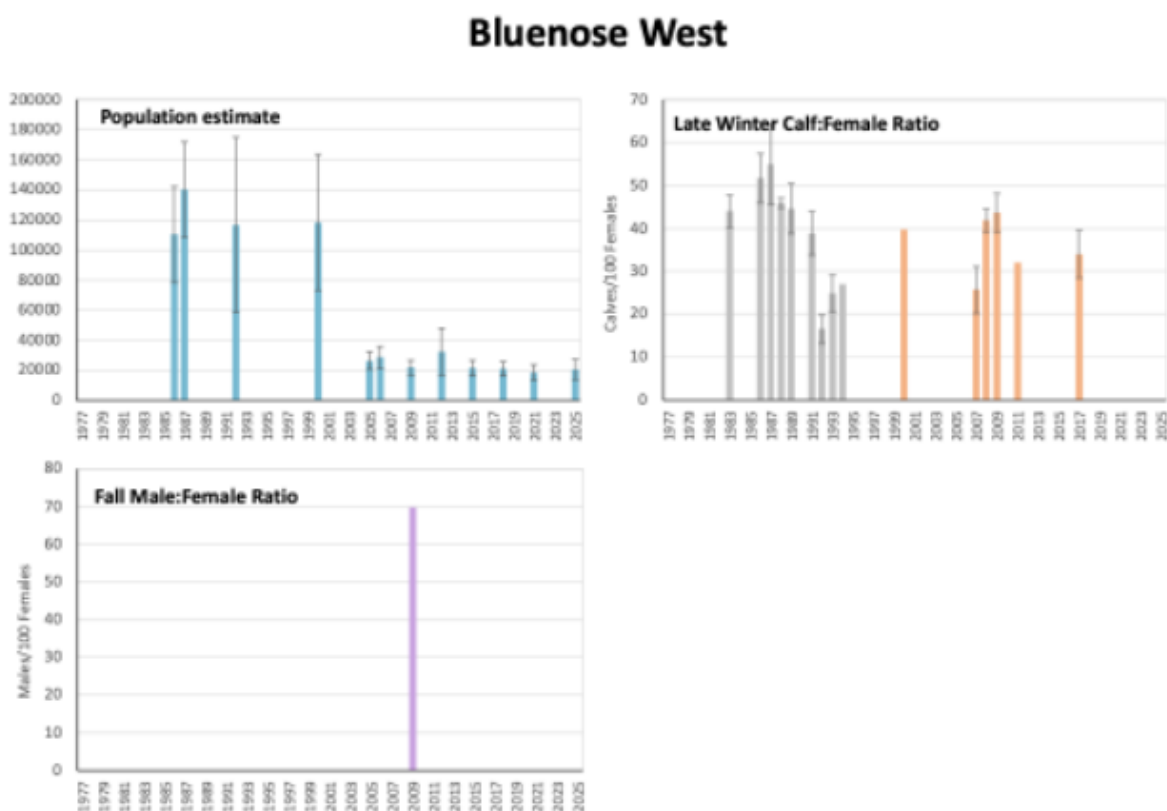


Figure 38. Demographic information available for the Bluenose West barren-ground caribou subpopulation including: population estimates based on post-calving aggregation surveys (top left), late winter calf:female ratios (top right) and fall male:female ratios (bottom left). Error bars show 95% confidence intervals. Late winter calf:female ratio estimates prior to 2000 are for the 'Bluenose' subpopulation, which included Cape Bathurst, Bluenose West and Bluenose East combined.

Bluenose-East

Similar to Cape Bathurst and Bluenose West, population estimates for the Bluenose East subpopulation prior to 1986 were based on calving ground surveys, which combined the Cape Bathurst, Bluenose-West and Bluenose-East subpopulations (Hawley *et al.* 1979). Post-calving aggregation photo-census surveys started in 1986, with additional surveys conducted in 1987 and 1992, which included the Bluenose East subpopulation as part of the 'Bluenose' subpopulation (Nagy *et al.* 1999, Nagy and Johnson 2006). Nagy (2009a)

was unable to calculate subpopulation-specific population estimates for those surveys for the Bluenose East subpopulation due to an insufficient number of collared Bluenose East caribou needed to derive reliable population estimates using the Lincoln-Peterson estimator (Nagy and Bucher 2006).

Starting in 2000, separate population surveys were conducted specifically for each of the three subpopulations, and post-calving surveys for the Bluenose East subpopulation were attempted in 2000, 2001, 2005, 2006, 2009 and 2010 (Adamczewski *et al.* 2016). Adamczewski (pers. comm. 2012 in SARC 2017) suggested the 2005 and 2006 estimates may have underestimated subpopulation size because of poor aggregation of individuals during the surveys, making both the decline to 2006 and the subsequent increase to 2010 less steep than documented. A post-calving survey was attempted in 2009 but failed due to poor weather conditions and poor aggregation (Adamczewski *et al.* 2014). In 2010, a post-calving survey and a calving survey were conducted to compare the two methods (Adamczewski *et al.* 2014, 2017) and the population estimate was subsequently recalculated using the Rivest estimator (Boulanger *et al.* 2018). Following an unsuccessful attempt at a post-calving survey in 2012 due to insufficient aggregation of caribou, a calving survey was successfully completed in 2013 (Adamczewski *et al.* 2014) and only calving surveys have been conducted on the Bluenose East since then. Of 7 attempted post-calving surveys of the Bluenose-East subpopulation from 2000 to 2012, only the 2010 survey resulted in a reliable estimate with subpopulation-wide aggregation (Boulanger *et al.* 2018). Population trend prior to 2010 was thus poorly documented.

Estimated population size of the Bluenose East caribou subpopulation declined rapidly from 120,880 caribou in 2010 to 19,294 in 2018 (Figure 39). The subpopulation stabilized between 2018 and 2021, then increased between 2021 and 2023 (Boulanger *et al.* 2022, 2024a). Although not significant, the slight increase in estimated population size between 2018 and 2021 was in part due to an increase in males based on a higher fall male:female ratios (Boulanger *et al.* 2022). The most recent population estimate of $28,759 \pm 2,762$ (95% CI) is based on a survey conducted in 2025 (ACCWM 2026).

The estimated annual rate of increase of adult female between 2021 and 2023 was statistically significant at 32% (18-48% CI) but is greater than the maximum rate of increase known for caribou and reindeer (28%/yr) (Boulanger *et al.* 2024a). The annual rate of increase from 2018 to 2023 was 12% (7-17% CI), but even that rate requires a combination of adult female survival of 90% and calf recruitment of 50-60% (Boulanger *et al.* 2024a). Adult female survival has averaged about 83% from 2018 to 2023 and late winter calf:female ratios have ranged from 41 to 47 calves/100 females (Figure 39). Although both late winter calf:female ratios and adult female survival have been high, they do not meet the modelled requirements for a 12%/yr or 32%/year rate of increase (Boulanger *et al.* 2024a). Based on collared adult female caribou, no collared caribou

switched from adjacent subpopulations to the Bluenose East subpopulation in 2022 or 2023, suggesting that immigration was not a factor, although collared caribou sample sizes were low (Boulanger *et al.* 2024a). The apparent increases for 2021-2023 and 2018-2023 are likely the result of a combination of factors including: under-estimation of subpopulation size in 2021 and possibly 2018 due to poor visual survey conditions (patchwork snow cover); under-estimation of adult female survival rates based on collared females; and, potentially undetected immigration from another subpopulation (Boulanger *et al.* 2024a). From 2021 to 2023, the Bluenose East subpopulation underwent an increase in numbers, despite uncertainty about the rate of increase (Boulanger *et al.* 2024a). The population model is currently being updated with further assessment of factors such as adult female survival rates (which may be higher than initially estimated) and male fidelity (Boulanger *et al.* 2024a, ACCWM 2025). The 2025 estimate represents an increase of 24% since 2018 or 6%/year. A report for the 2025 survey including updates to the population model is not available yet.

Late winter calf:female ratios prior to 2000 were assessed for the Cape Bathurst, Bluenose West and Bluenose East caribou combined and were over 40 calves/100 females for years sampled from 1983 to 1989, then declined to less than 30 for the period of 1992 to 1994 (Figure 39). In 2001, the late winter calf:female ratio for Bluenose East caribou was low, followed by a period of high late winter calf:female ratios from about 2004 to 2011, and then a period of low late winter calf:female ratios in the early 2010s before increasing to reach higher levels by 2020 (Figure 39). Other demographic indicators (adult female survival, fall calf:female ratio, fall male:female ratio, % of females breeding [an indicator of productivity or pregnancy rate]) all demonstrate higher values in the years from 2020 to 2025 (except for a decrease in the bull:female ratio between 2024 and 2025), consistent with the observed population increase (Figure 39).

Bluenose East

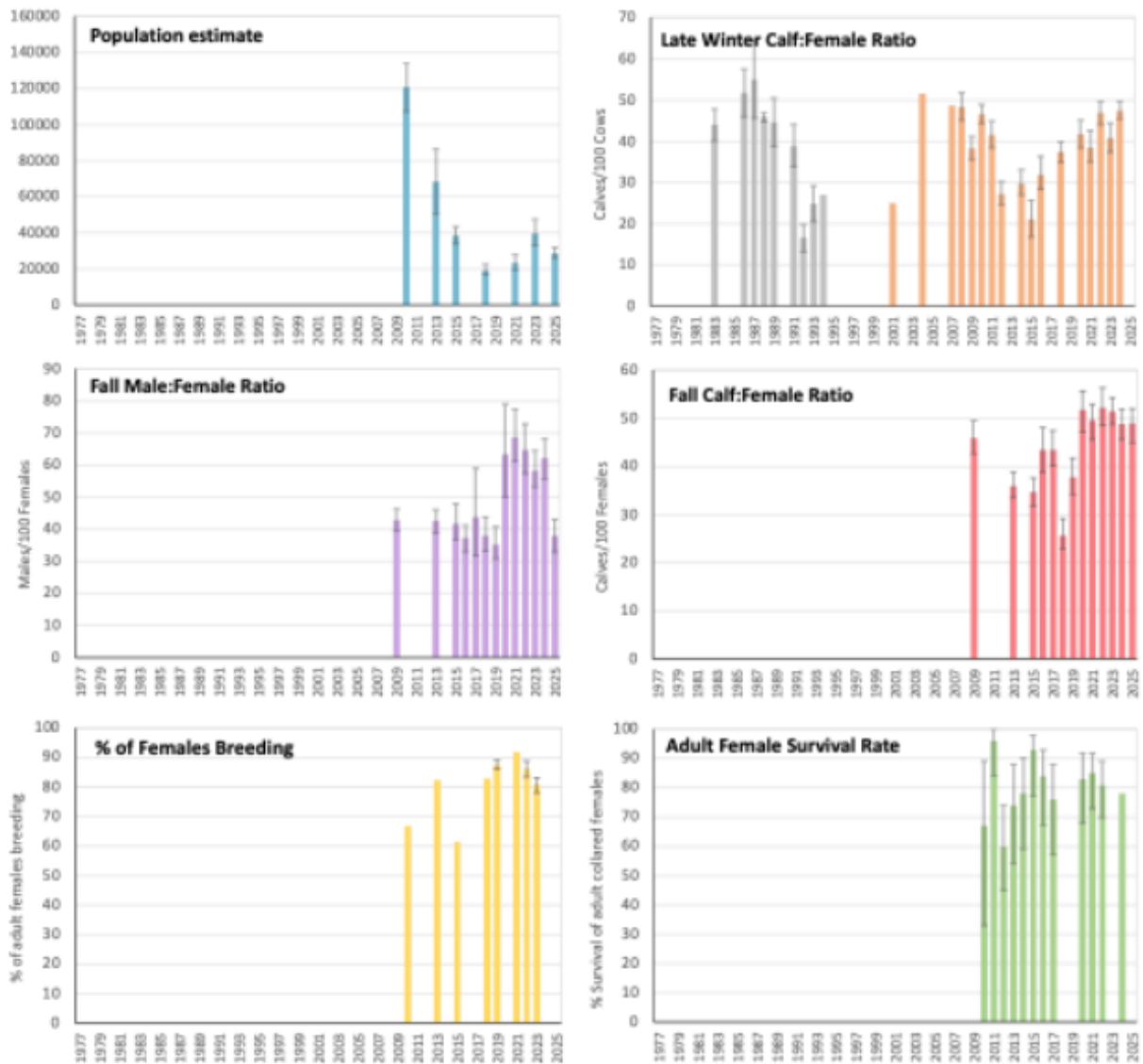


Figure 39. Demographic information available for the Bluenose East barren-ground caribou subpopulation including: population estimates based on calving surveys (top left), late winter calf:female ratios (top right), fall male:female ratios (center left), fall calf:female ratios (center right), % of females breeding (bottom left) and adult female survival rate (bottom right). Error bars show 95% confidence intervals. Late winter calf:female ratio estimates prior to 2000 are for the 'Bluenose' subpopulation, which included Cape Bathurst, Bluenose West and Bluenose East combined.

Bathurst

In general, demographic monitoring of the Bathurst subpopulation has been the most comprehensive over time. This subpopulation has shown the most extreme decline of the NWT subpopulations, from an estimated 470,000 in 1986 to just 3,600 estimated in 2025 (Figure 40), all based on photographic calving ground surveys.

Using hoof scars on spruce roots as an indirect index of population size, Zalatan *et al.* (2006) suggested low caribou abundance during the 1920s, a high peak during the mid-1940s, and low abundance between the mid-1950s to 1970. This index of caribou abundance assumes that caribou used the same migratory pathways over time and thus that spruce root scarring reflects subpopulation abundance rather than altered migrations.

Bathurst numbers increased during the late-1970s and early-1980s (Case *et al.* 1996). Visual surveys prior to 1982 are indicative of trend but likely under-estimated true subpopulation size based on side-by-side comparisons of visual and photographic surveys (Heard and Jackson 1990). Although the population estimate in 1990 (352,000) was lower than the 1986 estimate (479,000), Heard and Williams (1991) concluded that the apparent decrease was not statistically significant. There was also no statistically significant change detected between 1990 and 1996 (Gunn *et al.* 1997). The subpopulation began rapidly declining after 1996 with another rapid rate of decline (70%) between 2006 and 2009 (Figure 40; Nishi *et al.* 2007, 2010, Adamczewski *et al.* 2016). After a brief period of apparent stability between 2009 and 2012, the population has continued to decline with the most recent (2025) population estimate at 3,609 caribou (GNWT unpubl. data), which represents a 47% decrease since the 2022 estimate of 6,851 caribou (Adamczewski *et al.* 2023).

Population trend was reflected in the trend in late winter calf:female ratio, which was generally over 30 calves/100 females from the mid 1980s to the mid 1990s (Figure 40). This was followed by a period of declining and low late winter calf:female ratios from 29 calves/100 females in 2001 to 9 calves/100 females in 2006 as the subpopulation declined, and then a period of higher calf recruitment from 2007 to 2011, roughly corresponding to the apparent stability of the subpopulation between 2009 and 2012. Since 2012, late winter calf:female ratios have been about 30 calves/100 females or lower (Figure 40), consistent with a declining trend. Determining late winter calf:female ratios for Bathurst caribou has become challenging due to extensive mixing of Bathurst, Bluenose East, Beverly and Ahik caribou (Adamczewski *et al.* 2024c), and is the reason why there are no estimates available since 2021, despite efforts each year to conduct surveys. There has been better success at assessing calf:female ratios (along with sex ratios) from fall surveys in late October, as the Bathurst subpopulation has still been

relatively separate from its neighbours at that time. Since 2000, fall calf:female ratios have been highly variable, but consistently lower than 40 calves/100 females and consistently lower than fall calf:female ratios for the Bluenose East subpopulation (Figure 40, see Figure 39).

Fall male:female ratios have varied between 35 and 64 males/100 females from 1999 to 2020, with unusually high ratios of 106 males/100 females in 2022 and 110 males/100 females in 2023 (Figure 40, Adamczewski *et al.* 2024a,b). Adamczewski *et al.* (2024b) suggested that the abnormally high ratios could potentially be due to differences in emigration rates of females and males from the Bathurst subpopulation. If females were emigrating at a higher rate than males, the sex ratio could become skewed. An initial analysis of fidelity of Bathurst, Bluenose East and Beverly males to their summer ranges suggests that Bathurst male fidelity to their summer range is high, and the emigration rate of Bathurst females to the Beverly subpopulation was not matched by emigration of Bathurst males (Adamczewski *et al.* 2024b). Boulanger *et al.* (2024a) found that population models that did not include males emigrating to the Beverly subpopulation showed better fit to the high male:female ratios in 2022 and 2023 than models that included male emigration. Other possible explanations for the male:female ratio biased to males include: timing of the survey (a survey at the peak of rut is most likely to include all sex and age classes); spatial variation and adequacy of sampling (male:female ratios can vary widely within the Bathurst fall rut range); and misclassification of females and males (Adamczewski *et al.* 2022). Peak of Surveys in 2022 and 2023 were timed during the peak of rut (Adamczewski *et al.* 2022, 2023). In 2021, a fall composition survey was attempted for the Bathurst subpopulation but a reliable male:female ratio could not be determined since there was extensive mixing with the Beverly subpopulation and not enough areas were sampled that could be reliably considered Bathurst only (Adamczewski *et al.* 2022).

Adult female survival rates have been variable and generally lower than 80% prior to 2016, and especially low from 2009 to 2013 (Figure 40, Adamczewski *et al.* 2023, Boulanger *et al.* 2024a). From 2016 to 2022, annual adult collar-based female survival rates were higher than 80% for five out of seven years (Boulanger *et al.* 2024a).

Harvest information is summarized in *Interactions with Humans*.

