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Cumulative Effects Assessment of Four Barren-ground Caribou Herds in the NWT

Barren-ground Caribou Indigenous Knowledge Summaries

MICROSOFT ACCOUNT



Indigenous Knowledge of cumulative effects impacting the Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose-West, and Bluenose-East Caribou in the NWT, a written summary

Including information provided by Inuvialuit, Gwich'in, Sahtú Dene, Métis, and Tłı̨chǫ Knowledge-holders about tuktuvialuk / vadzaih / ɬedə / neregħa goɬekwé and ʔehdaɲla ɬekwé / Sahti ɬekwò

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Indigenous Language and Acronyms

Term	Indigenous Dialect
Barren ground caribou	Tuktuvialuk (Inuvialuktun, Siglitun dialect)
	Vadzaih (Teet'it and Gwichya Gwich'in)
	Ʒedə (K'áhsho Got'ine, Dela Got'ine)
	Neregha (North Shore) GoƷekwé (Dél'ine Got'ine)
	Ʒehdaɣla Ʒekwé (Dél'ine Got'ine)
	Sahtı Ʒekwò (Wek'èezhii (Tłıchq̄ Region)). ¹

ACCWM	Advisory Committee for Cooperation on Wildlife Management
CB	Cape Bathurst
BAFN	Behdzi Ahda First Nation
BNE	Bluenose-East caribou
BNW	Bluenose-West caribou
CCP	Community Conservation Plan
DEWG	Dél'ine Ʒekwé Working Group
DGG	Dél'ine Got'ine Government
ENR	Environment and Natural Resources, GNWT
GNWT	Government of the Northwest Territories
GSA	Gwich'in Settlement Area
HG	Headwater Group
HTC	Hunters and Trappers Committee
IK	Indigenous Knowledge
ISR	Inuvialuit Settlement Region
ITH	Inuvik-Tuktoyaktuk Highway
NU	Nunavut
NWT	Northwest Territories
SARC	Species at Risk Committee
SRRB	Sahtı Renewable Resources Board; Ʒehdzo Got'ine Got'sé Nákedı
SSA	Sahtı Settlement Area
TAH	Total Allowable Harvest
TG	Tłıchq̄ Government
TK	Traditional Knowledge
TP	Tuktoyaktuk Peninsula caribou
TRTI	Tłıchq̄ Research and Training Institute
WMAC-NWT	Wildlife Management Advisory Council, NWT
WRRB	Wek'èezhii Renewable Resources Board

¹ Tuktuvialuk, vadzaih, and Ʒedə refer to barren-ground caribou without a specific herd association. In the Sahtı or Great Bear Lake region, Dél'ine Got'ine use the term Ʒekwé to refer to barren-ground caribou; neregha goƷekwé refers to caribou encountered on the north shore of Great Bear Lake in Bluenose-West habitat, and Ʒehdaɣla goƷekwé refers to barren-ground caribou usually encountered in the Ʒehdaɣla area, corresponding to habitat of the Bluenose-East herd. The term for barren-ground caribou that are encountered by Tłıchq̄ members in the range of the Bluenose-East Herd is sahtı Ʒekwò.

DRAFT

Executive Summary

This report is a compilation of Inuvialuit, Gwich'in, Sahtú Dene, Métis, and Tłı̨chǫ knowledge about cumulative effects impacting Cape Bathurst, Tuktoyaktuk Peninsula, Bluenose-West, and Bluenose-East caribou in the Northwest Territories. It contains the results of a limited literature review intended to summarize Indigenous perspectives and observations on the trends and factors affecting caribou populations, habitat, and health from recent, publicly-available, written sources. This report and the accompanying tables of results will be used to inform the collaborative development of a decision-support tool with Renewable Resources Boards and the Wildlife Management Advisory Council, Northwest Territories to simulate the cumulative effects of natural and human factors on these four herds of barren-ground caribou.

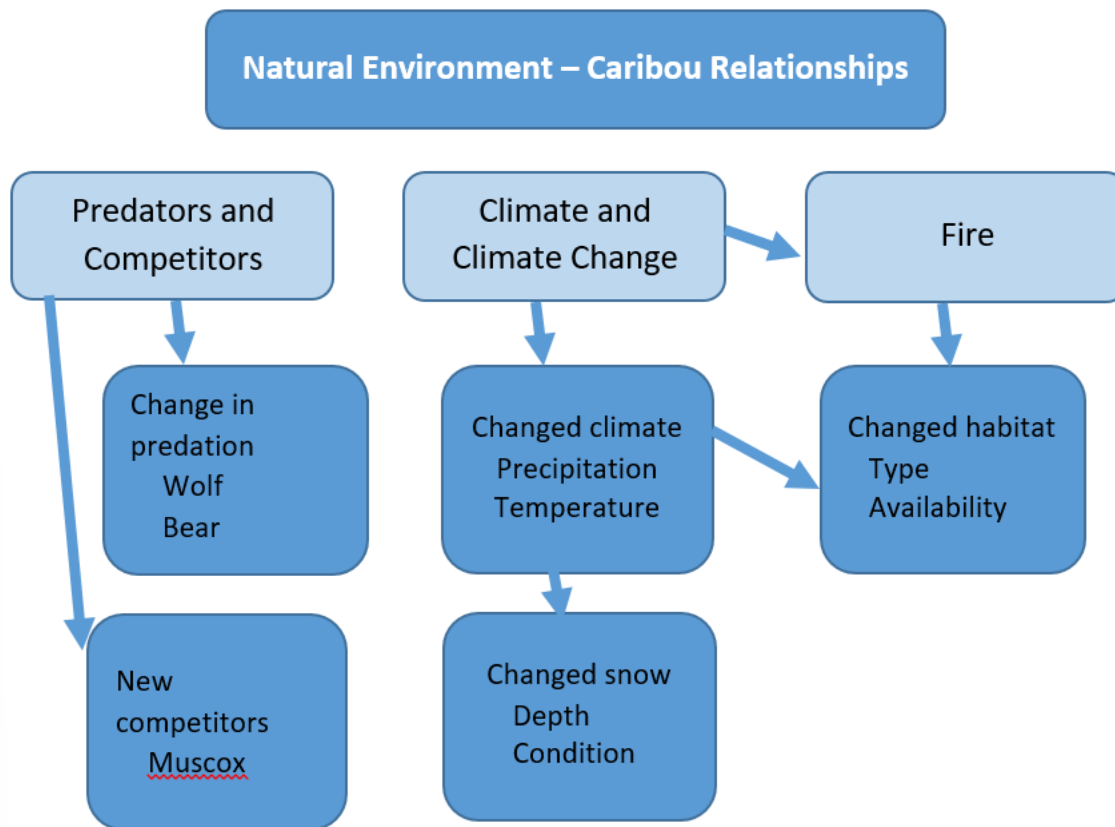
Information in this report corresponds to six categories of human and natural factors defined for this project, including:

- Predators and competitors
- Wildfires
- Climate and climate change
- Caribou health (condition)
- Land use (development)
- Harvest (and harvest practices).