Bathurst

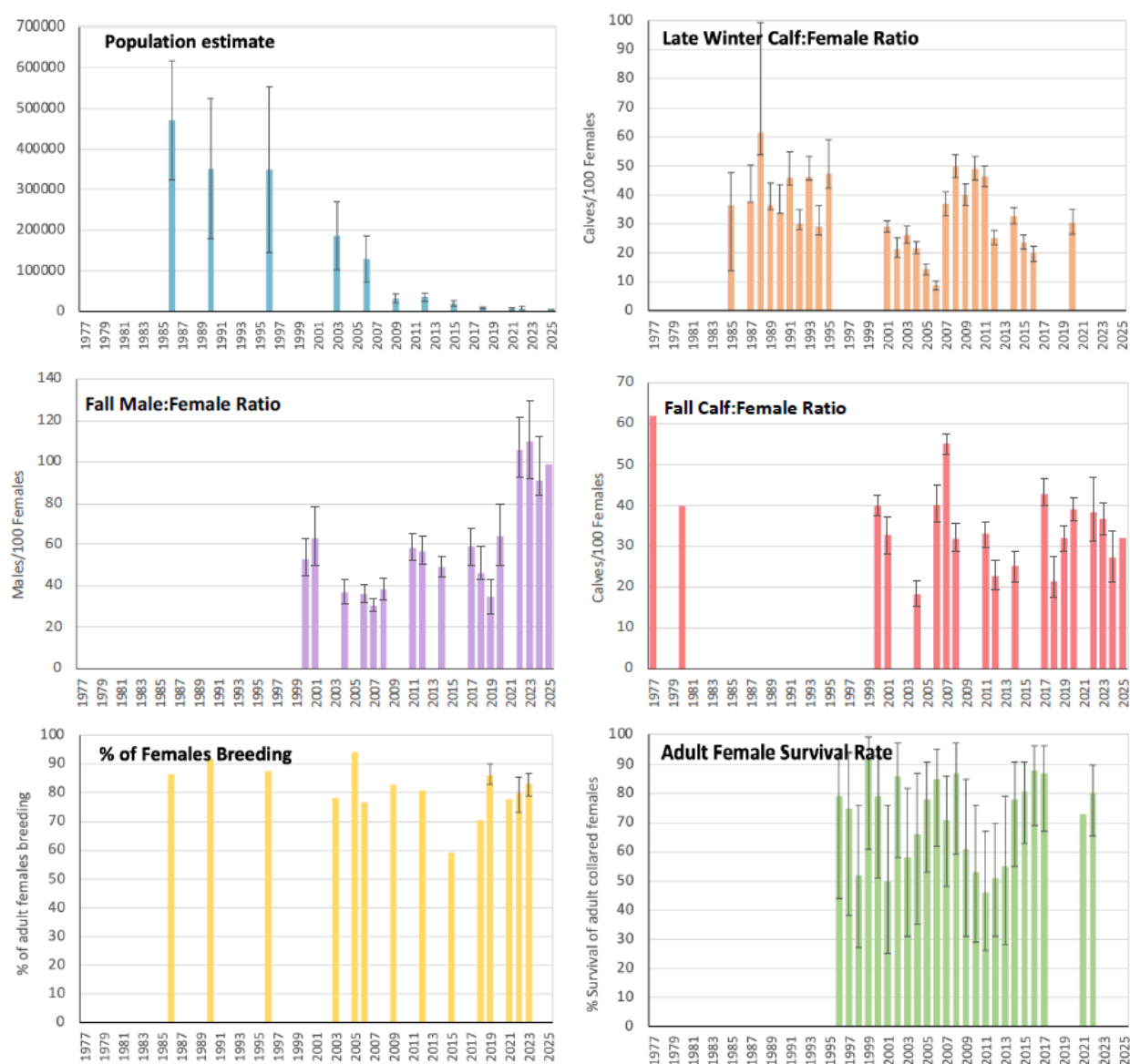


Figure 40. Demographic information available for the Bathurst barren-ground caribou subpopulation including: population estimates based on calving surveys (top left), late winter calf:female ratios (top right), fall male:female ratios (center left), fall calf:female ratios (center right), % of females breeding (bottom left) and adult female survival rate (bottom right). Error bars show 95% confidence intervals.

Beverly

The Beverly subpopulation (as defined as calving in the traditional inland calving ground [Beverly South], see *Systematic/taxonomic/naming clarifications*), was surveyed frequently between the early 1970s and mid-1990s. Sampling frequency for the Beverly subpopulation has been low since the mid-1990s. Photographic and visual surveys of the Beverly calving grounds have permitted estimates of population size and calving ground density from 1987-2002 (Williams 1995; Johnson and Mulders 2009). Between 2007 and

2011, aerial surveys of the traditional Beverly calving grounds were undertaken but extremely low numbers precluded estimating numbers (Johnson and Williams 2008; Johnson *et al.* 2009, Campbell *et al.* 2012a).

Population estimates, calf survival, adult survival and distribution suggest the subpopulation was likely at a stable peak of about 264,000 and 276,000 between 1984 and 1994, respectively (Thomas and Barry 1990a and b; Heard and Williams 1990b, 1991; Williams 1995; Thomas 1998). A survey conducted in 1993 did not result in a reliable estimate due to low survey coverage and a very late spring when some females likely did not reach their normal calving grounds and calved while still migrating north (Williams 1995). Estimates of late winter calf survival halted in 1995. No information was collected until a systematic reconnaissance survey in June 2002 mapped calving distribution and densities (Johnson and Mulders 2009). The survey was not designed to estimate population size, but it revealed a small calving ground with low densities compared to 1994. Subsequently, four calving ground delineation surveys were conducted from 2006 to 2009 (Johnson and Williams 2008; Johnson *et al.* 2009; Adamczewski *et al.* 2015), which in 2009 reported few females, low calf:female ratios, and an extrapolation of numbers to likely less than 500 caribou on the traditional inland calving grounds. More recently, reconnaissance surveys conducted by Campbell *et al.* (2012a) of the traditional inland calving ground showed densities of breeding females on the traditional inland calving ground to be too low to warrant further survey. This represents a decline of over 99% over three generations on the traditional inland calving ground.

Adult female survival rates were very low for satellite-collared females 2006-2009 with at least one year's history of calving on the traditional Beverly calving ground (Adamczewski *et al.* 2015). Based on aerial survey data, adult survival and calf production as well as analysis of telemetry data at the annual scale, the Beverly subpopulation declined through the last half of the 1990s and the 2000s (Gunn *et al.* 2012 and 2013b; Adamczewski *et al.* 2015).

Up to the 1994 estimate, the Beverly subpopulation was defined as calving inland on a calving ground south of Garry Lakes in Nunavut. This calving ground has not been used since 2009. The fate of that Beverly subpopulation is unclear; it either shifted in large numbers to calving in the Queen Maud Gulf lowlands (Nagy *et al.* 2011) or declined to very low numbers and the remnant subpopulation joined a larger subpopulation calving in the eastern Queen Maud Gulf (Adamczewski *et al.* 2015). The Beverly subpopulation defined more recently as calving in the central and eastern Queen Maud Gulf (2011, 2018 and 2023 surveys) may not correspond exactly to the earlier inland-calving Beverly subpopulation.

The population estimate for the Beverly subpopulation from the calving survey in 2011 was recalculated following the 2018 survey to include the Adelaide Peninsula, based on

distribution of collared Beverly caribou in 2018 (Campbell *et al.* 2019). Between 2011 and 2018, the subpopulation declined by 4-5% per year from 136,608 to 103,372 caribou, then increased by 8% per year to 151,131 in 2023 (Figure 41, Campbell *et al.* 2019, 2025a). Between 2011 and 2023, the subpopulation remained relatively stable (Campbell *et al.* 2025a).

Since 2008, late winter calf:female ratios have been generally high with rates greater than 40 calves/100 females for nine of 11 years, including all five of the most recent years (2020-2024, Figure 41). Heard and Williams (1991) reviewed calf:female ratios for the Bathurst, Beverly, Bluenose (the Cape Bathurst, Bluenose-West and Bluenose-East subpopulations were still considered a single subpopulation at this time) and Qamanirjuaq subpopulations from 1986-89 when these subpopulations were increasing in number; ratios were consistently above 30 calves: 100 females. Limited data from fall composition surveys suggest that male:female and calf:female ratios are moderate to high (Figure 41). Recent estimates of percent of females breeding (an indicator of productivity or pregnancy rate) were about 80% (Figure 41).

For the Beverly subpopulation from 1980-87, age-specific death rates were estimated by constructing a life-table from a large sample of harvested caribou (Thomas and Barry 1990b). During this period numbers were considered to be stable. Mortality was 10.6% between age two and three years, 11.3% from three to four years, and 22.4% between 10 and 11 years. From 2007-09, survival of Beverly females was estimated at 58% (CI 42-72%; Adamczewski *et al.* 2015), based on a small number of satellite collared females that had spent ≥ 1 year of calving on the traditional Beverly calving grounds. From 2012 to 2022, adult female survival averaged 80%, which is low for an increasing population (Campbell *et al.* 2025a).

Based on the Integrated Population Model, the increase in the population size between 2018 and 2023 is likely due to high productivity and potential movement from the neighbouring Bathurst and Ahiak subpopulations (Campbell *et al.* 2025a). Given the very low recent abundance of the Bathurst subpopulation and estimated emigration based on collars, though, it is unlikely that Bathurst emigration could have contributed significantly to the Beverly increase.

Beverly

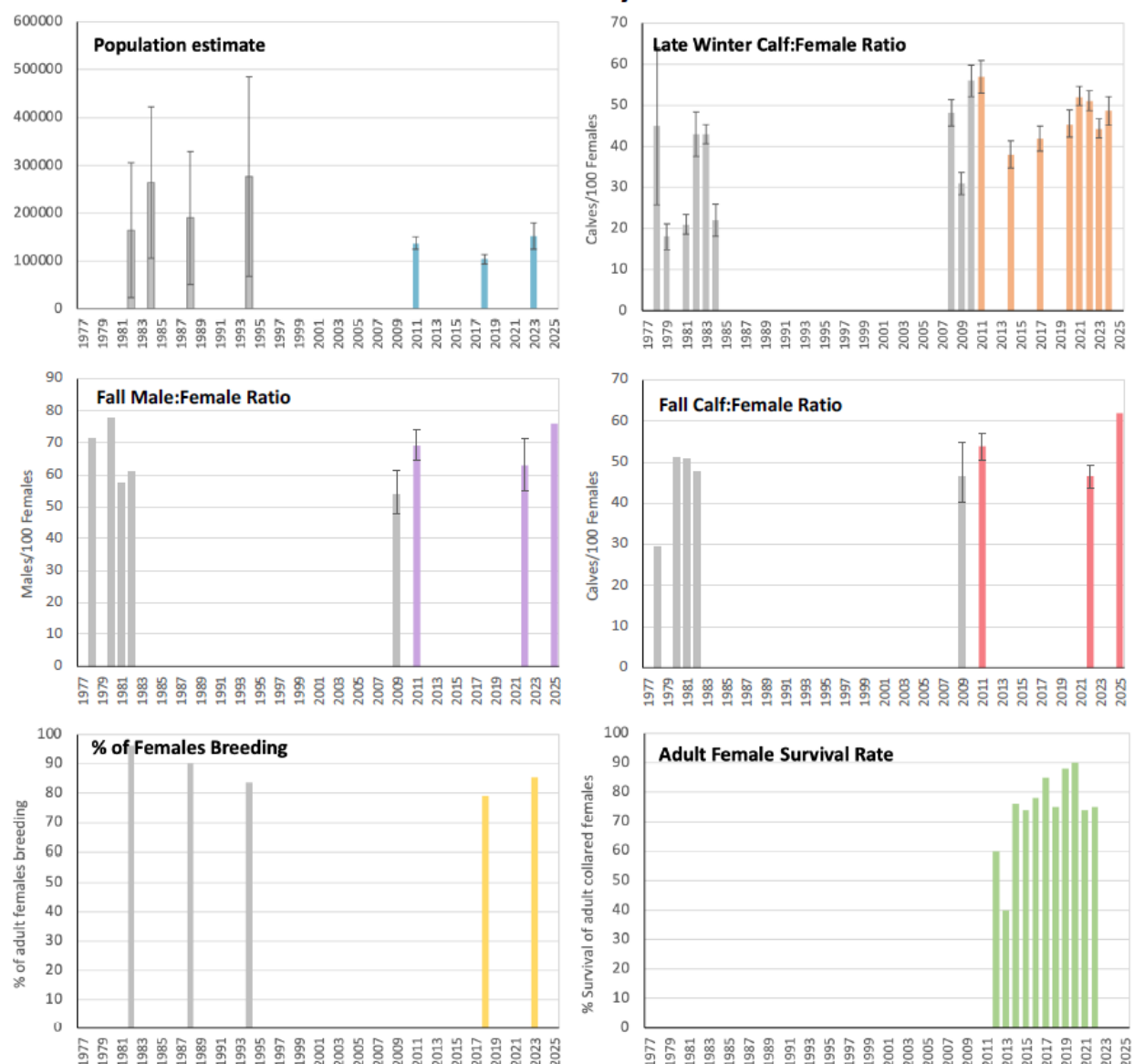


Figure 41. Demographic information available for the Beverly barren-ground caribou subpopulation including: population estimates based on calving photo surveys (top left), late winter calf:female ratios (top right), fall male:female ratios (center left), fall calf:female ratios (center right), % of females breeding (bottom left) and adult female survival rate (bottom right). Surveys conducted in 1993 and 2009 are not shown (see text). The Beverly subpopulation defined more recently as calving in the central and eastern Queen Maud Gulf (2011, 2018 and 2023 surveys) may not correspond exactly to the earlier inland-calving Beverly subpopulation, which is shown as grey bars in the figures above (see text). Error bars show 95% confidence intervals. Adult female survival rates were visually estimated from Figure 51 in Campbell and Boulanger (2025a).

Qamanirjuaq

Surveys of the Qamanirjuaq subpopulation date back to 1950 (Banfield 1954 *in* Heard and Calef 1986), with estimates of 120,000 in 1950 (Banfield 1954 *in* Heard and Calef 1986), 149,000 in 1955 (Loughrey unpubl. data *in* Heard and Calef 1986), and 63,000 in 1968 (Parker 1972 *in* Heard and Calef 1986). Between 1980-1982, a large, unexpected increase in subpopulation size was observed. This increase was attributed to immigration (from northeastern mainland NWT), increased birth rates, and increased survival rates (Heard and Calef 1986; Heard and Jackson 1990). The early 1980s were also a period of transition from calving ground surveys using visual-only methods to methods using aerial photography on high-density areas. Direct comparison of the two methods had shown that visual-only estimates of high-density areas substantially under-estimated caribou numbers (Heard and Jackson 1990). Estimates prior to the 1980s should be treated with caution. Population estimates based on calving photo surveys in 1983, 1985 and 1988 suggested a relatively stable subpopulation in the 1980s (Figure 42; Heard and Jackson 1990). Post-calving photo surveys in July 1987 resulted in an estimate of between 230,000-260,000 Qamanirjuaq caribou; however, given the absence of males in this sample, it was thought to be biased low. A more realistic estimate is 270,000-300,000 (Russell 1990).

The subpopulation reached a high of 496,000 in 1994 (BQCMB 2014). Surveys since then (Campbell *et al.* 2010, 2012a, 2019, 2023) suggest a decline of almost 50% between 1994 and 2022 (Figure 42). Although there is uncertainty associated with this trend (length of time between surveys and uncertainty in estimates, especially in 1994), the possibility of a decline is supported by the results of calving ground reconnaissance surveys in 2008 and 2012 that indicated a 10-20% decrease in relative density of caribou on the calving grounds during that period (BQCMB 2014; Campbell *et al.* 2015). A statistically significant decline of 2% per year was detected between the 2008 and 2022 surveys, and a non-significant decline was detected between 2017 and 2022 (Campbell *et al.* 2023).

Late winter calf:female ratios suggest high calf recruitment from surveys conducted from 1982 to 1985 and from 1993 to 1996, and low calf recruitment (<20 calves/100 females) from 2006 to 2008 (Figure 42, BQCMB 2014). The most recent estimates available in 2021 and 2022 were also below 30 calves/100 females (Figure 42, BQCMB 2024b). Heard and Williams (1991) reviewed calf: female ratios for the Bathurst, Beverly, Bluenose (the Cape Bathurst, Bluenose-West and Bluenose-East subpopulations were still considered a single subpopulation at this time) and Qamanirjuaq subpopulations from 1986-89 when these subpopulations were increasing in number; ratios were consistently above 30 calves: 100 females.

Few estimates were available for other demographic indicators. The most recent fall male:female ratios in 2008 and 2016 were high, and fall calf:female ratios were moderate

(Figure 42). The percent of females breeding was low in 2008 and 2017, but increased in 2022 (Figure 42).

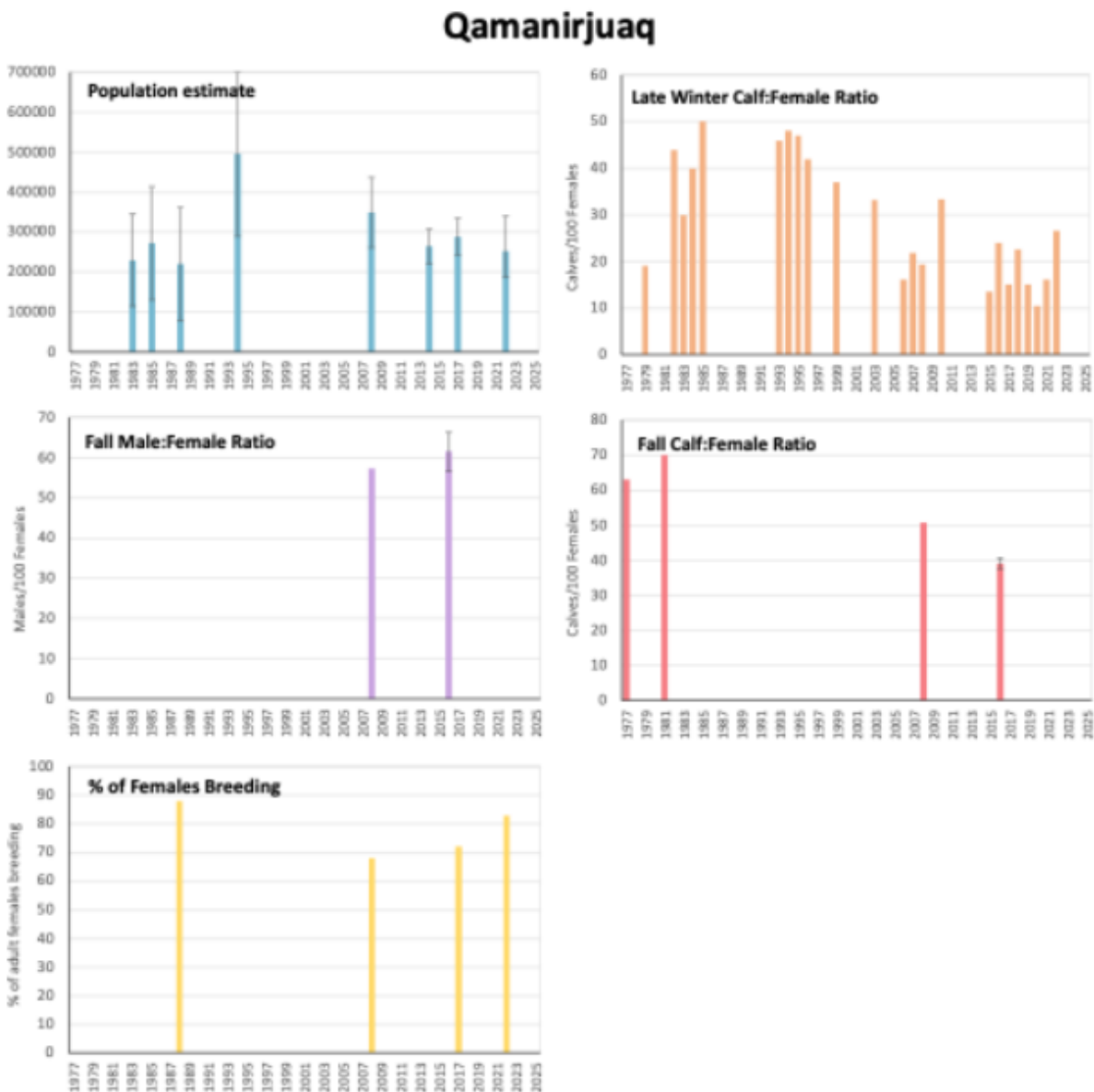


Figure 42. Demographic information available for the Qamanirjuaq barren-ground caribou subpopulation including: population estimates based on calving photo surveys (top left), late winter calf:female ratios, fall male:female ratios (center left), fall calf:female ratios (center right), and % of females breeding (bottom left). Error bars show 95% confidence intervals.