A seventh category – *Governing systems and knowledge* – was created to be more inclusive of the understandings and approaches that tend to characterize Indigenous frameworks for wildlife stewardship.

The sources reviewed for this report indicate that while there are some differences in the magnitude or significance of the cumulative effects thought to be impacting tuktuvialuk, vadzaih, ɾedə, neregħa goɾekwé and Sahtı ɾekwò / ɾehdaıla ɾekwé across their range, there is also a high level of consistency in the observations of harvesters from all four regions that encounter these caribou.

In regards to caribou predators, knowledge-holders in all four regions indicate that not just wolves are increasing in abundance, but grizzly bears and other predators are also having a negative impact on caribou populations. Increases in wolf numbers and average pack sizes have been consistently observed since the 1990s, but there are some indications that this trend may be starting to plateau in the last two years. Most Indigenous harvesters recognize predation as part of a healthy ecosystem with a role to play in maintaining balance, however elders also say it is harder to know what 'balance' looks like now, with pervasive evidence of climate change and rapidly shifting environmental conditions. Some changes in the landscape and environment may be benefiting predators; wolves are thought to have greater hunting success when there are icing events / crusts on snow, as well as when new roads and trails are opened up. Other societal factors are also possibly playing a role, such as the fact that today there are fewer people harvesting predators. Numerous Indigenous organizations are currently wrestling with the idea of predator control in response to this situation in light of caribou declines.



In some areas people are seeing new species showing up – this includes both predators and ‘competitors’. Muskoxen are currently expanding their range and numbers in several areas; there are varied opinions as to whether this expansion will result in direct or indirect competition for habitat and impact barren-ground caribou negatively. Moose, wood bison, and boreal caribou are also increasing in abundance in some areas, although there are few to no observations of these species having direct negative impacts on barren-ground caribou. Most knowledge-holders attest to the fact that there are very complicated interactions between predators, caribou, and alternate prey, meaning that the overall impact of some of these changes is challenging to estimate.

Due to two preceding summers being colder and wetter than recent years, wildfire did not stand out as a major concern in the most recent sources of Indigenous and community knowledge reviewed for this report. Nonetheless, concern regarding the impacts of fires on caribou habitat has been consistently documented in most regions of the NWT. It is likely that the impacts of wildfire differ across regions and ranges, however multiple regions report increasing trends not just in wildfire occurrence, but also in wildfire intensity. Wildfires can result in changes to caribou migration routes and feeding areas; there is widespread concern that they have impacted the winter ranges of these herds, are starting to impact summer range also, and that the habitat may take 10-100 years to recover.

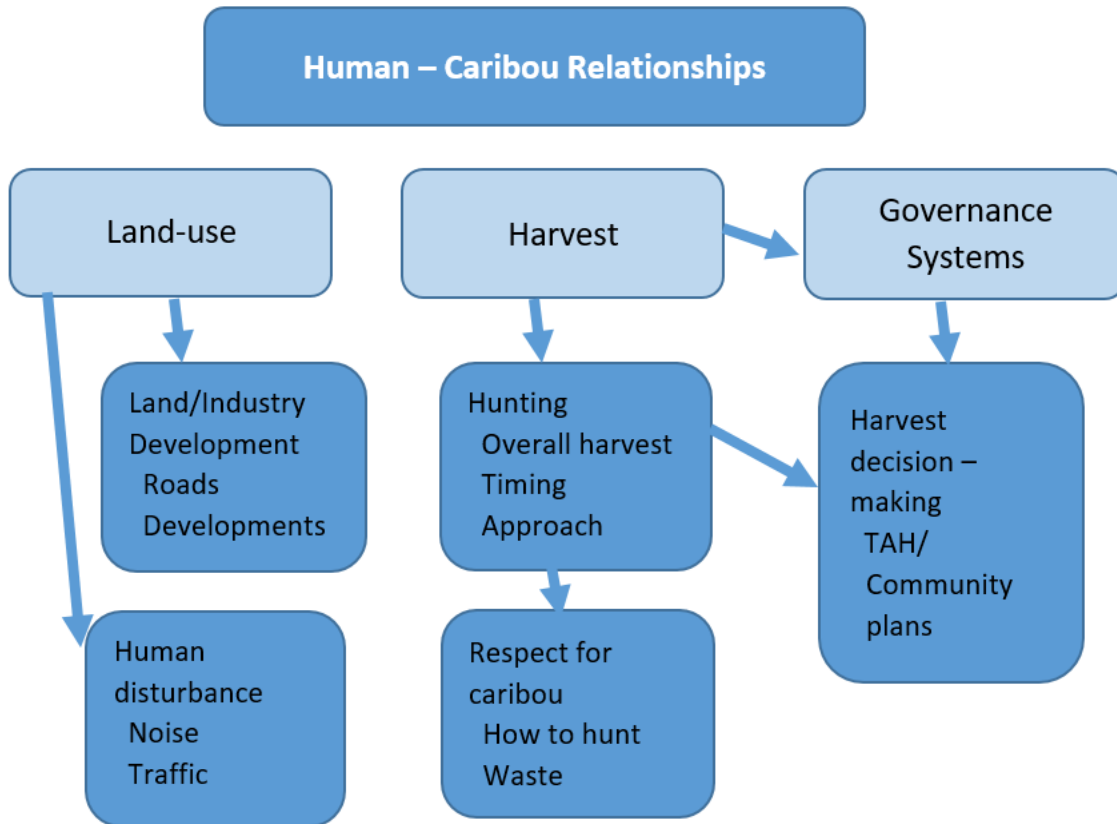
Changes to wildfire frequency and intensity are likely tightly linked to climate change. Throughout the ranges of these four herds there is evidence that the impacts of climate change are accelerating. Some of the changes mentioned most often include slumping, erosion, landslides, melting permafrost,

changes in weather, seasonal timings, and vegetation, as well as changes in caribou behaviour and movement patterns. There are numerous knowledge-holders that assert that climate change impacts are having the strongest negative affect on caribou populations today. Observations about climate change differ between regions however – for example, some areas are reporting more snow and others less, some indicate that habitat is wetter / boggy now as permafrost is melting, and in other places habitat is drier. Representatives from all areas indicate that weather and conditions on the land are less predictable now, and that is impacting not just caribou but also humans and their ability to continue traditional on-the-land activities.

Body condition and health are two measures of caribou wellness that seem to have high variability over time and space – that is, there are differences observed at different times of the year, from year to year, and in different areas. Lately there is a consistent message that harvesters in the ISR are encountering caribou with increasingly good signs of health – this is especially true for the Cape Bathurst and Tuk Pen herds. People are reporting good abundances, good numbers of calves, less apparent disease, and lots of body fat. Harvesters in both the ISR and the Sahtú are also reporting healthy-looking Bluenose-West caribou recently, with good levels of body fat and few signs of disease. It is more difficult to ascertain the overall health / body condition of Bluenose-east caribou, as observations are mixed and sometimes limited in areas where caribou are not being encountered as much as in the past. It is possible that climate change is having varied impacts on caribou body condition and health across the different regions, or that each herd is in a different phase of a naturally-occurring cycle.

Land use – encompassing both industrial development and other forms of human disturbance – is likely one of the categories including factors that are having some of the most substantial negative impacts on barren-ground caribou today. Some of those mentioned most often by knowledge-holders include road development, mining, oil and gas exploration and extraction, seismic activities, noise pollution, chemical and dust pollution, as well as increasing traffic, numbers of harvesters, newer hunting technologies, and some recreational and subsistence infrastructure. The specific source of the impacts differs by region and over time – for example, mining continues to be a significant concern in the Tłı̄chǫ region, whereas the new Inuvik-Tuktoyaktuk Highway is the main factor of concern in the Inuvialuit area. Overall, each results in some level of caribou habitat fragmentation and degradation, plus increased stress for caribou. It can take many years for disturbed habitat to recover, and caribou are often slow to return to a disturbed area.

There is a recurring theme across the ranges of these four herds that overharvesting is not the main problem leading to caribou declines. People generally harvest fewer caribou today than in previous generations; cases of high or concerning levels of harvest pressure tend to be limited to very localized areas. Knowledge-holders maintain that they have always harvested within sustainable limits, switching to alternate sources of food when caribou become unavailable or distant to communities. They cite the fact that despite increasing harvest restrictions, some herds of barren-ground caribou have been unable to recover – indicating that other factors are more significant in regards to their impacts on caribou. Because respectful harvesting can have beneficial impacts on caribou and their relationships with humans, there are increasing efforts to teach Traditional Knowledge and practices to new hunters and re-assert cultural protocols around harvesting.



Community Conservation Plans are one of the ways that communities and Indigenous organizations are finding to assert more Indigenous frameworks and governance in managing for caribou. There is a strong message from several regions that at this point, research and management need to go beyond counts, harvest monitoring and regulation, and incorporate more collaborative, culturally-appropriate, and less intrusive approaches. There is a recurring theme in recent sources of Indigenous / Traditional and Community Knowledge sources that Western scientific frameworks can lead to conflict and erode traditional ways that have been in place for thousands of years and have helped to sustain caribou for countless generations. With less emphasis on harvest counts and more emphasis on other management actions (such as ceremonial harvests, Traditional Knowledge education, maintenance of on-the-land activities and protocols, promotion of alternative harvesting, and land protection) local community plans are likely to provide significant beneficial impacts to caribou over time.

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1.0 Introduction

This report is a compilation of Inuvialuit, Gwich'in, Sahtú, Métis, and Tłı̨chǫ knowledge about cumulative effects impacting four herds of barren-ground caribou in four regions of the Northwest Territories. It presents the results of a limited literature review intended to summarize Indigenous perspectives and observations on the trends and factors affecting caribou populations, habitat, and health. The information contained here has been compiled from existing, publicly-available, written sources, with an emphasis on information documented in the last five years. The objective of the work is to help ensure that community knowledge and concerns are carried forward in planning for caribou.

This written summary is accompanied by tables of more detailed results. Both of these documents are being used to inform the collaborative development of a decision-support tool with Renewable Resources Boards (RRBs) and the Wildlife Management Advisory Council, Northwest Territories (WMAC-NWT) to simulate the cumulative effects of natural and human factors on Bluenose-West, Bluenose-East, Cape Bathurst, and Tuktoyaktuk Peninsula barren-ground caribou herds and habitats.

Draft results were presented in two parts for review by representatives of Indigenous organizations as follows, based on regional knowledge and the ranges of specific herds:

- Part 1: Tłı̨chǫ and Sahtú Dene and Métis Knowledge about cumulative impacts affecting Sahtı̨ ɔ̄ekwǝ / ʔehdaɣla ɔ̄ekwǝ (Bluenose-East caribou);
- Part 2: Inuvialuit, Gwich'in, and Sahtú Dene and Métis Knowledge of tuktuviialuk, vadzaih, ʔedǝ, and neregha goɔ̄ekwǝ (Tuktoyaktuk Peninsula, Cape Bathurst, and Bluenose-West caribou).

This final summary report and the accompanying tables combine information on all four herds, while presenting information by herd and / or community as much as possible. This is intended to retain specific information while allowing for comparisons across and between different herds and regions, as well as minimizing repetition – while there are differences in the Indigenous Knowledge pertaining to specific herds, there are also many important themes that span multiple herds.