Ahiak

The first systematic (stratified visual) calving survey for the Ahiak subpopulation was in 1986 and covered a small area west of Adelaide Peninsula (Gunn *et al.* 2000). It estimated $11,265 \pm 1,615$ (SE) breeding female caribou on the calving ground. The next calving ground survey in 1996 was more extensive covering from Adelaide Peninsula to the region south of Kent Peninsula. The estimate was $83,134 \pm 5,298$ (SE) breeding female caribou on the calving ground (Gunn *et al.* 2000). Results from the 1996 survey were used to extrapolate the entire Ahiak subpopulation estimate to approximately 200,000 caribou (Gunn *et al.* 2000). However, while the spacing of transects in 1986 was adequate, this was not the case in 1996, when the number of transects was very low and the southern boundary of the calving distribution was not well-defined. Therefore, the extrapolated estimate is questionable.

No surveys were conducted from 1996 to 2005. In 2006, the survey emphasis switched to measuring the distribution and density on the calving grounds. Between 2006 and 2010, annual reconnaissance surveys were conducted along the coastal Queen Maud Gulf, including the Adelaide Peninsula, to map calving distribution and estimate densities. Calving densities were relatively stable between 1996 and 2007 with densities of 1+ year old caribou at 3.9 caribou/km² in 1996 (Gunn *et al.* 2000), 3.1 caribou/km² in 2006 and 3.0 caribou/km² in 2007 (Johnson *et al.* 2009). Density was lower in 2008 (1.1 caribou/km²), which may have been a consequence of low pregnancy rates and/or non-breeding females being late to reach the calving grounds. However, given the infrequent survey history, different interpretations of subpopulation structure (see *Subpopulation names clarification*), questions as to the extent of movement from the inland-calving Beverly subpopulation to the Queen Maud Gulf lowlands, and differences in location of the surveyed areas, the population trend for the Ahiak subpopulation prior to 2011 is uncertain.

In June 2011, an extensive survey of the central Queen Maud Gulf area to the northeast mainland was conducted (Campbell *et al.* 2012a). The survey was used to estimate the number of adult caribou and yearlings in the Ahiak subpopulation (as defined by Campbell *et al.* 2012a) at 71,340 caribou. Another survey was conducted in 2021 and the population estimate for Ahiak caribou (not including yearlings) that year was 39,131 caribou (Campbell *et al.* 2022). In 2011, calving photo surveys were conducted for both the Ahiak and Beverly subpopulations, and the Adelaide Peninsula was included in the Ahiak survey (Campbell *et al.* 2012a). However, based on collared caribou distribution, the Adelaide Peninsula was included in the 2018 Beverly survey (Campbell *et al.* 2019). Following an extensive analysis of collar movement that showed that from 2011 to 2018 the Beverly caribou were more likely to use the Adelaide Peninsula than the Ahiak caribou,

the 2011 Beverly survey was re-analyzed to include the Adelaide Peninsula (Campbell *et al.* 2019).

Consequently, Campbell *et al.* (2022) assessed population trend between the 2011 and 2021 Ahiak surveys, by both including and excluding the Adelaide Peninsula. Estimates of adult caribou both including and excluding the Adelaide Peninsula indicated a population decline (Campbell *et al.* 2022). Over the 10 years between surveys, population change was 52% including the Adelaide Peninsula and 62% excluding the Adelaide Peninsula (Campbell *et al.* 2022). Figure 43 shows estimates for 2011 and 2021 based on estimates calculated for the trend analysis that exclude the Adelaide Peninsula.

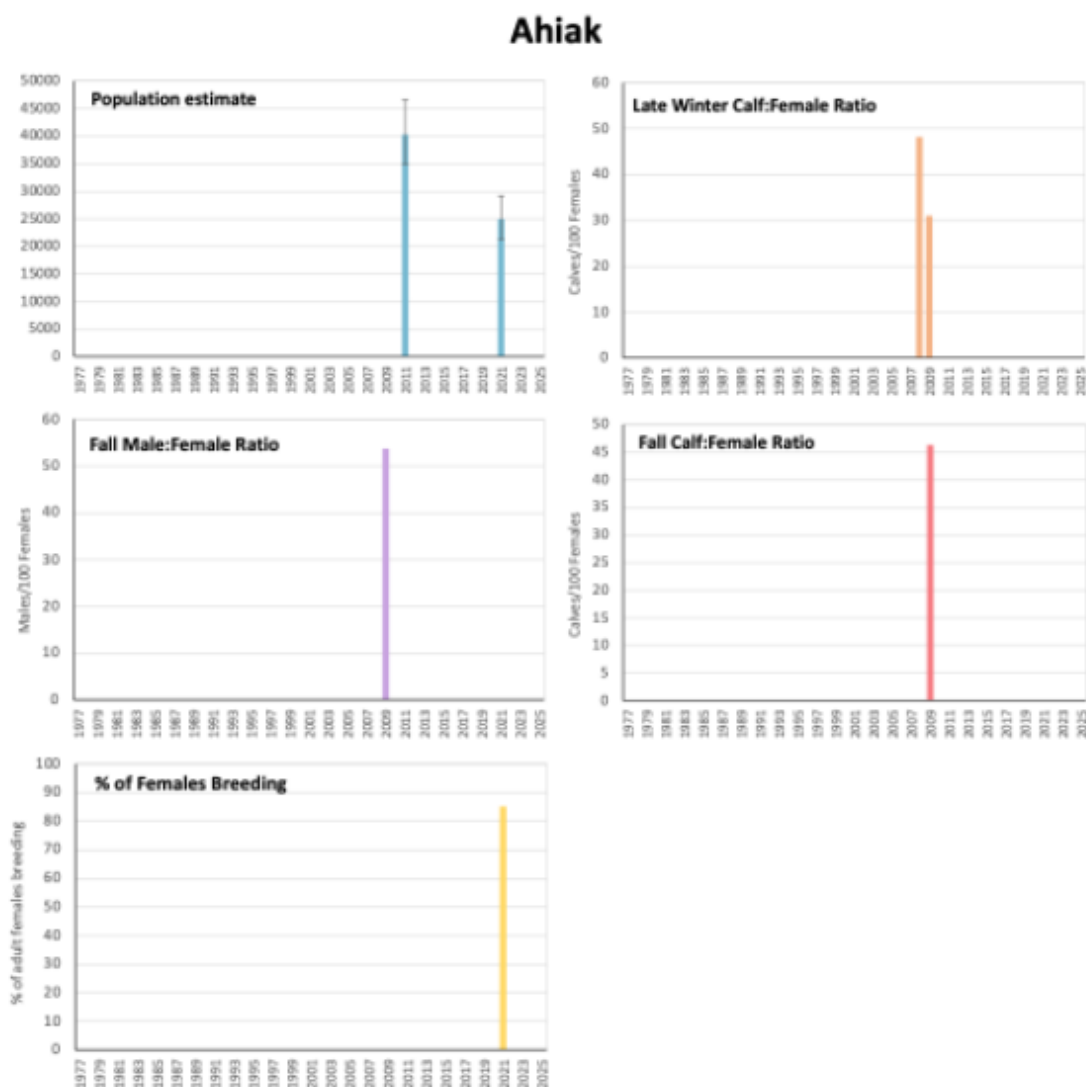


Figure 43. Demographic information available for the Ahiak barren-ground caribou subpopulation including: population estimates based on calving photo surveys (top left), late winter calf:female ratios (top right), fall male:female ratios (center left), fall calf:female ratios (center right), and % of females breeding (bottom left). Error bars show 95% confidence intervals.

Few estimates were available for other demographic indicators. Late winter calf:female ratios in 2008 and 2009 suggest moderate to high calf recruitment for those two years (Figure 43). Data are available for only one fall composition survey in 2009, which suggested a moderate fall male:female ratio and a moderate-high fall calf:female ratio (Figure 43). The percent of females breeding was high in 2021. From 2007-09, survival of Ahiak females was estimated at 79% (CI = 67-88%) (Adamczewski *et al.* 2015).

Wager Bay

Available demographic information for the Wager Bay subpopulation is limited to the population estimate of 45,005 caribou (95% confidence interval: 38,735-52,293) based on a calving survey conducted in 2021 (Figure 44; Campbell *et al.* 2022). The percent of females breeding was over 80%.

Previous surveys conducted of the Northeast Mainland area in 1983 and 1995 suggested a decline from 119,800 in 1983 to 73,994 caribou in 1995, however survey area coverage was very low and smaller aggregations of calving caribou could have been missed, compromising the reliability of the estimates (Campbell *et al.* 2022).

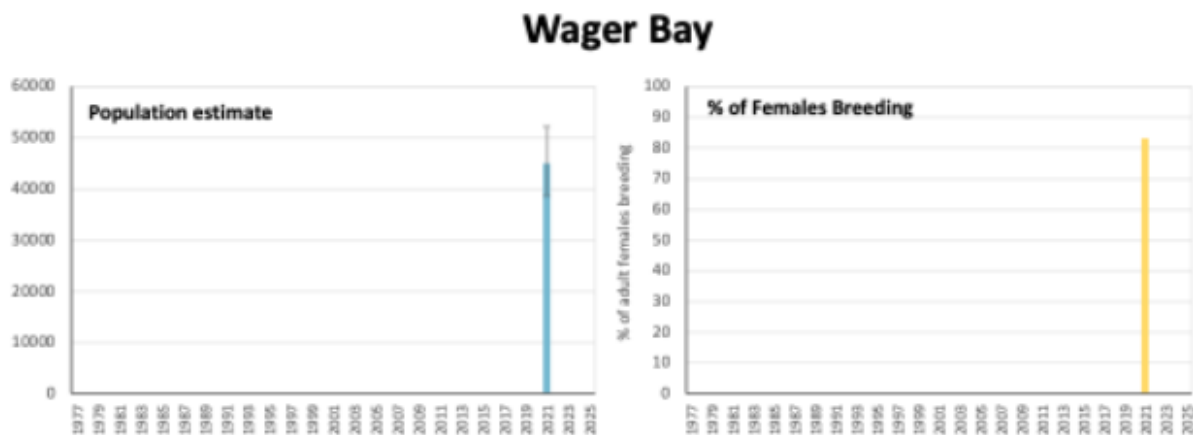


Figure 44. Demographic information available for the Wager Bay barren-ground caribou subpopulation including: population estimates based on calving surveys (left) and % of females breeding (right). Error bars show 95% confidence intervals.

Lorillard

The population estimate of 33,454 caribou (95% confidence interval: 22,503-49,735) based on a calving survey conducted in 2021 (Figure 45; Campbell *et al.* 2022), is the only demographic data available for the Lorillard subpopulation.

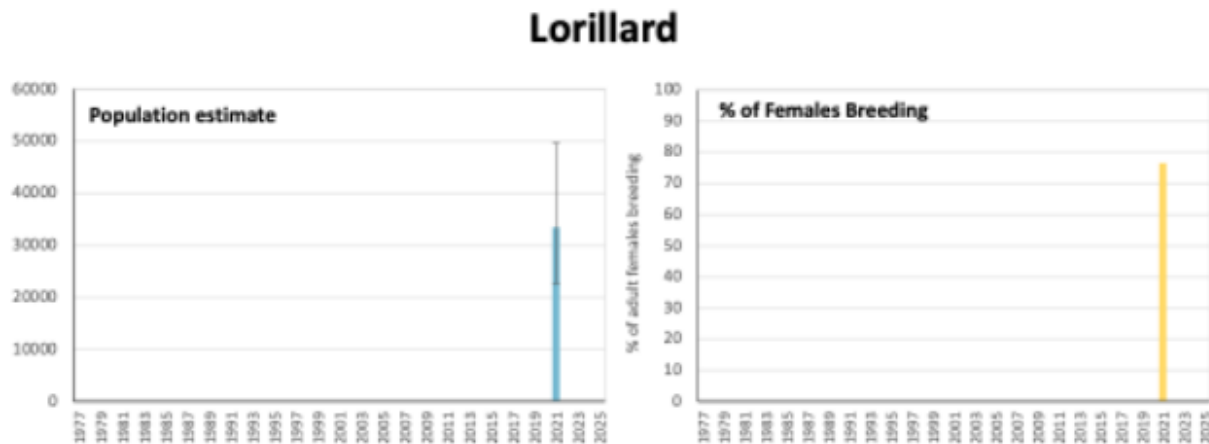


Figure 45. Demographic information available for the Lorillard barren-ground caribou subpopulation including: population estimates based on calving surveys (left), and % of females breeding (right). Error bars show 95% confidence intervals.

Overall population change and status

To assess population change over the past three generations (24-27 years), the most recent subpopulation estimates were compared to the closest estimate available to 24-27 years ago (1999-2001) and within the three-generation time period. For some subpopulations the closest estimates were as recent as 2010 or 2011. In those cases, if the subpopulation had been declining prior to the 'closest estimate', the magnitude of the decline would be underestimated. The overall change would also not adequately reflect the full magnitude and timing of a decline for subpopulations that declined but then started increasing within the three-generation period, nor if the subpopulation increased then declined within the three-generation period.

For the Porcupine caribou, the subpopulation increased by 16% between 2001 and 2025 (Table 21). This does not reflect the increasing trend to 218,457 until 2017, then the decline to 2025 (Figure 46). The current decreasing population trend is expected to continue (PCTC 2026).

Of the eight NWT barren-ground caribou subpopulations (excluding Porcupine) with at least two population estimates, seven had declined within the last three generations, with declines ranging from 16% to 98% (Table 21; Figure 46). However, two of those subpopulations (Cape Bathurst, Bluenose East) appear to be starting to recover. The

calculated change for the Beverly subpopulation showed an increase of 11%, but overlap of the 2011 confidence interval with the 2023 estimate suggests that the change was not statistically significant. The overall change for NWT subpopulations excluding the Porcupine subpopulation was an approximately 49% decline over the last three generations.

Table 21. Approximate % change in estimated population size for barren-ground caribou in the Northwest Territories within the past 3 generations (24-27 years).

Subpopulation	3 generations (24-27 years) (closest estimate) ¹		Current		Estimated % change
	Year	Estimate (95% CI)	Year	Estimate (95% CI)	
Porcupine					
Porcupine	2001	123,300	2025	143,135 ²	+16.1%
Other Northwest Territories subpopulations					
Tuktoyaktuk Peninsula	2006	3,320 ± 623	2024	2,798 ± 156	-15.7%
Cape Bathurst	2000	13,612 ± 5,245	2025	8,533 ± 1,413	-37.3%
Bluenose West	2000	118,472 ± 45,177	2025	20,476 ± 6,727	-82.7%
Bluenose East	2010	120,880 ± 13,398	2025	28,759 ³	-76.4%
Bathurst	2003	186,005 ± 84,701	2022	3,609 ⁴	-98.1%
Beverly	2011	136,608 ± 27,432	2023	152,131 ± 13,072	+11.4%
Qamanirjuaq	2008	348,661 ± 44,861	2022	252,892 ± 35,154	-27.5%
Ahiak ⁵	2011	40,341 ± 2,926	2021	24,910 ± 1,940	-38.3%
Wager Bay	N/A	N/A	2021	45,005 ± 3,272	N/A
Lorillard	N/A	N/A	2021	33,454 ± 6,416	N/A
Total (Other NWT subpopulations)		967,899		494,108 ⁶	-49.0%

¹ The closest estimate to 24-27 years ago (1999-2001) within the 3-generation time period

² The upper (+) and lower (-) CIs differed; the upper CI was +29,952 and the lower CI was -20,161

³ The upper (+) and lower (-) CIs differed; the upper CI was +3,057 and the lower CI was -2,762

⁴ The upper (+) and lower (-) CIs differed; the upper CI was +458 and the lower CI was -406

⁵ The Ahiak estimates without the Adelaide Peninsula (from Campbell *et al.* 2022) were used here to assess trend. Using the estimates with the Adelaide Peninsula results in an estimated change of -47.7% for Ahiak and -49.3% for all subpopulations combined.