It is important to note that many Traditional Knowledge (TK) holders do not define herds of barren-ground caribou or distinguish between them following scientific protocols and rationale (i.e., by calving ground affiliation). Names for barren-ground caribou in these regions may include:

- Tuktuviialuk (Inuvialuktun, Siglitun dialect)
- Vadzaih (Teetł'it and Gwichya Gwich'in)
- ʔedǝ (K'áhsho Got'ı̨ne, Dela Got'ı̨ne)
- Neregha (North Shore) Goɔ̄ekwǝ (Délı̨ne Got'ı̨ne)
- ʔehdaɣla ɔ̄ekwǝ (Délı̨ne Got'ı̨ne)
- Sahtı̨ ɔ̄ekwǝ (Wek'èezhı̨i (Tłı̨chǫ Region)).²

² Tuktuviialuk, vadzaih, and ʔedǝ refer to barren-ground caribou without a specific herd association. In the Sahtú or Great Bear Lake region, Délı̨ne Got'ı̨ne use the term ɔ̄ekwǝ to refer to barren-ground caribou; neregha goɔ̄ekwǝ refers to caribou encountered on the north shore of Great Bear Lake in Bluenose-West habitat, and ʔehdaɣla goɔ̄ekwǝ refers to barren-ground caribou usually encountered in the ʔehdaɣla area, corresponding to habitat of the Bluenose-East herd. The term for barren-ground caribou that are encountered by Tłı̨chǫ members in the range of the Bluenose-East Herd is sahtı̨ ɔ̄ekwǝ.

In Tuktoyaktuk, for example, some individuals do not consider the Cape Bathurst, Tuktoyaktuk Peninsula, and Bluenose-West herds to be separate (see discussion in SARC 2017³). Similarly, Gwich'in harvesters do not tend to distinguish between caribou of the Cape Bathurst and Bluenose-West herds, referring to them simply as 'Bluenose caribou' as they are difficult if not impossible to tell apart by sight alone (ACCWM 2022, 2014; Benson 2015). There is likewise little traditional distinction between the Bluenose-West and Bluenose-East herds amongst some harvesters (Wek'èezhì Renewable Resources Board 2016; SRRB 2007).

... it should be noted that neither the Sahtú nor the Tłı̄chǫ participants focused only on the Bluenose-East herd unless using the scientific perspective or referring to a hearing. Rather, they discussed barren-ground caribou that migrate to their community or region [ɔ̄ekwɛ̄ for Dǎ́l̄nǎgot'ı̄ne, and ɔ̄ekwɔ̄ for Tłı̄chǫ]. For example, the Tłı̄chǫ referred to 'caribou' when discussing places associated with both the Bathurst and Bluenose-East herds as well as when discussing ceremony. But they did refer to the Bluenose-East when discussing allocation. (Wek'èezhì Renewable Resources Board 2016:1-2)

Western science recognizes four distinct herds of barren-ground caribou in this area based on their fidelity to calving grounds as follows – Tuktoyaktuk Peninsula, Cape Bathurst, Bluenose-West, and Bluenose-East. For discussion purposes, these herd designations are used throughout this summary, however, it is important to note that in many cases, it is not possible to attribute information to a specific herd. This is at times due to how the information was initially documented, but also due to the fact that many harvesters hunt caribou in areas where their ranges overlap, and it is not possible to reliably distinguish which herd an animal is from by physical characteristics. Specific herds tend to be encountered by Inuvialuit, Gwich'in, Sahtú Dene and Métis, and Tłı̄chǫ communities as follows:

- Tuktoyaktuk Peninsula (Tuk Pen or TP) caribou tend to be harvested by people from Tuktoyaktuk; their winter range overlaps with that of the Cape Bathurst Herd, and harvesters do not distinguish between these caribou and Cape Bathurst caribou (Nathoo 2022).
- Cape Bathurst (CB) caribou usually migrate through two settlement areas / regions and are typically harvested by Inuvialuit and Gwich'in communities in the course of their annual cycle, including: Aklavik, Inuvik, Tsiigehtchic, and Tuktoyaktuk (ACCWM 2014). Ranges of Cape Bathurst and Bluenose-West herds overlap in areas where Gwich'in hunters encounter them; knowledge-holders attest that the two herds cannot not generally be differentiated by sight and therefore refer to all barren-ground caribou in this area as 'Bluenose' (Benson 2015).
- Bluenose-West (BNW) caribou usually migrate through three settlement areas / regions and are harvested by 13 communities: Aklavik, Fort McPherson, Tsiigehtchic, Inuvik, Tuktoyaktuk, Paulatuk, Colville Lake, Fort Good Hope, Norman Wells, Tulít'a, Dǎ́l̄nǎ, Ulukhaktok, and Sachs Harbour (ACCWM 2014). Most of the BNW information in this compilation is from Paulatuk, Inuvik, and Colville.
- Bluenose-East caribou migrate through four settlement areas / regions in the Northwest Territories and into the western portion of the Kitikmeot Region, Nunavut (NU). The herd may

³ Note that because the SARC 2017 report is a compilation of existing sources of TKCK, the primary sources cited there would normally be reviewed and cited in a document such as this. That was not feasible under the scope of this work; instead, readers are encouraged to consult the primary sources in that document to confirm information.

be harvested by nine communities: Wrigley, Norman Wells, Tulít’a, Déljñę, Whatì, Gamètì, Behchokò, Paulatuk, and Kugluktuk (ACCWM 2014).

While these caribou may also be encountered and harvested by other community members, such as those living in Kugluktuk (Nunavut) and the Dehcho Region, information from those areas could not be included in the scope of this work.

1.1 How this report is organized

The first section of this report and the correlating table (Table 1) summarize recent Indigenous Knowledge regarding the status and trends of Cape Bathurst, Tuk Pen, Bluenose-West, and Bluenose-East caribou populations. This information has been compiled primarily from Advisory Committee for Cooperation on Wildlife Management (ACCWM) status reports from 2019-2022, and is intended to provide context for the following discussions regarding the cumulative impacts affecting these herds.

The remainder of the report and tables are divided into two main sections based on the source of the impact, i.e., Natural Factors (Table 2) and Human Factors (Table 3). Indigenous Knowledge of cumulative effects has then been sorted into the following sub-categories based on modelling requirements:

Natural Factors:	Human Factors:
<ul style="list-style-type: none"> • Predators and competitors 	<ul style="list-style-type: none"> • Land use (development)
<ul style="list-style-type: none"> • Wildfires 	<ul style="list-style-type: none"> • Harvest (and harvest practices)
<ul style="list-style-type: none"> • Climate and climate change 	<ul style="list-style-type: none"> • Governing systems and knowledge
<ul style="list-style-type: none"> • Caribou health (condition) 	

Within each topic or sub-category, information is generally organized geographically, from the northwest to the southeast across the NWT – meaning that information for Cape Bathurst and Tuk Pen caribou is usually presented first in a section, followed by Bluenose-West then Bluenose-East. It is important to remind the reader that in some areas, information may not be differentiated by specific herds. This is most often true for Inuvialuit knowledge regarding CB and TP caribou, and Gwich’in knowledge of CB and BNW, due to the overlapping ranges of the herds, but is also true in other circumstances where knowledge was shared but a herd not specified.

The final topic – *Governing systems and knowledge* – while difficult to accommodate in modelling and risk assessment exercises, was created to better represent Indigenous perspectives regarding the critical importance of maintaining respectful relationships with caribou, and having the governance authority and ability to make impactful decisions that will help tuktuvialuk / vadzaih / ɔedə / neregha goɔekwë / ʔehdaɔla ɔekwë and Sahtı ɔekwò survive into the future. For many Indigenous peoples in the Northwest Territories, the relationship with caribou is a spiritual one; maintenance of this relationship is often seen as a sacred obligation and a critical part of sustaining caribou.

Dene stories tell that in the beginning of time, everything was equal, and people shared a universal language with the natural world around them. This increasingly caused chaos and conflict, so the Creator sent down Yamózha to establish order and respectful relationships on this earth. They assigned ɔeɔa (laws or codes of ethics), roles and responsibilities. People were given the role of land stewards, tasked with looking after everything on the land for

future generations. To this day, Sahtú Dene and Métis feel a responsibility in land governance according to Dene ɾeɾa (laws) and Dene ts'ı́ı (ways of life) (SRRB 2020).

When traditional protocols and responsibilities are not continued, systems may break down and caribou may make themselves unavailable to people. As a result, Indigenous frameworks and approaches to taking care of caribou tend to be much broader in scope and consider more economic, cultural, and societal factors than Western science based ones.

2.0 Observations regarding status and trends⁴

2.1 Cape Bathurst and Tuktoyaktuk Peninsula caribou

At annual meetings in November 2020 and 2021, members of the Advisory Committee for Cooperation on Wildlife Management met and determined the status of Cape Bathurst caribou to be 'yellow' – defined as intermediate and increasing (ACCWM 2022, 2021). This decision was based on available information from both Western science as well as Traditional / Indigenous and Community Knowledge (IK and / or TKCK⁵) and is seen as an improvement over previous years when the status of this herd was assessed as 'red' or low (ACCWM 2020, 2019). In 2021 the ACCWM noted that the CB population continues to be slowly recovering based on the community observations presented, and that this was the second year in a row in which indications are that the status of the herd is improving (2022). It was also noted that currently, hunters from Tuktoyaktuk make up the majority of those harvesting from this herd, as there are few Gwich'in hunting in the Cape Bathurst area (ACCWM 2022, 2021). In 2021 community knowledge was provided from two regions: the Inuvialuit Settlement Region (ISR) and the Gwich'in Settlement Area (GSA) (ACCWM 2022).

In the ISR, information from each community differs as they see the caribou at different times – Inuvik harvesters⁶ tend to see more males when they are in the Anderson River and Husky Lakes areas, while harvesters from Tuktoyaktuk are closer to the calving grounds and tend to see more cows (ACCWM 2022). There have been consistent reports from Tuktoyaktuk harvesters that there has been a steady population increase over the last four to six years in the area where the Tuk Pen and Cape Bathurst caribou ranges overlap (ACCWM 2020). While animals are not congregated in the large herds typical of the 1970s and 1980s, there are many small groups of caribou across the range, and general consensus is that the population is increasing, with hunters seeing good numbers of cows, bulls, and calves (ACCWM 2021, 2020, 2019). Inuvik harvesters indicate that the Cape Bathurst population size is steady from year to year but low, noting that they find it hard to assess changes in abundance as the Cape Bathurst distribution has changed (ACCWM 2022, 2020, 2019).

Very few sources of information regarding Indigenous Knowledge of the Tuk Pen herd specifically were found during this project. Rosemin Nathoo – the Wildlife Biologist for the Wildlife Management Advisory Council (NWT) – confirmed that there is indeed an information gap in regards to documented sources of

⁴ See Table 1.

⁵ Information is often presented in the SARC 2017 report as 'Traditional and / or Community Knowledge' or TKCK, and in many cases it is not possible to distinguish whether that information is from Indigenous or non-Indigenous community / local knowledge sources. As a result, the TKCK acronym has also been used here when necessary in reference to some information from that report.

⁶ The terms 'knowledge-holder' and 'harvester' are used interchangeably in this report to indicate Indigenous individuals with knowledge of these herds.

information for Tuk Pen caribou. This is in part due to the fact their range overlaps that of the Cape Bathurst.

Tuk Pen was not even really considered a separate herd until relatively recently, when the collaring and population surveys began. Particularly for Cape Bathurst and Tuk Pen, too, most knowledge holders understand Tuk Pen and Cape Bathurst to be the same herd. They winter together and even migrate together, and in my understanding, only really split up in spring and summer. Cape Bathurst caribou will move through the Tuk Pen area in the spring, which is why there is a spring harvest closure on the Tuk Pen in zone I/BC/08 as they are migrating through. Another thing that is a little sticky about Tuk Pen is that the reindeer used to be herded in that area in the spring and summer, so likely there weren't even much caribou there until the reindeer moved to Richards Islands (Nathoo 2022).

It has been suggested that reviewing community meeting notes could be a further source of information for the Tuk Pen caribou; that work could not be done under the scope of this project.