⁶ Excluding Wager Bay and Lorillard

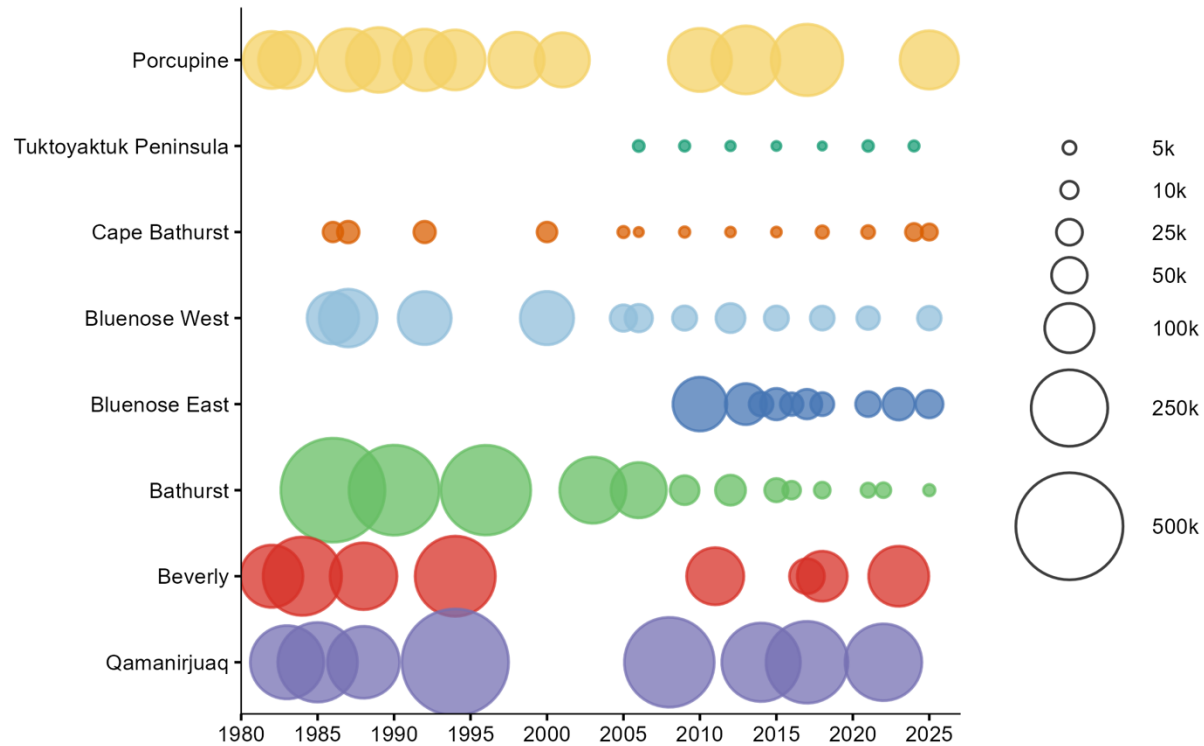


Figure 46. Population change for barren-ground caribou subpopulation in the NWT 1980-2025. GNWT 2026 *in prep.*

For barren-ground caribou subpopulations in the NWT with management plans, status of the subpopulations is assessed against criteria specified in the plans and ranked from highest concern (red) to lowest concern (green) (Table 22). There is a moderate to very high level of concern for the six of the subpopulations addressed. With respect to the Porcupine Caribou Harvest Management Plan, the Porcupine caribou subpopulation is currently ranked as lowest concern based on population size (PCTC 2026).

There does not appear to be a consistent west to east pattern in magnitude of trends or duration of low numbers (Table 21, Table 22, see Figure 34), which likely reflects subpopulation-specific climate trends, calving conditions and local adaptations (Couriot *et al.* 2023; Russell *et al.* 2024).

Table 22. Current status of barren-ground caribou in the Northwest Territories with management plans. Evaluation of status is based on subpopulation-specific collaborative management plans.

Subpopulation	Plan	Evaluation						
		Measure	Year ¹	Levels and Evaluation ^{2,3}				
Porcupine	Porcupine Caribou Harvest Management Plan (2010)	Population size	2024 (PCTC 2024)	<45,000	45,000 - 80,000	80,000 - 115,000	>115,000	
Tuktoyaktuk Peninsula	Not applicable							
Cape Bathurst	Taking Care of Caribou (2014)	Subpopulation status	2025 (ACCWM 2026)	Low	Intermed. & ↓	Intermed. & ↑	High	
Bluenose West				Low	Intermed. & ↓	Intermed. & ↑	High	
Bluenose East				Low	Intermed. & ↓	Intermed. & ↑	High	
Bathurst	Bathurst Caribou Management Plan (2021)	Population size and trend	2024 (BCAC 2024)	Critical Low	Low & ↓ Low & ↑	Medium & ↓ Medium & ↑	High	
Beverly	Caribou is Life (2024)	Vulnerability ⁴	2018 (BQCMB 2024a)	Very High	High	Medium	Low	Very Low
Qamanirjuaq			2016 (BQCMB 2024a)	Very High	High	Medium	Low	Very Low
Ahiak	Not applicable							
Wager Bay	Not applicable							
Lorillard	Not applicable							

¹ Year of most recent evaluation with source of the evaluation in brackets

² Thick outlining indicates the level that was determined during the most recent evaluation

³ ↓ = decreasing; ↑ = increasing; Intermed. = Intermediate

⁴ Vulnerability rankings for Beverly and Qamanirjuaq are opposite to the other rankings in that higher vulnerability is a higher concern, while for rankings based on population size and status lower levels indicate higher concern

Possibility of Rescue

The possibility of a rescue is influenced by the contiguous distribution of barren-ground caribou in neighbouring jurisdictions. Barren-ground caribou are mostly not genetically distinct at the current level of analyses and techniques, which suggests that natural dispersion and colonization or translocation could result in a rescue.

In Canada, barren-ground caribou subpopulations with ranges that are fully or partially contained in the NWT comprise about 98% of the Canadian population of DU3 barren-ground caribou as defined by COSEWIC. The four Canadian subpopulations with ranges that do not overlap the NWT vary in size from an estimated 500 caribou on Coats Island to about 12,600 on Southampton Island (see *Population - Abundance*), and may not have the capacity to significantly contribute to rescuing the NWT population should it decline or disappear. Any possibility of rescue from Canadian sources would likely take a considerable amount of time. Larger subpopulations currently exist in Alaska, which may be viable sources for rescue. The range of one of those subpopulations overlaps with the Porcupine caribou range, and the ranges of two other subpopulations are located relatively close. However, the largest subpopulation, the Western Arctic Herd, has declined from an estimated 475,000 in the early 2000s to an estimated 120,000 in 2025, and the population level is currently recognized as Critical (WACHTC 2025, Gunn *et al.* 2026).

Given the migratory behaviour of barren-ground caribou and their capability of moving over long distances, it is possible that subpopulations external to the NWT could re-colonize unoccupied habitat in the NWT. There do not appear to be any special adaptations by the NWT population that would prevent individuals from elsewhere to survive and reproduce, and currently there is sufficient habitat to support barren-ground caribou.

THREATS AND LIMITING FACTORS

Barren-ground caribou are a resilient species adapted to an environment characterised both by annual variation and decadal trends in such factors as the timing of spring melt and plant green-up. People have lived for a long time with barren-ground caribou (e.g., Gordon 2005) and the certainty that their numbers increase and decrease, and that they do return. However, the present-day changing conditions across barren-ground caribou ranges reduce that certainty. The following describes how some of those changing conditions can act as threats to barren-ground caribou subpopulations over the next three generations (24-27 years).

For the purposes of this report, 'changing conditions' includes not only the direct threats (forest fires; predation; novel parasites or diseases; over-harvest; industrial development) but also the far-reaching changes in climate, governance and institutional changes for caribou management. Direct threats interact with each other with either additive or compensatory effects and the recognition and mitigation of the threats is through collaborative adaptive co-management. While collaborative adaptive co-management is innovative and the logical approach for the future, it is often challenging when complex, difficult decisions are needed in a timely manner. Also in the context of jurisdictional complexity, the lack of overall land use planning, especially in the context of cumulative effects of industrial developments and human activities represents a potential threat. In particular, the lack of an overall approach to calving ground management has been identified as a specific threat.

Disturbance from human activity

For the Porcupine subpopulation, activity on the winter range, oil and gas exploration in the Eagle Plains basin (Alaska), improved access offered to hunters by the Dempster Highway (NWT and Yukon), and potential future mineral exploration in the Peel River watershed (Figure 47) represent likely threats. Of more significance however, is that in October 2025, the U.S. Department of the Interior Bureau of Land Management reinstituted the Coastal Plain Oil and Gas Leasing Program, opening up oil and gas leasing in the 1.56 million acre Coastal Plain of the Arctic National Wildlife Refuge (U.S. Department of the Interior Bureau of Land Management 2025), which is a calving and post-calving area for Porcupine caribou. Leases and development resulting from this program are expected to contribute significant new disturbances and footprint in a critical portion of the Porcupine caribou subpopulation range (PCTC 2026). Modelling suggests that the proposed development could result in significant declines in caribou numbers for the already decreasing subpopulation (PCTC 2026). In Yukon, a major 3D seismic program was conducted in the Eagle Plains area in 2013/14 which included 2,124 km of seismic line (1.75-5 m wide) and 228 km of road (3-5 meters wide) (PCTC 2024).

Industrial development activities (exploration, mining, and oil and gas) vary over time, in a boom-and-bust cycle dependent upon the global economy. Following peaks in the 1990s and mid- to late-2000s (prior to the 2008 market crash), exploration and development activity has, for the most part, been declining in the NWT. Little to no 2D and 3D seismic activity has taken place since 2007. As of 2007, mineral leased claims, typically associated with active mines, comprised only 0.7% of the NWT land base. Production licenses, primarily occurring in the Mackenzie Valley, with some also in the Mackenzie Delta and Beaufort Sea, comprise <2% of the NWT land base. There has been some recent increase in prospecting and mineral claims as a result of interest in diamond, gold, base metal, rare earth element, and uranium exploration (ENR 2015).

Operating mines in barren-ground caribou range include Ekati, and Gahcho Kué diamond mines, and Mon gold mine in the NWT, and Meliadine, Meadowbank, Amaruq and Goose mines in Nunavut (Figure 47). Diavik Diamond Mine in the NWT ceased production in March 2026. In 2025, exploration projects in the NWT included 12 lithium, eight critical and base minerals, and four gold exploration projects within the barren-ground caribou range (NWTGS 2025). In Nunavut, exploration projects in 2023 in barren-ground caribou range included five for nickel/copper/platinum group elements, one for base metals, two for uranium and 14 for gold (CIRNAC 2023). Several projects are being considered in the North Slave region of the NWT and the Kitikmeot region of Nunavut. Fortune Minerals Ltd.'s NICO Project and Vital Metals' Nechalacho Rare Earth Elements Project have completed their environmental assessments (Mackenzie Valley Review Board [MVRB] 2016a and b). The projects are located near Whatì and Yellowknife, respectively, and fall within the summer range of the Bathurst subpopulation. In the Kitikmeot region of Nunavut, on the post-calving ranges of the Beverly and Ahiak subpopulations, MMG Resources Inc. is proposing the construction of a zinc/aluminum/lead mine at Izok and High lakes (Izok Corridor Project), an all-season road, and a port facility at Grays Bay on the Coronation Gulf (MMG Resources Inc. 2012). The Grays Bay Road proposal would cross through the western portion of the Bathurst subpopulation's calving ground.). On the Beverly subpopulation's summer range, a uranium mine has also been proposed (Nunavut Impact Review Board [NIRB] 2014). Exploration activities by Tundra Copper Corp. and Crystal Exploration (APEX Geosciences) in the core calving areas of the Bluenose-East and Bathurst subpopulations, respectively, were approved by NIRB in 2015 (NIRB 2015a and b). Within the core calving area of the Qamanirjuaq subpopulation, mineral exploration by Anconia Resources Corp. was approved by NIRB in 2012 (NIRB 2012). This is in addition to the position taken by the Nunavut Government, opposing blanket protection for barren-ground caribou calving grounds (Kivalliq Wildlife Board 2016). Although entirely within Nunavut, the transboundary nature of barren-ground caribou subpopulations makes potential future impacts from these projects relevant to the assessment of barren-ground caribou in the NWT.



Figure 47. Human disturbance (footprints) within the range of the Porcupine caribou subpopulation. Linear features and industrial disturbance are not to scale. Provide a date to this map. And who made it.

In terms of linear disturbance, a 28 km all-weather road through the central barrens is currently under construction and there is the possibility of an all-weather road connecting a deep-water portion of the Arctic coast to interior resource developments. The Jay pipe expansion at Ekati mine will likely increase traffic on the Tibbitt to Contwoyto winter road (MVRB 2014). Further, the GNWT has proposed the extension of Highway 4 into the Slave Geological Corridor and is prioritizing the development of the Mackenzie Valley Highway from Wrigley to Tuktoyaktuk (Department of Transportation [DOT] 2016), which would provide increased access to the winter range of the Cape Bathurst subpopulation and pass near the ranges of the Bluenose-West and Bluenose-East subpopulations (ACCWM 2014). The Slave Geological Corridor is intended to provide an all-season road to the Nunavut border to link with the proposed Grays Bay Port and Road Project (GNWT 2025b). Three stages are proposed for the project with the first stage, the Lockhart All-Season Road, extending from Tibbitt Lake to Lockhart Lake. Table 23 includes examples of proposed and operational all-season roads.

The proposed Kivalliq Hydro-Fibre Link is a high-voltage electricity and fibre-optic transmission line that will run 1,200 kilometers from northern Manitoba to five communities in eastern Nunavut: Arviat, Whale Cove, Rankin Inlet, Chesterfield Inlet and Baker Lake (Nukik Corporation 2025). The route would traverse through the Qamanirjuaq subpopulation range, including a portion of its calving ground, as well as portions of the Ahiak, Wager Bay and Lorillard ranges.

Of the NWT's barren-ground caribou subpopulations, the Bathurst subpopulation likely faces the most pressure from human activities. Exploration activity within the Bathurst range increased rapidly through the early to mid-2000s to peak at 95 exploration camps in 2006 (Fig. 7.5-3 in De Beers Canada 2010). Mainly covering 1996 to 2010 with more limited data from prior to 1996, approximately 250 previous and existing industrial developments occur within the Bathurst subpopulation's annual range, from lodges and small mineral exploration camps to fully developed mines and communities (Table 7.5-1 in De Beers Canada 2010). Winter roads, all-season roads and highways totalling over 2,100 km in length also occur within the Bathurst subpopulation's range. Modeling human development scenarios shows that the number of proposed or constructed roads as part of mine developments is increasing on tundra ranges mostly, for the Bathurst subpopulation (Figure 48). Of greatest concern are the proposed all-season roads in NWT (Slave Province Road) and NU (Grays Bay Road) which would render this relatively remote area much more accessible for mining, traffic and potentially hunter harvest.

Table 23. Proposed and operational all-season roads associated with mines on tundra ranges of barren-ground caribou in the NWT (modified from COSEWIC 2016).

Subpopulation	Road type	Operation	Road km	Start-up year/ Completed	Access
Qamanirjuaq	Ore haul road pit to plant	AEM Meliadine ¹	24	(2013)	Public
Lorillard and Ahiak	Supply road from Baker Lake	AEM Meadowbank ¹	107	2010	Public
	Ore haul road to pit to plant	AEM Meadowbank (Whale Tail extension) ¹	64	2018	Private
Bathurst	Ore haul road pit to plant	DDEC Ekati (Misery Rd) ³	29	2001	Private
	Ore haul road pit to plant	DDEC Ekati (Sable Rd) ³	20	2019 (2016)	Private
	Ore haul road pit to plant	DDEC Ekati (Jay Rd) ³	5	(2017)	Private
	Ore haul road pit to plant and supply road to winter road to Yellowknife	BIPAR Phase 2 to ² Contwoyto Lake	132	Postponed	Public
	Ore haul road pit to plant	MMG Izok to Grays Bay Road and Port ²	80	Postponed	Private
	Road for resources from Contwoyto L to port	WKR Grays Bay Road and Port (Phase 1) ²	230	Proposed	Public
	Road for resources from Yellowknife to Contwoyto Lake	Road and Port (Phase 2)	c. 600	Proposed	Public
Beverly-Ahiak	Ore haul road pit to plant and supply road to port	BIPAR Phase 1 Back River ² and Hackett ²	85	Postponed	Public
	Ore haul road pit to plant and supply road to port	Doris North ¹	16	2008	Private
Porcupine	Public highway	n/a	736	1979	Public
	Northern Cross ⁴	Oil and gas well development	c. 95	Proposed	Private

¹Listed as completed environmental assessments (NIRB 2014).

²Listed as active environmental assessments (NIRB 2014).

³Listed as completed environmental assessments (MVEIRB 2014).

⁴Listed as active environmental assessments (YESAB 2016).



Figure 48. Three future human development scenarios for the range of the Bathurst subpopulation (from left to right, showing the outcome of the scenario in 2040: declining development, continuing development, and increasing development). All three focus on different levels of mineral exploration and development activity, and their associated transportation infrastructure. They extend 24 years into the future and were developed based on proposed projects and transportation concepts either in assessment, planned, or with a reasonable likelihood of occurring (Clark *et al.* 2016).

With respect to oil and gas activities, the proposed Mackenzie Gas Project (the Parsons Lake Anchor Field, including associated infrastructure such as the airstrip, lateral and pipeline corridor), could increase camps, winter roads and aircraft flights on the winter ranges of the Cape Bathurst and Bluenose-West subpopulations (Joint Review Panel 2010).

Caribou respond to human activities, especially those associated with industrial exploration and development (Wolfe *et al.* 2000; Cameron 2005; Cameron *et al.* 2005; Stankowich 2008; Vistnes *et al.* 2008; Boulanger *et al.* 2012). Disturbances, such as low-level aircraft flights, people on foot and vehicles can increase caribou energetic costs if these activities interrupt caribou foraging or cause the caribou to move away in response to the disturbance (Weladji and Forbes 2002). Roads can potentially affect caribou by increasing disturbance, creating partial barriers to movement, and increasing access for harvesting (Wolfe *et al.* 2000). Studies from the two diamond mines in the Lac de Gras area within the Bathurst subpopulation's summer range have suggested that a 14 km zone of influence exists within which caribou abundance is less than what would be expected without the developments (Boulanger *et al.* 2012). As the number of mines increases, the zones of influence cover an increased proportion of post-calving and summer ranges for the Bathurst subpopulation. There still remains considerable uncertainty about when, how and if there is a threshold for cumulative effects at which clear and predictable effects on subpopulation size and trend can be expected (Mackenzie Valley Environmental Impact Review Board [MVEIRB] 2013, 2016).

There is increasing evidence that roads affect barren-ground caribou movements (Poole *et al.* 2021; Dube 2022; Smith *et al.* 2023; Boulanger *et al.* 2024b; Joly *et al.* 2026). In the Ekati mine area, caribou moved slower and made more sharp turns when they were closer to roads, resulting in them spending more time near roads and other mine infrastructure than in areas further away (Poole *et al.* 2021). Similarly, Boulanger *et al.* (2024b) found that caribou aggregated prior to crossing the all-weather access road associated with the Meadowbank Mine in NU, resulting in delays in crossing the road. In the NWT, the Tibbitt to Contwoyto winter road impeded caribou movement (Dube 2022) and traffic level affected whether caribou crossed the road (Smith and Johnson 2023). Delays in crossing the all-weather access road associated with the Meadowbank Mine were reduced when the road was closed if caribou were in the area (Boulanger *et al.* 2024b). Also, caribou spent less time foraging and more time walking when they were close to a road (Smith *et al.* 2023). In their analysis of barren-ground caribou use in the Ekati/Diavik mine area, Rettie *et al.* (2024) concluded that movements are not longer or delayed for caribou that encounter the mines and associated infrastructure. However, IEMA (2024) challenged their methods, especially for not considering turning angle and relying too heavily on caribou use of land cover in their analysis. Barrier effects may lead to reduced caribou survival rates (Joly *et al.* 2026).

Each of the major projects that are subject to environmental assessments include cumulative effects assessments but they are proponent rather than issue-driven and have not made a significant contribution to managing cumulative effects (Gunn *et al.* 2011c). Concerns about cumulative effects and limits to development footprints are an on-going concern. The recommendations of the Joint Review Panel (2010) recognized the threat of a major development (the Mackenzie Gas Project) and included range management plans for the winter ranges of the Cape Bathurst and Bluenose-West subpopulations, which included linear and area density development thresholds. Driven by the GNWT, the Bathurst caribou range (habitat) plan, which considers cumulative impacts to Bathurst caribou habitat within caribou management planning, land use permitting, land use planning, and environmental impact assessment was completed in 2019 (GNWT 2019).

Climate change

Climate change signals are particularly strong in the Arctic and the Mackenzie Valley (Rantanen *et al.* 2022; ECCC 2026). Although evidence is already strong for changes such as an increase in shrubs (Myers-Smith *et al.* 2011), changes to the ecology of barren-ground caribou due to climate change is complex, consisting of positive and negative effects, most of which are interacting and non-linear (Cebrian *et al.* 2008; Chen *et al.* 2014).

Recent climate and weather trends indicate higher temperatures, longer snow-free periods, deeper maximum snow depths, warmer ground with associated changes in nitrogen dynamics and increased plant growth. From 1948 to 2018, annual mean temperature increases from 1948 to 2018 ranged from about 2°C in southeastern NWT to almost 4°C near the Beaufort Sea (ECCC 2026). The temperature anomaly was strongest during winter, ranging from about 3°C to over 6°C in southeastern NWT and near the Beaufort Sea respectively (ECCC 2026).

Caribou are susceptible to heat stress (Soppela *et al.* 1986): days with mean daily temperatures exceeding 25°C are infrequent for the Bluenose-East, Bathurst, and Qamanirjuaq subpopulations and the number of days when temperatures exceeded mean +2 SD for the 1990s was similar to the 2000s. The summer of 2014 stands out with more high temperature days experienced by the three subpopulations than in previous records from 1979 to 2014 (CARMA 2014).

At higher temperatures, caribou and reindeer are less active and forage less during the hottest part of the day, with corresponding increased probability of being active in the cooler parts of the evening (Thompson and Barboza 2014; Trondrud *et al.* 2023; Stoessel *et al.* 2026). Overall, on the hottest days, loss of foraging activity during midday was not fully compensated by increased activity in the evening, and female reindeer with the lowest levels of activity had the greatest impacts on body weight in fall (Trondrud *et al.*

2023). In Scandinavia, at higher temperatures reindeer shifted habitat use to higher elevations, likely due to insect harassment, where forage productivity was lower than at lower elevations and foraging efficiency was reduced (Stoessel et al. 2026).

Chen et al. (2014) found indicators of summer forage (leaf biomass, phenology, and nitrogen content), derived from remote sensing and weather data, were correlated with population change in the summer season for the Bathurst subpopulation, suggesting that weather and summer range conditions can act as severe limiting factors to subpopulation-level dynamics for barren-ground caribou. A climate envelope was measured at which lower availability of summer range forage explained some of the variation in productivity 2–3 years later in the Bathurst subpopulation (Chen et al. 2014).

Many plant productivity trends for barren-ground caribou are driven by decadal climatic patterns, which are the result of larger scale atmospheric patterns, such as the Arctic, North Atlantic (NAO) and Pacific Decadal Oscillations. Correlation between changes in caribou abundance and dominant decadal patterns has been mostly documented through the effects of winter foraging conditions in Alaska, other parts of eastern Canada and Scandinavia (Forchhammer and Post 2004; Zalatan et al. 2006; Joly et al. 2011; Weladji and Holand 2006; Bastille-Rousseau et al. 2013). Weladji and Holand (2006) reported that reindeer age classes born following a high NAO winter index were lighter in summer and early winter, and had a lower absolute growth rate than cohorts born after cold and dry winters (low NAO winter index; State Climate Office of North Carolina 2016).

Plant growth has increased over the last three decades by 20–26% based on satellite imagery (Normalized Difference Vegetation Index; NDVI) correlated with field measurements (Epstein et al. 2012). The increases in plant biomass are strongest along the mainland Arctic coast (Cape Bathurst and Queen Maud Gulf areas). However, lichen-dominated communities had consistently lower Normalized Difference Vegetation Index (NDVI) trends than vascular plant-dominated communities (Olthof and Pouliot 2010). In addition, the trends for increasing net plant productivity may not mean an increase in forage quality as, for example, the amount of solar radiation (or cloud cover) and temperature also affect the levels of compounds such as tannins in plants, which affects forage quality (Weladji et al. 2002). Thus, the conditions that promote greater primary productivity may also lower the quality of some of the vegetation as food for herbivores (e.g., see Chen et al. 2014).

Progress is being made in correlating individual fitness through energetic and protein allocation models. Such models permit exploring interactions between changes in forage availability, diet quality and both internal and external parasites (Russell et al. 2005; White et al. 2013). Modeling at the individual scale and exploration of correlations

between subpopulation scale indicators and weather will contribute toward predicting more detailed effects of global warming (Berteaux *et al.* 2006).

Future climate change may act as a continuing threat for barren-ground caribou through a complex mechanism involving shifts in timing of greening, lower summer forage quality, and subsequent lower calf production and reproductive potential of females, then population declines. Studies to date also suggest that individual subpopulations will be affected in different ways; for example, links between decadal oscillation patterns and the four Alaskan tundra-migratory subpopulations were different for each subpopulation (Joly *et al.* 2011).

Harvest sustainability

Sustainable harvest of wildlife populations can be defined as harvest that does not cause a population to decline (ENR 2013a). Harvest from a large and stable subpopulation of caribou is likely to have relatively little impact on the subpopulation, since only a small fraction of the subpopulation is harvested (ENR 2013a). However, a large harvest from a small, declining subpopulation increased the risk of more rapid and extensive decline (ENR 2013a).

The Porcupine Caribou Management Board (PCMB) has established a Harvest Management Plan, which includes an annual meeting where recommendations on harvesting for the subsequent year are put forward for public consultation and responses from the parties to the management agreement (PCMB 2010a). This collaborative and precautionary approach reduces the likelihood of harvest becoming unsustainable.

Collaborative management plans and processes also exist for other subpopulations in the NWT, and harvest restrictions are in place for several subpopulations. Annual meetings are held to re-assess monitoring and other management of the Cape Bathurst, Bluenose-West, Bluenose-East and Bathurst subpopulations. For the Cape Bathurst and Bluenose-West subpopulations, severe restrictions on harvesting (see *Positive influences*) likely halted further declines, in combination with improved calf recruitment beginning in 2007-09 (Adamczewski *et al.* 2020). A closure of commercial, outfitted, and resident harvest has been in place for the Bluenose-East subpopulation since 2006; however, the subpopulation continued to decline. Harvest on the Bluenose-East subpopulation was known to have increased in 2010 when Bathurst harvest was reduced (Adamczewski pers. comm. 2014 in SARC 2017). After public hearings in the Sahtú and Wek'èezhìi regions, harvest by communities has been reduced (Tłıchq Government and GNWT 2016a,b; WRRB 2016a,b). However, harvest levels were increased in 2024/25 to 395 for Wek'èezhìi (WRRB 2025) and to 450 caribou (with no limit on the proportion of females) in Nunavut (GN 2024a) based on the June 2023 survey, which indicated that Bluenose East caribou numbers appeared to be rebounding (see *Population*).

A large reduction in harvest of the Bathurst subpopulation, along with improved calf survival, likewise resulted in at least an initial stabilization in numbers from 2009-2012 (Adamczewski *et al.* 2020); however, the subpopulation continued to decline since then. Since December 2016, after public hearings, total allowable harvest on the Bathurst subpopulation has been set at zero within Wek'èezhìi (Tłıchq Government and GNWT 2016a; WRRB 2016a). Harvest of the Bathurst subpopulation is limited to 10 caribou/year since 2020 (Adamczewski pers. comm. 2026). A key change from previous periods of caribou scarcity is increased access on winter and all-season roads, along with high-powered snow machines, which means that this potential threat may need to be managed in the long term. The extent of the threat will depend on the success of monitoring to detect trends in adult survival (from natural mortality including predation, and from harvest estimates for each subpopulation) and trends in productivity, and then the availability of that information to decide on hunting levels relative to the desired rate of population increase. Harvesting along the Tibbitt-Contwoyto Lake ice road has included wastage, which has led to discussions on respectful hunting and resulted in the GNWT and Indigenous governments and organizations taking action to reinforce responsible harvesting practices (GNWT 2025c). The management plan for this subpopulation includes a Critical Low threshold of 30,000 caribou; below this threshold, harvest is recommended to remain at 0.

Harvest levels on the Beverly, Ahiak, and Qamanirjuaq subpopulations are poorly documented and compiled harvest data are incomplete. However, the Kivalliq Harvest Reporting Project ran from 2017 to 2021, with additional information collected in 2024/25 (BQCMB 2025). Resident harvest is limited to one male per year on the NWT portions of the Beverly and Ahiak subpopulations, and closure of the commercial and outfitted harvest remains in place in the NWT for these two subpopulations as well. There are no restrictions on Indigenous harvest of any of these subpopulations (see *Positive influences*). To date, declines in the Beverly and Qamanirjuaq subpopulations have not been severe enough to warrant limiting Indigenous harvest; should that situation change, the Beverly and Qamanirjuaq subpopulation would be well placed to consider harvest management options. There have been concerns about increasing meat sales in the Kivalliq region, but no information is available about the degree to which it occurs (BQCMB 2020).

Wounding loss is a threat of unknown magnitude, but is recognized as a factor affecting caribou subpopulations. For example, the BQCMB has factored in a wounding loss of 25% to their harvest estimate (Campbell *et al.* 2010). Wounding loss is not tracked and has not been factored into other subpopulation harvest estimates in this report (Valkenburg *et al.* 1994). Wounding losses likely vary depending on the experience and ethics of hunter groups.

Wildfires

Wildfires in the boreal and taiga forests are becoming more frequent and severe in a changing climate, affecting the distribution and availability of habitat for barren-ground caribou (Palm *et al.* 2022). With the exception of large lakes and rivers, wildfire represents the most visible factor driving habitat fragmentation and change, impacting forage availability and movement (Thomas and Kiliaan 1998b) (discussed further in *Habitat requirements, Habitat fragmentation, and Habitat trends*).

Avoidance of high density burn areas by barren-ground caribou is well established (Barrier and Johnson 2012). Site selection in the winter range often favours mature forest stands (Barrier and Johnson 2012). These mature forest stands have better high-quality forage availability, more favourable snow conditions, and offer better predator protection than younger forest stands (Barrier and Johnson 2012).

In the NWT, regeneration of lichen-supporting forest stands can take 50-100 years following fire depending on stand type (Greuel *et al.* 2021). Caribou will avoid burn areas with lower lichen abundance and wildfire cycles shorter than the regeneration time of a given region can stall forest stands in earlier seral stages, resulting in lower quality winter habitat for barren-ground caribou (Palm *et al.* 2022).

Wildfires disturb an average of 600,000 ha of NWT forest annually. The annual total area burned fluctuates each year, but a weak trend indicates a slight reduction in both total area burnt and the number of fires larger than 200 ha between 1988 and 2008 (ENR 2015). This does not account for the particularly severe fire season seen in the NWT in 2014, where 385 fires impacted approximately 3.4 million ha (ENR 2014). The 2023 fire season was even more severe with 4.16 million ha burned by 305 wildfires (Transitional Solutions Inc. 2025). It is predicted that climate change will result in an increase in the frequency and intensity of fires, due to hotter, drier summers that provide a longer fire season (Soya *et al.* 2007).

Another potentially emerging issue is the impact of tundra fires (Hethcoat *et al.* 2024) on caribou and caribou habitat. However, the impacts are largely unknown, in part due to lack of information about tundra fires. Tundra fires occurred in both the catastrophic fire years of 2014 and 2023, although the extent was limited.

Pathogens and Diseases

Pathogens and diseases are a potential and complex threat under a warmer climate. Many parasites, including warbles and bot flies, have transmission phases that are temperature dependent either for the development time, the infective stage or the activity of an intermediate host. Indices based on summer temperatures for the activity of mosquitoes and warble flies have significantly increased on the Bathurst and Porcupine

subpopulations' ranges (Witter *et al.* 2012b, Hein *et al. in review*). Warmer temperatures may not favour all parasites, such as gastro-intestinal worms (Hoar *et al.* 2012). Warmer climate will not only affect the existing parasites and diseases but also increase the likelihood of invasive species (Davidson *et al.* 2011). Kutz (2007) indicated that climate change may increase the incidence of parasites and diseases (Table 24).

Laaksonen *et al.* (2010) measured how fatal outbreaks of *Setaria* in Finnish reindeer occurred when temperatures were above average, thus increasing the level of mosquito activity (responsible for the transmission of the parasite). *Setaria*, a blood parasite recorded recently in barren-ground caribou, is of concern, but very little is known about its ecology (Kutz *et al.* 2004, 2013). Laaksonen *et al.* (2010) pointed out the complexity of various factors having to coincide to result in an epidemic. Such complexities and the fact that climate change will also likely affect vegetation, extent of fires, presence of other ungulates and predators, etc., indicate that predicting future trends in parasites and diseases will be difficult. The potential for shared diseases and parasites is a reason for concern about the spread of white-tailed deer (*Odocoileus virginianus*) into the NWT (Veitch 2001).

Table 24. Parasite and disease species and groups affecting barren-ground caribou, number of species and groups where climate change is predicted to have high to moderate effects, and level of concern from climate change (summarized from Kutz 2007).

Parasite disease species and groupings	No. current species/groups	No. possibly Invasive	Probable effects of climate change	
			High	Moderate
Insects and ticks	7	2	7	0
Protozoa (single-celled parasites including <i>Besnoitia</i> , <i>Giardia</i>)	8	1	2	2
Intestinal worms	3	1	4	
Muscle worms	6	2	7	
Bacteria (including <i>Brucella</i> , foot-rot)	3	4	1	3
Insect-transmitted diseases	2	2	2	1

Chronic wasting disease (CWD) is a significant potential threat to barren-ground caribou in the NWT because it is a fatal, highly transmissible disease that can spread both directly between animals and indirectly through contaminated environments (ENR 2019). Although CWD has not been detected in the NWT, the expansion of species such as white-

tailed deer may increase the risk of disease introduction, and if CWD reaches barren-ground caribou ranges it could have severe population-level impacts (CMA 2020).

Meningeal worm (*Parelaphostrongylus tenuis*) is a parasitic nematode that occurs naturally in white-tailed deer with little to no illness but can cause severe neurological damage in other species and is often fatal in caribou (Government of Alberta 2025). The parasite is transmitted indirectly through infected snails and slugs and can cause weakness, loss of coordination, paralysis, abnormal behaviour, and death as it migrates through the brain and spinal cord (Government of Alberta 2025). In the absence of white-tailed deer as the definitive host, the lifecycle of *P. tenuis* eventually collapses (Cornell Wildlife Health Lab 2026).

Although *P. tenuis* has historically been limited to eastern North America, its range has expanded westward, and infections have recently been confirmed in caribou and moose in northeastern Alberta (Government of Alberta 2025). The continued expansion of white-tailed deer increases the risk of spread toward the Northwest Territories, where the parasite could threaten barren-ground caribou populations (Government of Alberta 2025). Evidence from eastern Canada and the United States suggests that meningeal worm has contributed to the decline or disappearance of caribou, elk, and mule deer in parts of its range. While these species are aberrant, or "dead-end," hosts that do not typically support completion of the parasite's life cycle, infection can cause severe neurological disease and mortality, making meningeal worm a potentially significant emerging threat if it becomes established in the NWT (Government of Alberta 2025; Cornell Wildlife Health Lab 2026).

Predation

As discussed in *Interactions*, predators, in particular wolves, figure prominently in barren-ground caribou population dynamics, affecting survival and reproduction and therefore abundance. There are few estimates of the rate of predation on barren-ground caribou subpopulations, although it is understood to be quite substantial and to disproportionately affect calves on calving grounds (Miller and Broughton 1974; Miller *et al.* 1985, 1988; Clarkson and Liepins 1992; Hayes and Russell 2000; Griffith *et al.* 2002). While there have been reports of increases in the number of predators (see *Traditional and Community Knowledge Component - Interactions*), recent scientific information suggests a declining trend in the population of wolves and of active den sites, at least within the summer range of the Bathurst subpopulation (Cluff pers. comm. 2015 in SARC 2017; Klaczek *et al.* 2016). Likewise, Klaczek *et al.* (2015) observed no adaptive response to contracting summer Bathurst caribou range, with wolves continuing to select den sites in esker-rich areas, despite the increasing distance between the dens and prey base. This

lack of adaptive response during a period of key pup growth may adversely impact pup survival and population growth among wolves. Surveys conducted in 2023 and 2024 suggest that number of active wolf dens and average number of pups/den remain low (Wilson *et al.* 2023, 2024).

A wolf (diga) management program was implemented in the North Slave Region to reduce wolf (diga) predation on the Bathurst and Bluenose-East subpopulations to increase calf and adult caribou survival (Clark *et al.* 2024; Nishi *et al.* 2024; Wilson *et al.* 2023, 2024, 2025). The program included aerial removal in 2019/20 and a Wolf Harvest Incentive Area from 2018/19 to 2023/24 where harvesters received a financial incentive for harvesting wolves (Wilson *et al.* 2025). The location of the Wolf Harvest Incentive Area varied each year depending on where Bluenose East and Bathurst caribou were expected to winter (Figure 49). In all years of this program, overlap of Bathurst and Bluenose-East caribou collars was extensive; in addition, overlap with the much larger Beverly subpopulation was also extensive. A total of 639 wolves were removed from 2018/19 to 2023/24 on the Bluenose East and Bathurst caribou ranges through the Wolf Harvest Incentive Program, by Outfitters and by the aerial removal program in 2019/20 (Wilson *et al.* 2025). A detailed evaluation of the wolf removal program is currently being conducted.