In 2021 Gwich'in harvesters indicated that the CB population is stable or slightly decreasing (ACCWM 2022). While Gwich'in have not been consistently encountering Cape Bathurst caribou in recent years, overall, people stated there were less caribou now than in the distant past and they are not being seen in their usual areas (ACCWM 2021, 2020; Benson 2015).

The SARC status report concluded that based on available Traditional and Community Knowledge there is some evidence the Tuk Pen herd may be increasing, while the Cape Bathurst trend is less clear (2017).

2.2 Bluenose-West caribou

During the 2020 and 2021 status meetings, the ACCWM determined the Bluenose-West herd status to be 'orange' – intermediate and decreasing; this status was unchanged from the preceding two years, so the population is considered to be stable (ACCWM 2022, 2021, 2020, 2019). Knowledge-holders from Paulaktuk, Tuktoyaktuk, Colville Lake, and Inuvik are those most often encountering Bluenose-West caribou. Inuvialuit and Gwich'in representatives pointed out that the community knowledge collected by the Wildlife Management Advisory Council (NWT) and the Gwich'in Renewable Resources Board (GRRB) for Bluenose-West caribou is largely identical to that presented for Cape Bathurst (ACCWM 2021). The Paulatuk Hunters and Trappers Committee (HTC) and was also able to provide BNW observations from their community, and Sahtú information was provided by representatives of the Behdzi Ahda First Nation (Colville Lake) (ACCWM 2022, 2021).

In the Inuvialuit Settlement Region, Paulatuk representatives report that Bluenose-West caribou have changed some of their movement patterns – they have been migrating close to the community and staying in the area year-round lately (ACCWM 2021). The population has been described as 'stable for a long while' (ACCWM 2022), either 'levelled out' or increasing in the last few years, and appears 'vibrant and healthy' with big groups and abundances not seen since the 1980s (ACCWM 2022, 2021, 2020, 2019). Because distribution and movement patterns have changed, Inuvik harvesters are not encountering BNW caribou consistently, but there is little evidence that people are hunting them and an overall perception that the population may be stable (ACCWM 2021, 2020, 2019).

For the Gwich'in Settlement Area, representatives stated that because harvesters were not encountering BNW caribou very much in recent years, there were relatively few observations in regards

to population trends, but observations suggest that the population is either stable or slightly decreasing (ACCWM 2022, 2021).

Colville representatives indicate that the herd is more ‘spread out’, and their migration route has shifted further north, but the population seems to be about the same as previous years and is considered stable (ACCWM 2021, 2020; SRRB 2020). Harvesters in Délı̄ne have not generally been encountering BNW caribou as much as in the past and say they are in much smaller numbers than usual (ACCWM 2020).

The SARC status report concluded that no clear trend in Bluenose-West caribou could be determined based on available TKCK resources (2017).

2.3 Bluenose-East caribou

During annual meetings held in 2018, 2019, and 2020 the ACCWM determined the status of the BNE herd to be red’ or low (ACCWM 2021, 2020, 2019). In November 2021 the Member Boards were unable to reach consensus regarding the status of the herd, with community reports indicating several positive trends (such as the increased twinning of calves and a rise in sub-adult population numbers in 2021), and the scientific data indicating no statistically significant change in population since 2018 and no increase in the number of adult females (ACCWM 2022). In April 2022 the Boards decided on a hybrid red (low) / yellow (intermediate and increasing) status to acknowledge the positive indicators while still highlighting the fact that there are concerns about the BNE population; there are hopes that the herd will be in the yellow range by November 2022 (ACCWM 2022).

Representatives from Délı̄ne reported on BNE caribou in the Sahtú at the 2021 status meeting; Tłı̄chǫ knowledge-holders also provided information on the herd (ACCWM 2022). Additional relevant information was provided by Kugluktuk (NU) representatives, but that information has not been included in this report.

Throughout the range of ʔehdaı̄la ʔekwǫ́ or ʔedə (Bluenose-East caribou) in the Sahtú Region, community members are consistently reporting seeing fewer caribou, especially since 2018 (ACCWM 2021, 2020, 2019; HG 2022b, 2021b). In 2021 Délı̄ne harvesters again said that the caribou are staying far from their community and there are few observations they can share about the herd as a result (ACCWM 2022). Knowledge-holders have consistently expressed concerns over the declining availability of these caribou, stating that they are not seeing them around their traditional places or near communities, and when they have gone to look for them, they have not seen them in large groups but alone or in pairs (ACCWM 2020).

Similar observations are being documented in the Wek’èezhii (Tłı̄chǫ Region), where knowledge-holders say overall there are fewer animals now and they are seen in smaller groups than before; places where there used to be Sahtı ʔekwǫ́ no longer even have tracks (TRTI 2022; ACCWM 2021, 2020, 2019). There are also observations that caribou are changing the way they move – for example, they are no longer going near communities such as Gamèti and Whatı̄ (ACCWM 2019). In 2020, the Tłı̄chǫ Research and Training Institute extended their ‘Ekwǫ́ Nàxoèhdee K’è: Boots-on-the-Ground’ monitoring program to a new base camp at Deèzàati to start monitoring Sahtı ʔekwǫ́, but the caribou were too far north and teams only saw two caribou in four weeks (TRTI 2021). Due to disruptions in the program caused by COVID-19 in 2021, it was not possible to present new monitoring results for that year (ACCWM 2022).

The SARC concluded that the Bluenose-East herd was likely decreasing in its 2017 status report.

2.4 Cumulative effects across the four herds

For barren-ground caribou that are known to be in decline the 2017 status report states:

The causes of the decline are complex and include habitat loss, forest fires, reduced forage, climate change, unfavourable weather conditions (icing, extremely hot summers), industrial development, increased access, increased predation, increased disturbances, hydroelectric regulation of reservoir levels, land use in the calving (and rutting) grounds, increased insect activity, overharvest, overharvest of females, habitat fragmentation, and competition from other animals such as muskoxen. Lack of hunter knowledge of and compliance with traditional laws and protocols is also considered to be a possible cause of declines (SARC 2017:xx).