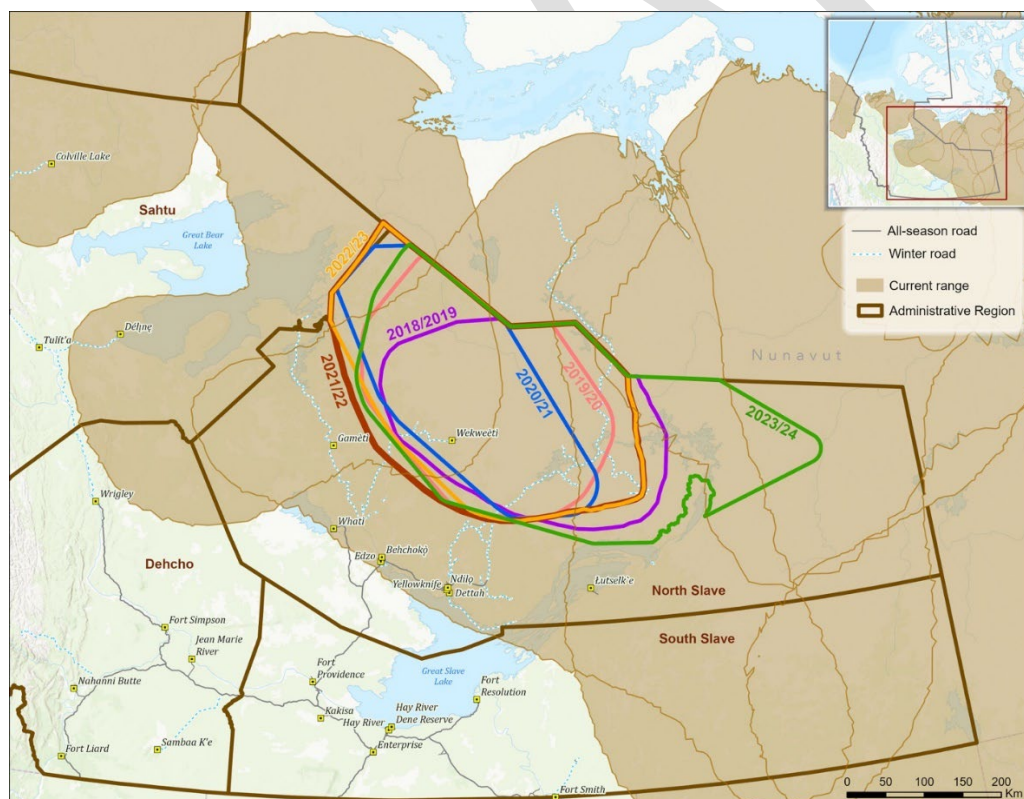


Figure 49. Boundaries of the Wolf Harvest Incentive Area from 2018/19 to 2023/24.

In Nunavut, extensive wolf harvesting occurs along the Qamanirjuaq caribou spring migration route (Szor et al. 2014). Through the Support for Active Harvesters program, the Government of Nunavut Department of Environment offered compensation for local hunters to harvest wolves beginning in 2018-19 in the Kitikmeot Region then in all of Nunavut starting in 2019/20 (Awan et al. 2023). Hunters from the communities of Arviat, Whale Cove and Rankin Inlet harvested 265 and 183 wolves from the Qamanirjuaq caribou range from March to May in 2019/20 and 2020/21 respectively. This was estimated to represent roughly 12-25% of the wolves associated with Qamanirjuaq caribou during spring migration and pre-calving movements, which likely resulted in decreased wolf predation on calving and post-calving grounds (Awan et al. 2023).

Contaminants

While most chemicals and metals are at low concentrations in caribou tissues and organs, the levels of mercury in kidneys have increased over time for the Porcupine subpopulation, which is a potential concern as there are considerable uncertainties about atmospheric trends in mercury and implications for Arctic ecosystems (Gamberg 2009). Contrastingly, there was a declining trend in mercury and various radionuclide concentrations in the kidneys of Cape Bathurst caribou between the mid-1990s and early 2000s, although aluminum concentration increased during this time (Larter et al. 2010).

Contaminants are not currently considered a threat as contaminant levels in caribou tissue are generally low based on monitoring under the Northern Contaminants Program (Elkin and Bethke 1995; Braune et al. 1999; Gamberg et al. 2005; Gamberg 2009) and subsequent studies (Larter and Nagy 2000; Larter et al. 2010). Determining trends across the NWT is difficult as the sample size, frequency and timing of sampling varies among subpopulations. The Qamanirjuaq subpopulation was sampled in 1993, 2006 (Gamberg 2009), 2013-14 and 2014-15 (Gamberg 2015). The Beverly subpopulation was sampled in 1994, 2000, 2008 (Gamberg et al. 2008), the Bluenose subpopulations (Cape Bathurst, Bluenose-West, Bluenose-East) in 1994, 1998, 2002 (Bluenose-East only) (Macdonald 2002), 2005-06, and 2012 (Bluenose-East only) (Macdonald 2012). The Bathurst subpopulation was sampled in 2005-06 (Gamberg et al. 2005; Gamberg 2009) and 2007-08 (Gamberg et al. 2008; Morris et al. 2014), and the Cape Bathurst subpopulation in 1994-95 and 2000-01 (Larter et al. 2010). A larger-scale study, looking at caribou and reindeer subpopulations throughout Alaska, Canada and Greenland examined radionuclide concentrations over a 40-year period (Macdonald et al. 2007). Variation in concentrations of heavy metals among subpopulations is apparent, possibly related to the proportion of lichen in the diet (Larter and Nagy 2000).

Novel chemicals (from either local sources or from sources subject to long-distance transport) that accumulate in the environment are another potential threat. Brominated flame retardants (used in plastics, textiles, and electronic equipment to make them less flammable) and fluorinated surfactants (used as stain repellents and in paints and

polishes) have increased since the 1980s (Stow *et al.* 2004). Detectable levels of such persistent organic pollutants have been reported for wildlife in the Dehcho region of the NWT (Larter *et al.* 2014).

Lichens are important in caribou diets and are well-known for the propensity to accumulate atmospheric contaminants (Thomas *et al.* 1992). Monitoring at the NWT diamond mines has revealed increased levels of some metals in lichens on the summer range of the Bathurst caribou subpopulation (Enns 2012). During the environmental assessments for mines, dust generated by mine activities, including roads, has been listed as a potential threat. Dust is carried by wind, rain and/or snow onto vegetation, which includes caribou forage. Increased levels of some metals were measured in faecal pellets of caribou found in the vicinity of an abandoned gold mine on the Bathurst winter range (MacDonald and Gunn 2004). Similarly, elevated levels of metals were found in the faecal pellets and tissues from caribou of the Western Arctic Herd collected near the Red Dog base metal mine (O'Hara *et al.* 2003). The levels of metals were not considered to be a risk for human health but there is the potential for adverse effects on caribou health. Dust-contaminated forage may be a factor in caribou showing reduced probability of use in the vicinity of the diamond mines on the Bathurst subpopulation's range (Boulanger *et al.* 2012).

Cumulative effects

Some barren-ground caribou subpopulations are now at or near low points in their abundance and they are facing cumulative effects from multiple interacting threats that are unprecedented (Boulanger *et al.* 2012; Campbell *et al.* 2014; Cameron *et al.* 2005). These include increased development and industrial activity, more advanced hunting equipment as well as increased access, and a changing climate. Each major development project that is subject to environmental assessments includes a cumulative effects assessment, but these are proponent-driven and have not made a significant contribution to managing cumulative impacts for caribou (Gunn *et al.* 2011c). Also, these assessments rarely consider the full range of activities that might act on subpopulations of caribou in a cumulative way (Johnson *et al.* 2005). Although some subpopulations have management plans in place, a key challenge is the lack of long-term management plans for all subpopulations, especially in the context of cumulative effects of industrial developments and human activities. The lack of an overall approach to calving ground management is a specific issue of concern.

Management complexity

In the NWT, caribou management involves interactions among many government agencies, co-management boards, various organizations, and industrial interests. Caribou seasonally migrate throughout extensive ranges and this can lead to inter-

jurisdictional complexity between political, land management and wildlife management agencies, in particular for the Porcupine caribou subpopulation, which also uses areas in Yukon and Alaska. Other subpopulations also range across NWT, Nunavut, Manitoba and Saskatchewan.

Delays in obtaining information, such as subpopulation size and composition and harvest levels, affects the ability of governments and co-management boards to rapidly respond to declines. When declines are initially reported, there is an understandable desire to first confirm and then an obligation to consult on the declines before taking actions. The Bathurst subpopulation's decline was first identified in 2003, but limited actions were undertaken until 2010, by which time the decline had accelerated and population size was further reduced (Boulanger *et al.* 2011).

Currently, range management planning and harvest management plans are incomplete and plans have developed slowly. A management approach that is more reactive than proactive, along with a lack of timely implementation of management actions, threatens caribou conservation, because the ability to effectively react to changes in caribou numbers and their environment is delayed. There are, however, management plans and annual review processes in place for the Porcupine, Cape Bathurst, Bluenose-West, Bluenose-East, Bathurst, Beverly and Qamanirjuaq subpopulations.

One of the outstanding ecological characteristics of barren-ground caribou is their seasonal migrations, in which the females travel hundreds of kilometers in a single season. Migrations are an adaptive strategy of caribou in response to their predators, parasites, and availability of forage. There is a risk that caribou subpopulations will lose their ability to cope with environmental changes and human activities if their ability to find space is compromised or restricted, particularly by roads that act as barriers to movement (Poole *et al.* 2021; Dube 2022; Smith *et al.* 2023; Boulanger *et al.* 2024b; Joly *et al.* 2026). Land-use planning and management, including environmental assessments and monitoring, are within a complex structure of land tenure and jurisdictional responsibilities. Land use plans are also very slow in development, often taking many years in planning. The net effect is a threat to caribou as land use planning for caribou seasonal ranges is fragmented and partial. In particular, despite decades of concerns, calving grounds remain mostly unprotected although the Bluenose-West subpopulation's calving grounds are largely protected by Tuktut Nogait National Park and the Beverly subpopulation's calving grounds are mostly within a bird sanctuary. Developments on calving grounds are a potential threat as almost all the females of a subpopulation are in one relatively small area during calving. It is also important to avoid and minimize disturbance to caribou especially during summer and fall when the caribou are building their body reserves and interruptions to foraging are costly before the rut and before winter.

POSITIVE INFLUENCES

Collaborative co-management has allowed for cooperative/joint management planning for caribou. The shift to co-management with the co-management boards holding public hearings greatly increased the sharing and availability of information and data through public registries. In some cases, agreement among management authorities has resulted in management actions, including harvesting restrictions for commercial, outfitted, resident and Indigenous hunting, which contribute to addressing caribou declines, as well as the development of co-management plans for barren-ground caribou subpopulations in the NWT. Several subpopulation-based management plans have been developed over the last 15 years (Table 25).

Table 25. Existing or under development subpopulation-specific and community management plans for barren-ground caribou in the NWT (adapted from CMA 2020).

Subpopulation	Management Plan	Lead Organization
Tuktoyaktuk Peninsula	Under development	Wildlife Management Advisory Council (NWT)
Cape Bathurst	Taking Care of Caribou: The Cape Bathurst, Bluenose-West, and Bluenose-East Barren-ground Caribou Herds Management Plan (November 2014)	Advisory Committee for Cooperation on Wildlife Management (ACCWM)
Bluenose-West		
Bluenose-East	Belarewile Gots'ę Ɂekwę (Délne caribou conservation plan)	Délne Belarewile Gots'ę Ɂekwę planning participants
Bathurst	Bathurst Caribou Range Plan	Bathurst Caribou Range Plan Working Group
	Yúnethé Xá Ɂetthén Hádi - Caribou Stewardship Plan	Lutsel K'e Dene First Nation
	Bathurst Caribou Management Plan	Bathurst Caribou Advisory Committee
Beverly	Caribou is Life - Beverly and Qamanirjuaq Caribou Management Plan 2023-2032	Beverly and Qamanirjuaq Caribou Management Board (BQCMB)
Qamanirjuaq	Yúnethé Xá Ɂetthén Hádi - Caribou Stewardship Plan	Lutsel K'e Dene First Nation
Ahiak	Yúnethé Xá Ɂetthén Hádi - Caribou Stewardship Plan	Lutsel K'e Dene First Nation

As discussed previously (see *Interactions*, and *Threats and limiting factors*), harvest restrictions are in place for a number of barren-ground caribou subpopulations across the NWT.

Harvest of the Porcupine caribou subpopulation is led by a harvest management plan. This plan establishes a total allowable harvest based on the status of the subpopulation

and requires harvest reporting for all Parties to the plan. Currently, there is no harvest limit or sex selected harvest requirement for Indigenous harvesters. Licensed resident hunters in the NWT may harvest up to two males (PCMB 2010a, b; PCMB 2016).

The Tuktoyaktuk Peninsula subpopulation benefitted from the removal of domestic reindeer from the peninsula in 2001. NWT resident, outfitted, and commercial harvest was suspended in 2006. Inuvialuit harvest is unrestricted except during April 1-June 15, when harvesting is suspended to permit the migration of the Cape Bathurst subpopulation (Davison *et al.* 2014; ENR 2016).

The management of the Cape Bathurst, Bluenose-West, and Bluenose-East subpopulations is guided by *Taking Care of Caribou: Cape Bathurst, Bluenose-West, and Bluenose-East Barren-ground Caribou Herds Management Plan* (ACCWM 2014). This plan was developed in response to declines in these subpopulations and is intended to address long-term management needs. It includes provisions for management within the natural range of variation, conservation and management of caribou habitat, and respectful and sustainable harvest. Action plans are developed for each subpopulation annually. A series of harvest restrictions have been implemented starting in 2005 (see Table 14). Belarewile Gots'é ʔekwé: Délı̨ne Caribou Conservation, a Délı̨ne Got'ı̨ne Plan of Action has set a harvest threshold of 150 for the Bluenose-East subpopulation (Délı̨ne ʔekwé Working Group 2016).

For the Bathurst caribou subpopulation, the *Bathurst Caribou Range Plan* was completed in 2019 (GNWT 2019), and the *Bathurst Caribou Management Plan* was completed in 2021 (BCAC 2021). The *Bathurst Caribou Range Plan* makes recommendations on managing the cumulative effects of human disturbance. A series of harvest restrictions have been implemented starting in 2009/10 with the closure of resident, non-resident and commercial harvest in Wek'èezhı̨, and North Slave and South Slave regions (see Table 14). Significant harvest restrictions included the establishment of the Mobile Core Bathurst Caribou Management Zone (no harvest) in January 2015 and a TAH of 0 for Indigenous harvest of Bathurst caribou in Wek'èezhı̨ in the NWT in 2016/17. In addition, a wolf reduction program was conducted in the Bathurst range in the NWT from 2019/20 to 2023/24 (see *Threats and Limiting Factors - Predation*).

Management guidance for the Beverly and Qamanirjuaq subpopulations is provided by the *Caribou is Life - Beverly and Qamanirjuaq Caribou Management Plan 2023-2032* (BQCMB 2024a). This document includes provisions for education, research advancement, and monitoring. The Beverly and Ahiak subpopulation were afforded some protection through the 2010 closure of NWT commercial, outfitted, and resident hunts within their ranges (see Table 14). This closure was partially rescinded in 2014, with harvest limited to one male-only resident harvest. There are no restrictions on Indigenous harvest (ENR 2016).

Currently, there is no commercial harvesting of any NWT barren-ground caribou subpopulation.

Specific co-management structures have also been built to address concerns with some barren-ground caribou subpopulations. These structures include the PCMB, the International Porcupine Caribou Board (IPCB), the ACCWM, the Bathurst Caribou Advisory Committee (BCAC) and the BQCMB.

The PCMB is an advisory committee that provides Porcupine caribou subpopulation management recommendations to those agencies responsible for managing the subpopulation and gathers and communicates information about the subpopulation to users. Its membership includes the Gwich'in Tribal Council (GTC), Na-cho Nyak Dün First Nation, Vuntut Gwitchin First Nation, Tr'ondëk Hwëch'in First Nation, Inuvialuit Game Council (IGC), GNWT, Government of Yukon, and Government of Canada (Canada) (PCMB 2016). The IPCB administers the 1987 bilateral (Canada and United States (U.S.)) *Agreement on the Conservation of the Porcupine Caribou Herd* and provides advice to Canada and the U.S. on the protection and management of Porcupine caribou. The NWT, through the GNWT, is responsible for nominating one of the members of the ICMB (Environment and Climate Change Canada 2016).

The ACCWM was established to exchange information, help develop cooperation and consensus, and make recommendations regarding wildlife and wildlife habitat issues that cross land claim and treaty boundaries. ACCWM membership consists of WMAC (NWT), GRRB, SRRB, Wek'ëezhii Renewable Resources Board (WRRB), Kitikmeot Regional Wildlife Board, and Tuktut Nogait National Park Management Board (ACCWM 2014).

The BCAC was established in 2017 and consists of 14 governments and organizations from the NWT, Nunavut and Saskatchewan representing communities that traditionally interacted with the Bathurst caribou subpopulation including Government of the Northwest Territories, Government of Nunavut, Tłı̨ch̨ Government, Nunavut Tunngavik Incorporated, Athabasca Denesųliné Néné Land Corporation, Yellowknives Dene First Nation, Łutsël K'é Dene First Nation, Northwest Territories Métis Nation, North Slave Métis Alliance, Salt River First Nation, Deninu K'ue First Nation, Wek'ëezhii Renewable Resources Board, Kitikmeot Regional Wildlife Board, Kugluktuk Angoniatit Association (Hunters and Trappers Organization), Umingmaktok Hunters and Trappers Organization (Bay Chimo), Burnside Hunters and Trappers Organization (Bathurst Inlet) and Ekaluktutiak Hunters and Trappers Organization (Cambridge Bay).

The BQCMB was the first caribou co-management board created in North America, in 1982. It provides a multi-jurisdictional and multi-cultural forum (Government of Nunavut, GNWT, Government of Saskatchewan, Government of Manitoba, Government of Canada, and traditional users) for the coordinated management of Beverly and

Qamanirjuaq caribou (Cizek 1990; BQCMB 2016). To date, abundance of the Beverly and Qamanirjuaq subpopulations has not reached levels necessitating limits to harvest, however the BQCMB would be well placed to advise on recommended approaches to management of harvest and other actions.

Barren-ground caribou were assessed as Threatened by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in December 2016 and by the NWT Species at Risk Committee (SARC) in April 2017. Barren-ground caribou were added to the NWT List of Species at Risk as Threatened in July 2018, but have not yet been listed as Threatened under the federal *Species at Risk Act*. The NWT listing resulted in the preparation of the *Recovery Strategy for Barren-ground Caribou in the Northwest Territories*, which was completed in 2020 by the Conference of Management Authorities (CMA 2020). The overall goals of the strategy are to: 1) maintain or restore self-sustaining, resilient populations of each barren-ground caribou subpopulation such that no subpopulation is lost, 2) support and maintain the caribou-people relationship, 3) promote conditions that allow caribou to move and migrate across their historic ranges without barriers and 4) promote the conditions necessary for recovery.

Although not a formal co-management structure, CARMA (2014) is a network of scientists, co-managers, community leaders and caribou harvesters that was formed in 2004 to better understand how global change is impacting migratory tundra caribou and the people that depend on them. This organization can also facilitate inter-personal and agency discussions and data exchange among those concerned with caribou management.

Current and proposed habitat protection for barren-ground caribou in the NWT can be found through existing protected areas (Figure 50), areas established through the Protected Areas Strategy, range planning processes, and through regional land use planning processes. Restrictions on development vary among land management regimes, but many include some form of restriction on resource development.

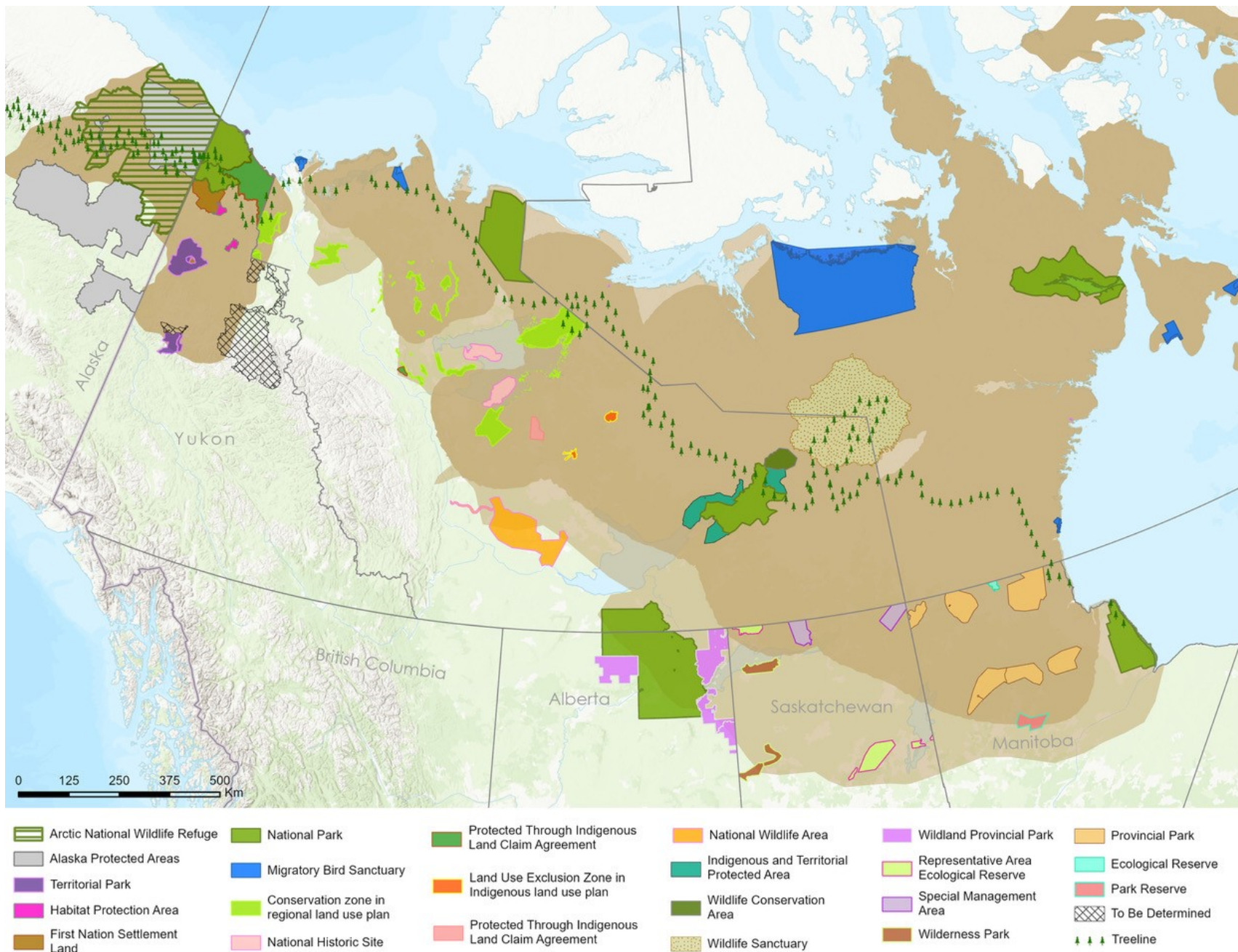


Figure 50. Areas providing habitat protection within the range of barren-ground caribou

Areas within the NWT of likely significance to barren-ground caribou include Thaidene Nene (proposed national and territorial parks around the East Arm of Great Slave Lake), Ezodzitı (protected through the Tłıchǵ Final Agreement) (ACCWM 2014), the Thelon Game Sanctuary, Edaııla (Caribou Point, Great Bear Lake, identified in the Sahtú Land Use Plan), Saoyú-ıehdacho National Historic Site (ACCWM 2014), Tuktut Nogait National Park (Community of Paulatuk *et al.* 2008; ACCWM 2014), and Yambahti (Yamba Lake, where the Tłıchǵ Government has submitted a formal request and proposal to the GNWT to sponsor the area as a Critical Wildlife Area; NWT Protected Areas Strategy 2012). Within Nunavut, the Queen Maud Gulf Migratory Bird Sanctuary encompasses most of the Beverly (coastal calving ground only) and Ahiak calving grounds. A new NU park adjacent to Tuktut Nogait National Park is being discussed by Kugluktuk, the Kitikmeot Inuit Association, and the Nunavut Planning Commission (ACCWM 2014). Portions of the Porcupine caribou subpopulation in the Yukon are also offered some protection from Ivvavik National Park (Community of Aklavik *et al.* 2008; Community of Inuvik *et al.* 2008; Parks Canada 2016) and the Old Crow Flats Special Management Area (Technical Working Group and Management Committee for the Parties 2006).

Land use plan zoning provides some protection to barren-ground caribou subpopulations throughout the NWT. Under the Gwich'in Land Use Plan, barren-ground caribou are offered protection through special management zones (approximately 33% of the Gwich'in Settlement Area (GSA)) and conservation/heritage conservation zones (approximately 10% of the GSA). While development is permitted in special management zones, it is limited by specific conditions in each zone designed to protect identified values (Gwich'in Land Use Planning Board 2003). Zones of particular interest include:

- Vǎdzaih (Porcupine Caribou Special Management Zone): protection of Porcupine caribou habitat and migration corridor in the GSA.
- Gwatoh Taii Tshik (Stoney Creek Special Management Area): partial protection of Porcupine caribou migration corridor, water, and heritage resources.
- Transportation Special Management Zone: conditions to protect Porcupine caribou from transportation-related disturbances along the Dempster Highway: Yukon/NWT border to the Peel River.
- Ddhah zhit han, Eneekaii han, Chii gwaazraii (Rat, Husky and Black Mountain Conservation Zone) and Dachan dha'aıı jik/Vitreekwaa viteetshik (James Creek/Vittewkwa River Conservation Zone): partial protection of the Porcupine caribou migration corridor.
- Kahii luk, Nagwichoonyik, Dachan choo gehnjik (Travaillant Lake, Mackenzie/Tree River): partial protection of the wintering grounds of Bluenose caribou.

The Sahtú Land Use Plan offers barren-ground caribou similar zone-based protections (with special management zones and conservation zones comprising approximately 48% and 11% of the Sahtú Settlement Area, respectively). Many of the special management and conservation zones include barren-ground caribou as a value to be respected. For these areas, the importance of caribou is recognized through a general conformity requirement (Sahtú Land Use Planning Board 2013).

The Tłıchǵ Land Use Plan, released in 2012 by the Tłıchǵ Government, is supported by the 2013 *Tłıchǵ Land Use Plan Law*, enacted in 2013. Five land use planning zones are established: wehexlaxodiale (land exclusion zone), dèk'èasìzedaa (habitat management zone), gowhadò yek'e t'u k'e (traditional use zone), Tłıchǵ nawoo kè dèt'ahot'ıı (cultural heritage zone), and asu haxowu gha enehatò (enhanced management zone). Each zone offers varying levels of protection depending upon the values that they are designed to preserve (Tłıchǵ Government 2012).

In the Inuvialuit Settlement Region, six community conservation plans set out guidelines for land and resource use in their respective regions. Lands are categorized according to the degree of protection they are felt to require (A, B, C, D, and E, with degree of protection increasing from Category A to Category E). Special Designated Lands of importance to barren-ground caribou include: Bluenose-West caribou subpopulation winter range (Category E); eastern North Slope, east of Babbage River (Category D) (Community of Aklavik *et al.* 2008; Community of Inuvik *et al.* 2008; Community of Tuktoyaktuk *et al.* 2008); Fish Hole/Cache Creek and Big Fish River (Category D/E) (Community of Inuvik *et al.* 2008); Bluenose-West caribou core calving and post-calving grounds (Category D) (Community of Paulatuk *et al.* 2008); and Cape Bathurst caribou core calving and post-calving grounds (Category D) (Community of Paulatuk *et al.* 2008; Community of Tuktoyaktuk *et al.* 2008). In addition to these land protection categories, conservation measures aimed specifically at barren-ground caribou are beneficial. These include supporting certain management planning initiatives, protecting important habitat from disturbance, ensuring harvest is sustainable, and discouraging meat wastage (Community of Aklavik *et al.* 2008; Community of Inuvik *et al.* 2008; Community of Paulatuk *et al.* 2008; Community of Tuktoyaktuk *et al.* 2008).

The draft Nunavut Land Use Plan includes provisions for the protection of core calving areas, post-calving areas, migration corridors, water crossings, and rutting areas. Once approved, the land use plan could act as a positive influence on Nunavut caribou subpopulations, including the four subpopulations shared with the NWT (Qamanirjuaq, Bathurst, Bluenose-East, Beverly, Ahik, Wager Bay, Lorillard). Development applications that are submitted prior to land use plan approval, however, will be grandfathered and not subject to the protection provisions included in the land use plan (Nunavut Planning Commission 2016).

A key positive influence is that currently most of the range occupied by barren-ground caribou is relatively undisturbed by development and road access, allowing caribou to interact with their environment as they always have. Existing and proposed roads may be the greatest long-term threat to the health of migratory tundra subpopulations.

DRAFT

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2017 SARC Report

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STATUS AND RANKS

BARREN-GROUND CARIBOU (*Rangifer tarandus groenlandicus*)

Region	Coarse Filter (Ranks) ⁸ To prioritize	Fine Filter (Status) To provide advice	Legal Listings (Status) To protect under species at risk legislation
Global	G5T4 – Secure (NatureServe Canada 2016)	Least Concern (IUCN Red List 2021)	
Canada	N4 – Apparently Secure (NatureServe Canada 2016)	Threatened (COSEWIC 2016)	Under consideration
Northwest Territories	At Risk (NWT General Status Ranking Program 2024) S2 – Imperiled (NatureServe Canada 2015)	Threatened (SARC 2017)	Threatened (2018)
Adjacent Jurisdictions			
Nunavut	S2S4 – Imperiled to Apparently Secure (NatureServe Canada 2016)		
Saskatchewan	S3S4N – Vulnerable to Apparently Secure (NatureServe Canada 2016)		
Manitoba	S5N – Secure (NatureServe Canada 2016)		

⁸ All NatureServe codes are as defined in Definitions of NatureServe Conservation Status Ranks: http://help.natureserve.org/biotics/Content/Record_Management/Element_Files/Element_Tracking/ETR_ACK_Definitions_of_Heritage_Conservation_Status_Ranks.htm#NatureSe

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APPENDIX – THREATS ASSESSMENT

Threats Assessment⁹

Threats have been classified for Porcupine and barren-ground caribou in the NWT only (i.e., not including threats that may be present in neighbouring jurisdictions). The threats assessment is based on whether threats are of concern for the sustainability of the species in the NWT over approximately the next 10 years.

This threats assessment was completed collaboratively by members of the NWT Species at Risk Committee, at a meeting on July 14, 2026. The threats assessment will be reviewed and revised as required when the status report is reviewed in 10 years or at the request of a Management Authority or the Conference of Management Authorities. Parameters used to assess threats are listed in Table B1.

Table B1. Parameters used in threats assessment.

Parameter	Description	Categories
LIKELIHOOD		
Timing (i.e., immediacy)	Indicates if the threat is presently happening, expected in the short term (<10 years), expected in the long term (>10 years), or not expected to happen.	Happening now Short-term future Long-term future Not expected
Probability of event within 10 years	Indicates the likelihood of the threat to occur over the next 10 years.	High Medium Low
CAUSAL CERTAINTY		
Certainty	Indicates the confidence that the threat will have an impact on the population.	High Medium Low
MAGNITUDE		

⁹ This approach to threats assessment represents a modification of the International Union for the Conservation of Nature's (IUCN) traditional threats calculator. It was originally modified for use in the Inuvialuit Settlement Region Polar Bear Joint Management Plan (Joint Secretariat 2017). This modified threats assessment approach was adopted as the standard threats assessment method by the Species at Risk Committee and Conference of Management Authorities in 2019.

Extent (scope)	Indicates the spatial extent of the threat (based on percentage of population or area affected)	Widespread (>50%) Localized (<50%)
Severity of population-level effect	Indicates how severe the impact of the threat would be at a population level if it occurred.	High Medium Low Unknown
Temporality	Indicates the frequency with which the threat occurs.	Seasonal Continuous
Overall level of concern	Indicates the overall threat to the population (considering the above).	High Medium Low

Overall Level of Concern

The overall level of concern for threats to Porcupine and barren-ground caribou are noted below. Please note that combinations of individual threats could result in cumulative impacts to Porcupine and barren-ground caribou in the NWT. Details be found in the *Detailed Threats Assessment*.

Overall level of concern:

- | | |
|---|---------------------------|
| • Infrastructure Development (roads, other linear disturbance) | High |
| • Insect Harassment | High |
| • Wildfires and Smoke | Medium-High |
| • Disrespectful Harvesting / Over-harvesting | Medium-High |
| • Pathogens and Diseases | Medium |
| • Predation | Medium |
| • Industrial Land Use (exploration and extraction) | Medium |
| • Ice-on-Snow Events | Medium |
| • Thawing Permafrost | Low |
| • Shrubification and Treeline Expansion | [To Be Completed by SARC] |
| • Direct Impacts of Heat Stress | [To Be Completed by SARC] |
| • Heat Related Changes to Vegetation | [To Be Completed by SARC] |
| • Drought | [To Be Completed by SARC] |

Detailed Threats Assessment

Threat #1. Habitat Loss – Infrastructure Development (roads, other linear disturbance)		
Specific threat	Roads and other infrastructure developments can negatively affect barren-ground caribou by creating barriers to movement, fragmenting and reducing available habitat, altering migration routes, and increasing human access to caribou ranges. Roads can also create noise and visual disturbances, affect predator dynamics, reduce forage quality through dust, and increase the risk of harvest and vehicle collisions. Existing roads already affect caribou habitat, ranges and movement. Future proposed roads in the NWT and Nunavut would exacerbate current impacts and would also increase access to previously remote areas and may intersect important caribou habitats, including calving grounds. Currently, there are several roads in the range of barren-ground caribou in the NWT, Nunavut and Yukon. In addition, several projects are being considered in the North Slave region of the NWT and the Kitikmeot region of Nunavut. Of greatest concern are the proposed all-season roads in NWT (Slave Province Road) and NU (Grays Bay Road), which would render this relatively remote area much more accessible for mining, traffic and potentially hunter harvest. The proposed Grays Bay Road would cross through the western portion of the Bathurst subpopulation's calving ground.	
Stress	Migration is a key adaptive strategy that enables caribou to respond to predators, parasites, and shifting forage conditions. Roads that restrict movement can reduce access to important habitats, compromising the ability of caribou subpopulations to adapt to environmental change and human-induced disturbances. Roads disturb caribou migration routes and create partial barriers to movement. Caribou exhibit stress responses near roads including moving slower, congregating at roadways, and delaying crossing. These altered behavioural responses result in less time foraging and migrating to seasonal habitat and increase susceptibility to predation or harvest. The impacts from existing roads are ongoing and likely to increase over the next decade. Many knowledge holders express a high level of concern about how infrastructure development is affecting barren-ground caribou populations, emphasizing the need for careful consideration and management of future projects. These barrier effects may lead to reduced caribou survival rates and population declines.	
Barren-ground caribou subpopulation:	Porcupine	Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose West, Bluenose East, Bathurst, Beverly, Ahik,

		Qamanirjuaq, Lorillard, Wager Bay
Extent	Localized (<50%)	Widespread (>50%)
Severity	High	High
Temporality	Seasonal	Continuous
Timing	Happening now	Happening now
Probability	High	High
Causal certainty	High	High
Overall level of concern	High	High

Threat #2. Climate change – Insect Harassment		
Specific threat	Climate change is increasing the duration and intensity of insect harassment experienced by barren-ground caribou. Warm, humid, low-wind summer conditions favor high numbers of biting insects, causing caribou to spend more time avoiding insects and seeking refuge in cooler, windier areas such as higher elevations, shorelines, or more northern locations. Continued warming is expected to increase periods of high insect activity.	
Stress	Increased insect harassment causes energetic and nutritional stress by reducing the time caribou spend feeding and increasing the energy they expend avoiding insects. This can lead to poorer body condition, lower pregnancy rates, and reduced overall health. If high insect activity persists over multiple consecutive years, it may negatively affect population productivity and abundance. Insect-driven movements to refuge habitats may also constrain habitat use when suitable escape areas are limited.	
Barren-ground caribou subpopulation:	Porcupine	Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose West, Bluenose East, Bathurst, Beverly, Ahlak, Qamanirjuaq, Lorillard, Wager Bay
Extent	Widespread (>50%)	Widespread (>50%)
Severity	High	High
Temporality	Seasonal	Seasonal

Timing	Happening now	Happening now
Probability	High	High
Causal certainty	High	High
Overall level of concern	High	High