Many of these impacts were also raised in the other sources of Traditional and Indigenous Knowledge reviewed for this report; each is explored in greater detail below. While the SARC 2017 barren-ground caribou status report is a major source for this work, a greater emphasis was placed on reviewing and compiling information documented since 2016 – the intention was to minimize duplication of information and effort, as well as to build on the comprehensive TKCK compiled in the SARC report. Information from primary sources dated prior to 2016 is included only when it is herd or community specific and that level of specificity was not retained in the preparation of the SARC report (e.g., see Benson 2015 and ACCWM 2014).

It is important to note that for the most part, Indigenous knowledge-holders across the north recognize that cycles in abundance are a natural dynamic for barren-ground caribou populations, with the length of the cycle being estimated from anywhere as short as ten years to as long as 80-100 years (see discussions in SARC 2017 and ACCWM 2022, among others). Nonetheless, there are also observations that peaks in these cycles of abundance are not as high as they used to be and these changes could be due to various novel natural and human-caused factors (SARC 2017).

3.0 Natural Factors: Key themes⁷

3.1 Predators and competitors – Including other species interactions

In most regions of the NWT Indigenous Knowledge indicates that wolves and grizzlies are the primary predators of barren-ground caribou (Winbourne 2021; SARC 2017; ACCWM 2014).

Most Traditional and / or Community Knowledge sources indicate that people are seeing a lot more wolf sign and large wolf packs in recent years, however there are concerns that it is not just wolves but populations of several predator species that are increasing throughout the range of barren-ground caribou, with grizzly bears, wolverines, and eagles most often mentioned (ACCWM 2022, 2021, 2020, 2019, 2014; SARC 2017; Benson 2015). Predation by wolves and other predators was noted as a limiting factor for barren-ground caribou in the 2017 assessment report, and it has been suggested in several regions that predator numbers may be increasing due to a combination of factors, such as a decrease in hunting pressure and an influx of alternate prey species such as muskoxen (HG 2021a; ACCWM 2020; SARC 2017).

⁷ See corresponding Table 2.

There are several recent observations within the range of CB / TP / BNW caribou that may indicate that the increase in wolf numbers may be starting to plateau (ACCWM 2022, 2021, 2020). In 2021 Inuvik harvesters said that a lot of wolves were being harvested, however there are still a lot fewer people that harvest wolves than caribou (ACCWM 2022). Despite a focus on wolf predation and control in some recent public processes in the NWT, there are many indications that the grizzly population in particular is very high and also seen as a threat across the range of these herds (ACCWM 2022, 2021, 2020, 2019, 2014; HG 2021a). Grizzly bear predation has been described by Traditional Knowledge holders during the post-calving season, and during the calving period when calves are the most vulnerable (SARC 2017). Wolverines will also scavenge caribou carcasses and have been seen killing caribou (SARC 2017); some harvesters in both the ISR and GSA noted increases in wolverine abundance in 2021 (ACCWM 2022).

In the Sahtú, Traditional Knowledge teaches that all things are connected and co-exist in balance when systems are healthy; as a result, predators (including humans) are generally seen to be part of a working system that sustains caribou, and the concept of ‘competitors’ is not necessarily one shared by Dene (HG 2022b; ACCWM 2021; DEWG 2021; Winbourne 2021). Today, there are environmental and societal changes that may be changing this dynamic. The traditional economy has shifted in many places and there has been a decline in trapping activities; this has allowed for an increase in many types of furbearers (HG 2022b; ACCWM 2014). People are seeing increases in predator populations such as wolves and grizzlies, and there are concerns about increasing levels of caribou predation in some areas (ACCWM 2021, 2020, 2019, 2014; Winbourne 2021). The issue of controlling predators can be a sensitive topic in this region. Some knowledge-holders believe that a predator like the wolf is a spiritually powerful animal that has an important role in ecosystems by helping to maintain balance in the world and keeping caribou healthy; not treating wolves with respect can have consequences such as physical harm and sickness (ACCWM 2021; DEWG 2021; Winbourne 2021; SRRB 2016).

Most of these changes are also being observed in the Wek’èzhii (Tłı̨chǫ Region), where elders say it is harder to know what ‘balance’ is and how to maintain it now, as climate change and human activities are making the world less predictable (TRTI 2019). Tłı̨chǫ knowledge-holders have been raising concerns about increases in predator populations and levels of caribou predation for at least 10 years – this includes observations of both wolves and bears (ACCWM 2021, 2020, 2019, 2014). As in the Sahtú, many Tłı̨chǫ teachings indicate that wolves and bears have relationships with caribou that are bigger than just their actions as predators, and that dįga (wolves) are sacred and a culturally important species (ACCWM 2022, 2021; WRRB 2016). Nonetheless, as both Bathurst and Bluenose-East caribou have become less available despite harvest restrictions in the region, Tłı̨chǫ organizations made a decision to partner with ENR on a joint management plan aimed at reducing the wolf population on the winter ranges of the BNE and Bathurst herds, including provisions for training harvesters and monitoring wolves with tracking collars. Over 200 wolves were removed in 2021 and 2020 – all from areas where most of the Bathurst and BNE herds were wintering (TG and ENR 2022).

Tłı̨chǫ representatives have been reporting several new species on the barren-lands and in communities along the treeline, such as moose, muskoxen, and wood bison – wood bison are seen as bringing predators and disease (e.g., anthrax) into barren-ground caribou range as well as competing for forage that has already been impacted by forest fires (see SARC 2017). New predators are also being seen, including more foxes and bald eagles, which could be killing calves on the calving grounds (TRTI 2022; SARC 2017). There is widespread acknowledgement of the complexity of the relationship among wolves, caribou, and alternate prey such as muskoxen and moose (HG 2022b; Winbourne and Benson 2021).