Threat #3. Climate Change – Wildfires and Smoke		
Specific threat	Wildfires are a major threat to barren-ground caribou, especially in the boreal and taiga forests of their winter range. While wildfires are a natural part of the boreal and taiga ecosystems, they are now larger and more intense due to climate change and changing fire management policies. In addition, wildfires are more common in the tundra. Wildfires disturb an average of 600,000 ha of NWT forest annually, however there is extreme variability in this value. In 2023 and 2024, over 3.4 million and 4.2 million hectares burned, respectively. These fires have significantly reduced winter habitat and changed the distribution of caribou in the NWT. Modelling predicts that climate change will result in an increase in the frequency and intensity of fires, due to hotter, drier summers that provide a longer fire season.	
Stress	The regeneration of forage, particularly lichens, in burnt areas takes decades, making the impact of wildfires long-lasting. In the NWT, regeneration of lichen-supporting forest stands can take 50-100 years following fire depending on stand type. Smoke can also impact caribou directly (e.g., air quality) and indirectly (e.g., localized weather, plant growth). Knowledge holders are certain that habitat loss from wildfires is contributing to shifting winter distribution and declines in barren-ground caribou populations, particularly in the Bathurst, Beverly, Qamanirjuaq, and Bluenose-East subpopulations. This threat is expected to persist over the next decade due to ongoing climatic changes.	
Barren-ground caribou subpopulation:	Porcupine	Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose West, Bluenose East, Bathurst, Beverly, Ahik, Qamanirjuaq, Lorillard, Wager Bay
Extent	Widespread (>50%)	Widespread (>50%)
Severity	Medium	Medium-High

Temporality	Continuous	Continuous
Timing	Happening now	Happening now
Probability	High	High
Causal certainty	Medium	Medium
Overall level of concern	Medium	Medium-High

Threat #4. Disrespectful Harvesting / Over-harvesting	
Specific threat	Knowledge holders emphasize that respecting caribou is essential to ensuring their return. Harvest generally has little impact on large, stable caribou subpopulations. However, harvest from small or declining subpopulations can accelerate declines and reduce recovery potential. Collaborative, precautionary, and community driven approaches to harvest management help reduce the likelihood of harvest becoming unsustainable. Harvest management actions are in place including Total Allowable Harvest, harvest management plans, and community conservation plans. However, unsustainable and disrespectful harvest practices are recognized as threats to barren-ground caribou. These include overharvesting, disrespectful harvesting behaviours (e.g., meat wastage, chasing caribou with snowmachines, quads or drones, harvesting the leader, and taking more animals than needed), and the lasting impacts of historical outfitted sport hunting. Concerns are heightened in some regions, particularly along winter roads, although the extent of harvest is difficult to assess due to limited reporting and uncertainty about harvest levels. Knowledge holders are concerned that the Tibbitt to Contwoyto Winter Road has increased access to barren-ground caribou winter ranges, enabling harvest levels that were not possible before the road was built. In 2025, a minimum harvest of 2,814 caribou was estimated along the winter road, large concentrations of gut piles were documented, and meat wastage was observed at about 10% of kill sites. Harvest management measures vary. The Bluenose-West, Bluenose-East, Cape Bathurst, and Bathurst herds are under total allowable harvest (TAH) systems, while others, such as the Porcupine, Beverly, Ahiak and Qamanirjuaq herds, currently have no restrictions on Indigenous harvest and limited resident harvest. Total allowable harvest for the Bathurst, and Cape Bathurst herds is currently set at zero.
Stress	Harvest-related activities can cause direct mortality, behavioural disturbance, habitat impacts, and reduced population health. Chasing caribou with snowmachines or quads causes stress and disturbance, and

	may alter migration routes. Harvesting the leader or disturbing the first groups entering an area may result in caribou avoiding that area in the future. Overharvest can reduce population numbers, particularly when combined with other threats. Outfitted sport hunting closed in the NWT in 2010, but is ongoing in adjacent jurisdictions. Historical outfitted sport hunting may have reduced genetic quality through the removal of prime bulls. Abandoned outfitter camps have degraded habitat quality at important migration areas such as water crossings and land bridges.	
Barren-ground caribou subpopulation:	Porcupine	Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose West, Bluenose East, Bathurst, Beverly, Ahlak, Qamanirjuaq, Lorillard, Wager Bay
Extent	Localized (<50%)	Widespread (>50%)
Severity	Medium-Low	Medium-High
Temporality	Seasonal	Seasonal
Timing	Happening now	Happening now
Probability	High	High
Causal certainty	Low	High (with increased road access in the future)
Overall level of concern	Low	Medium-High

Threat #5. Pathogens and Diseases	
Specific threat	Pathogens and diseases are a potential and complex threat, particularly under a warmer climate. Caribou host a variety of parasites, including gastro-intestinal nematodes, tapeworms, muscle worms, lung worms, blood parasites, warble flies, and bot flies. Warmer temperatures can increase the activity and transmission of some pathogens, potentially increasing their prevalence. Diseases of concern include Johne's disease and brucellosis, although levels vary among subpopulations and future trends remain difficult to predict. Although some pathogens and diseases occur naturally in barren-ground caribou, there are some concerning novel pathogens. Although CWD has not been detected in the NWT, the expansion of species such as white-tailed deer may increase the risk of disease introduction, and if Chronic Wasting Disease (CWD) reaches barren-ground caribou ranges it could

	have severe population-level impacts. Similarly, meningeal worm (<i>P. tenuis</i>) has the potential to be a significant threat to barren-ground caribou populations in the NWT in the presence of white-tailed deer. Neither CWD nor <i>P. tenuis</i> have been documented in the NWT.	
Stress	Parasites and diseases can cause reduced body condition, lower reproductive success, illness, and mortality. Parasites such as warble flies, bot flies, and gastro-intestinal nematodes can reduce body reserves and pregnancy rates. Johne's disease can cause death, while brucellosis can cause lameness and reduced reproductive rates. Some parasites may also increase a caribou's susceptibility to predation by altering behaviour, further affecting individual health and population dynamics. Both CWD and <i>P. tenuis</i> can be fatal and can have severe population-level impacts to barren-ground caribou where these pathogens occur.	
Barren-ground caribou subpopulation:	Porcupine	Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose West, Bluenose East, Bathurst, Beverly, Ahik, Qamanirjuaq, Lorillard, Wager Bay
Extent	Widespread (>50%)	Widespread (>50%)
Severity	Medium-High	Medium-High
Temporality	Continuous	Continuous
Timing	Happening now (current parasites/diseases) Long-term future (novel parasites/diseases)	Happening now (current parasites/diseases) Long-term future (novel parasites/diseases)
Probability	High (current parasites/diseases) Low (novel parasites/diseases)	High (current parasites/diseases) Low (novel parasites/diseases)
Causal certainty	Medium	Medium
Overall level of concern	Medium	Medium

Threat #6. Predation	
Specific threat	Caribou co-exist with predators, and predation is a natural component of caribou ecology that can affect survival and reproduction, which in turn contribute to changes in abundance. Wolves and grizzly bears are primary

	predators, while wolverines, lynx, and eagles also prey on caribou to a lesser extent. Elevated levels of predation contribute to caribou population declines, especially when caribou numbers are already low. Predation risk can be influenced by environmental conditions, seasonal distribution, and human-made features such as winter roads. Increases in wolf numbers has also been attributed to a reduction in trapping and harvest of predators on the range of barren-ground caribou.	
Stress	Predation causes direct mortality and reduced population productivity by affecting survival, recruitment, and reproduction. Grizzly bears can have a particularly strong impact on newborn calves on calving grounds, while wolves prey on caribou of all sex and age classes throughout the year. Winter roads may increase predation risk by making caribou reluctant to cross, creating opportunities for wolves to ambush them. The effects of predation can be more pronounced during population declines and low phases of the population cycle.	
Barren-ground caribou subpopulation:	Porcupine	Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose West, Bluenose East, Bathurst, Beverly, Ahlak, Qamanirjuaq, Lorillard, Wager Bay
Extent	Widespread (>50%)	Widespread (>50%)
Severity	Medium-High	Medium-High
Temporality	Continuous	Continuous
Timing	Happening now	Happening now
Probability	High	High
Causal certainty	High	High
Overall level of concern	Medium	Medium

Threat #7. Habitat Loss – Industrial Land Use (exploration and extraction)	
Specific threat	Industrial development, such as mining, oil and gas exploration, and hydroelectric projects, are considered significant threats to barren-ground caribou. These activities disturb caribou through noise, smells, and habitat disruption, causing them to alter migration routes and avoid certain areas. The dust and pollution from mining reduce the quality of forage and habitat. Low-level flights associated with mineral exploration

	increase stress and can cause caribou to expend unnecessary energy or sustain injuries. Diamond mines (active and in closure) in the NWT impact the Bathurst, Beverly, Lorillard, and Wager Bay herds, while operating mines in Nunavut and northern Saskatchewan affect the Beverly, Qamanirjuaq, Lorillard, and Wager Bay herds. Oil and gas activities primarily occur in the winter ranges of the Bluenose-West, Cape Bathurst, Tuktoyaktuk Peninsula and Porcupine caribou herds. Mineral exploration is occurring throughout the range of barren-ground caribou, particularly in the range of the Bathurst, Beverly, and Qamanirjuaq herds, and to a limited extent in the range of the Bluenose-West and Bluenose-East herds, as well as in the Canadian range of the Porcupine caribou. Several projects are being considered in the North Slave region of the NWT and the Kitikmeot region of Nunavut. Some of the projects are within the summer range of the Bathurst subpopulation.	
Stress	Industrial development causes behavioural, energetic, habitat, and population-level stress. Caribou may change migration routes and avoid areas affected by mines and exploration camps, resulting in a loss of available habitat. Dust and pollution from mining can reduce forage quality and habitat availability. Low-level flights associated with mineral exploration increase stress, raise energetic costs, and may cause caribou to expend unnecessary energy or injure themselves. These disturbances can negatively affect animal health (e.g., reduced calf survival, reduced cow condition resulting in lower pregnancy rates), migration patterns, and population numbers, with modelling suggesting that some proposed developments could contribute to significant population declines. Mining-related disturbances are ongoing and highly likely to continue, with a high level of concern among knowledge holders, particularly in the Bathurst, Beverly, and Qamanirjuaq ranges. Of the NWT's barren-ground caribou subpopulations, the Bathurst subpopulation likely faces the most pressure from human activities. Oil and gas leasing in the calving and post-calving area for Porcupine caribou is expected to contribute to disturbances. Modelling suggests that the proposed development could result in significant declines in Porcupine caribou numbers for the already decreasing subpopulation.	
Barren-ground caribou subpopulation:	Porcupine	Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose West, Bluenose East, Bathurst, Beverly, Ahiak, Qamanirjuaq, Lorillard, Wager Bay

Extent	Widespread (>50%) (mining and exploration)	Widespread (>50%) (mining and exploration)
Severity	Medium	Medium
Temporality	Continuous	Continuous
Timing	Happening now	Happening now
Probability	High	High
Causal certainty	Medium	Medium
Overall level of concern	Medium	Medium

Threat #8. Climate change – Ice-on-Snow Events		
Specific threat	Climate change is increasing the frequency of ice-on-snow events, which occur when rain falls on existing snow or when mid-winter warming is followed by refreezing. These conditions create a hard ice layer over or within the snowpack, making it difficult for barren-ground caribou to dig (crater) through the snow to reach winter forage.	
Stress	Ice-on-snow events reduce access to winter forage, leading to nutritional stress and poorer body condition. As caribou expend more energy digging through ice-covered snow and obtain less food, they may experience weight loss, reduced health, and in severe cases, starvation. These events may also contribute to changes in winter distribution, with some knowledge holders observing caribou remaining farther north during winter.	
Barren-ground caribou subpopulation:	Porcupine	Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose West, Bluenose East, Bathurst, Beverly, Ahik, Qamanirjuaq, Lorillard, Wager Bay
Extent	Localized (<50%)	Localized (<50%)
Severity	Medium-High	Medium-High
Temporality	Seasonal	Seasonal
Timing	Short-term future	Short-term future
Probability	High	High

Causal certainty	Medium	Medium
Overall level of concern	Medium	Medium

Threat #9. Climate change – Habitat Change (thawing permafrost)		
Specific threat	Thawing permafrost is causing changes in ground firmness and moisture, leading to slumping and potential habitat loss.	
Stress	Caribou may avoid areas affected by permafrost thaw, altering migration routes and habitat use. Thawing permafrost and slumping is most noted in the ranges of Porcupine caribou and western herds near the Mackenzie Delta, but it is occurring across barren-ground caribou ranges.	
Barren-ground caribou subpopulation:	Porcupine	Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose West, Bluenose East, Bathurst, Beverly, Ahik, Qamanirjuaq, Lorillard, Wager Bay
Extent	Widespread (>50%)	Localized (<50%)
Severity	Low	Low
Temporality	Continuous	Continuous
Timing	Happening now	Happening now
Probability	High	High
Causal certainty	Low	Low
Overall level of concern	Low	Low

Threat #X. Climate change – Habitat Change (shrubification and treeline expansion)	
Specific threat	Climate change is causing shrub expansion and northward treeline advance across the tundra, a process often referred to as shrubification. As shrubs become larger and more widespread and forests encroach into previously open tundra habitat, the structure and availability of traditional barren-ground caribou habitat is altered. This landscape transformation has been occurring for decades and is expected to continue.

Stress	Shrubification causes habitat alteration and displacement stress by reducing the extent of open tundra habitat preferred by barren-ground caribou. These habitat changes may alter migration patterns, seasonal distribution, and habitat use. However, population-level impacts are uncertain and current concern about this threat is relatively low among knowledge holders.	
Barren-ground caribou subpopulation:	Porcupine	Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose West, Bluenose East, Bathurst, Beverly, Ahlak, Qamanirjuaq, Lorillard, Wager Bay
Extent	[To Be Completed by SARC]	[To Be Completed by SARC]
Severity	[To Be Completed by SARC]	[To Be Completed by SARC]
Temporality	[To Be Completed by SARC]	[To Be Completed by SARC]
Timing	[To Be Completed by SARC]	[To Be Completed by SARC]
Probability	[To Be Completed by SARC]	[To Be Completed by SARC]
Causal certainty	[To Be Completed by SARC]	[To Be Completed by SARC]
Overall level of concern	[To Be Completed by SARC]	[To Be Completed by SARC]

Direct Impacts of Heat Stress

Threat #X. Climate change – Direct Impact of Heat Stress	
Specific threat	Caribou are well adapted to the northern landscape and to cold temperatures. That said, caribou are susceptible to heat stress and need to avoid over-heating during hot days or excess movements. Climate and weather trends indicate higher temperatures, loss of summer/permanent snow patches and longer snow-free periods. Snow patches provide refuge from heat and insect harassment, however, permanent or summer snow patches are melting and being lost. From 1948 to 2018, annual mean temperature increases from 1948 to 2018 ranged from about 2°C in southeastern NWT to almost 4°C near the Beaufort Sea. The temperature anomaly was strongest during winter, ranging from about 3°C to over 6°C in southeastern NWT and near the Beaufort Sea respectively.
Stress	At higher temperatures, caribou are less active and forage less during the hottest part of the day. Loss of foraging activity impacts body weight.

	During heat events, caribou will shift habitat use and retreat to higher elevations for cooler temperatures and lower insect activity. Without these remnant snow beds caribou are limited in their ability to cope with high heat.	
Barren-ground caribou subpopulation:	Porcupine	Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose West, Bluenose East, Bathurst, Beverly, Ahik, Qamanirjuaq, Lorillard, Wager Bay
Extent	[To Be Completed by SARC]	[To Be Completed by SARC]
Severity	[To Be Completed by SARC]	[To Be Completed by SARC]
Temporality	[To Be Completed by SARC]	[To Be Completed by SARC]
Timing	[To Be Completed by SARC]	[To Be Completed by SARC]
Probability	[To Be Completed by SARC]	[To Be Completed by SARC]
Causal certainty	[To Be Completed by SARC]	[To Be Completed by SARC]
Overall level of concern	[To Be Completed by SARC]	[To Be Completed by SARC]

Threat #X. Climate change – Heat Related Changes to Vegetation	
Specific threat	Rising temperatures, longer snow-free periods, changes in plant growth and phenology, and the loss of permanent snow patches are altering the quantity, timing, and nutritional quality of forage available to barren-ground caribou. Large-scale climatic oscillations, including the Arctic Oscillation (AO), North Atlantic Oscillation (NAO), and Pacific Decadal Oscillation (PDO), influence weather patterns and plant productivity across the Arctic, contributing to long-term changes in forage conditions experienced by barren-ground caribou.
Stress	Climate change-driven alterations to forage availability and quality can reduce nutrition, lower productivity and increase physiological stress on barren-ground caribou. Changes in summer forage conditions can limit caribou productivity and influence population dynamics. Increased plant growth does not necessarily improve forage quality, and may be associated with lower nutritional value. Reduced forage quality and availability can affect body condition, growth, and reproduction, with effects on productivity evident several years later. Decadal climate patterns such as the North Atlantic

	Oscillation (NAO) have also been linked to poorer growth and lower body mass in northern Rangifer populations, suggesting that broad-scale climatic variability can influence caribou fitness through its effects on seasonal forage and environmental conditions. The loss of permanent snow patches reduces moisture inputs that support high-quality forage, compounding nutritional and energetic stress on barren-ground caribou.	
Barren-ground caribou subpopulation:	Porcupine	Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose West, Bluenose East, Bathurst, Beverly, Ahik, Qamanirjuaq, Lorillard, Wager Bay
Extent	[To Be Completed by SARC]	[To Be Completed by SARC]
Severity	[To Be Completed by SARC]	[To Be Completed by SARC]
Temporality	[To Be Completed by SARC]	[To Be Completed by SARC]
Timing	[To Be Completed by SARC]	[To Be Completed by SARC]
Probability	[To Be Completed by SARC]	[To Be Completed by SARC]
Causal certainty	[To Be Completed by SARC]	[To Be Completed by SARC]
Overall level of concern	[To Be Completed by SARC]	[To Be Completed by SARC]

Threat #X. Climate change – Drought		
Specific threat	Summer drought conditions have persisted since 2022 in the tundra; the land and vegetation are dry through the summer months, and rain doesn't fall until August. Mid-July weather is increasingly hot and humid, but without rain and with increased insect activity.	
Stress	Caribou food dries out during these drought conditions, making it difficult for them to eat and digest. Prolonged drought conditions and large fires on their fall and winter forage habitat impact the ability of caribou to access high quality forage.	
Barren-ground caribou subpopulation:	Porcupine	Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose West, Bluenose East, Bathurst, Beverly, Ahik, Qamanirjuaq, Lorillard, Wager Bay
Extent	[To Be Completed by SARC]	[To Be Completed by SARC]

Severity	[To Be Completed by SARC]	[To Be Completed by SARC]
Temporality	[To Be Completed by SARC]	[To Be Completed by SARC]
Timing	[To Be Completed by SARC]	[To Be Completed by SARC]
Probability	[To Be Completed by SARC]	[To Be Completed by SARC]
Causal certainty	[To Be Completed by SARC]	[To Be Completed by SARC]
Overall level of concern	[To Be Completed by SARC]	[To Be Completed by SARC]