Muskoxen are also found in the Inuvialuit Settlement Region, in the western portion of the Gwich'in Settlement Area, and across much of the Sahtú Settlement Area (SSA); they are currently increasing in abundance and expanding their range following their extirpation from mainland NWT over 100 years ago (Winbourne and Benson 2021). There are some recent observations that while there are more muskoxen on CB / TP caribou range (ACCWM 2022), they seem to learn to use the same area with time (HG 2021a; ACCWM 2021, 2019). This is a slightly different message to observations from five to ten years ago that mostly indicated the presence of muskoxen deters caribou (see Winbourne and Benson 2021, SARC 2017, and ACCWM 2014, among others). Muskoxen negatively impacting barren-ground caribou is a prevalent theme in many parts of the Sahtú region, where people are reporting increasing numbers of muskoxen and have concerns that they may be causing caribou to move away from their former areas (ACCWM 2022, 2021, 2020, 2014; DEWG 2021). Across regions there are varied points of view about the relationship between muskoxen and caribou; some IK sources cite direct competition between muskoxen and caribou for food / habitat, others say they share habitat and cycle independently (see Winbourne 2021; Winbourne and Benson 2021; ACCWM 2014 among others).

In the northern portion of the NWT, there are areas where barren-ground caribou and domesticated (or formerly domesticated) reindeer may come into contact with one another; there are many observations that reindeer and barren-ground caribou are 'mixing', and that reindeer and muskoxen are moving further south and west (ACCWM 2022; HG 2021a; ACCWM 2020, 2019; SARC 2017; Benson 2015). Harvesters in Paulatuk reported seeing many reindeer and moose in 2021 (ACCWM 2022). TKCK included in the 2017 status report indicates that caribou and reindeer hybridization does occur and that these hybrid animals rut and give birth earlier than barren-ground caribou (SARC).

There is also a recent theme in some Sahtú and Gwich'in communities that woodland caribou and moose are increasing in abundance and are being seen in areas where they didn't used to be, however, these initial observations do not mention a negative impact on barren-ground caribou as a result (ACCWM 2022, 2021, 2020; HG 2022b).

3.2 Wildfires

Relatively little recent information (*i.e.*, since 2016) regarding the impact of wildfire on caribou habitat use was found in the sources reviewed for this compilation. This could be due to the fact that during the past two years relatively low numbers of forest fires were experienced in the NWT. In preceding years concerns about the frequency, intensity, and impacts of forest fires in the NWT have been common and well-documented (see SARC 2017).

While it is recognized that wildfires can impact caribou habitat and the animals' use of an area, in recent meetings in the ISR, Inuvialuit knowledge-holders said that they don't consider fire to be a big issue in their area – it's something people have always lived with, and caribou do eventually return to burned areas of habitat (HG 2021a). In regards to CB / BNW habitat, Gwich'in knowledge-holders have observed that forest fires can change the caribou food supply for 10-40 years, impacting their migration routes and feeding areas, but once things grow back the land is rejuvenated (Benson 2015).

Sahtú communities have been amongst those most consistently expressing concerns about the impacts of fire on caribou and their habitat, saying there are more wildfires now than in the past (HG 2022a, b; DEWG 2021; SRRB 2016). Knowledge-holders in the range of BNE caribou recognize fire as a natural part of ecosystems, however, many people are reporting not just higher numbers of fires but more intense

fires in recent years (HG 2022a, b; DEWG 2021; ACCWM 2014). Tree stands reduced by fire mean less shade for caribou and a lengthy habitat recovery time due to the fact that lichen can take decades to grow back (HG 2022a; SARC 2017; ACCWM 2014).

In the Wek'èezhii (Tłı̄chǫ Region), there are also many observations that forest fires have had a substantial impact on barren-ground caribou habitat and behaviour; people have noted that caribou avoid burned areas for years afterwards and with the growing extent of fires they are having a hard time finding enough to eat (ACCWM 2020, 2019, 2014). In the forested winter range of BNE caribou wildfire can impact herd movements and access to key wintering areas (TG and ENR 2022; WRRB 2016). Elders have noted that there is much more wildfire today than in the past (TRTI 2022).

Forest fires are considered one of the dominant threats to barren-ground caribou habitat in the NWT, and Traditional Knowledge holders generally agree that fires can have a significant adverse impact on habitat, often leaving it unsuitable for decades (SARC 2017). Although forest fire is a dominant concern in the winter range, which tends to be below the treeline, there are also concerns about fires in the summer ranges of some of the herds as well, particularly their calving grounds, suggesting that fire is an issue throughout the range of the species (SARC 2017).

Traditional and Community Knowledge regarding the impact of wildfire across regions of the NWT was summarized in the 2017 SARC status report on barren-ground caribou as follows:

The loss of winter range and forage from forest fires has a significant impact on barren-ground caribou. The number, intensity, and duration of forest fires appears to be increasing in the NWT. Traditional knowledge holders generally agree that fires dramatically impact habitat, often leaving it unsuitable for decades, if not centuries, and forcing barren-ground caribou to relocate to more desirable habitat. These large-scale impacts to habitat reduce survivability of calves, reduce physical condition of adults, and also influence migration patterns. (SARC 2017:xiv)

TKCK across the NWT suggests that it can take anywhere from 10-100 years before the lichen has grown back enough that caribou migrations and cycles return to burned areas; the threat from forest fires is seen as imminent in the NWT, and likely to increase in the future (SARC 2017).

3.3 Climate and climate change – Including weather

Inuvialuit knowledge-holders are relating many changes to environmental conditions that they attribute to climate change, and they say there is a rise in signs in recent years. Some of the most consistent themes are:

- Seasonal timings have changed – freeze-up is 2-3 weeks later and thaw / break-up is 2-3 weeks earlier than before, and snow is coming later (ACCWM 2022, 2021, 2014; HG 2021a); every year there is less ice on the lakes (ACCWM 2022); some Tuktoyaktuk harvesters have seen caribou calving earlier in April now instead of May (ACCWM 2019); caribou are coming south later in fall now and coming out of the treeline later in spring (ACCWM 2022, 2021, 2020, 2014).
- There is more permafrost melt / exposure – people see increasing evidence of coastal erosion, more landslides, and slumping; land is soft underfoot and it is harder to travel (ACCWM 2022, 2021, 2020, 2019; HG 2021a). Caribou get stuck in the mud (ACCWM 2022).

- Vegetation is changing – some years there are hardly any berries, but each year there are more willows and alders (ACCWM 2022; HG 2021a).
- Caribou distribution and movement patterns have changed – Changing climate patterns affect where caribou go and their distribution and migration routes have shifted as a result (ACCWM 2022, 2020, 2019; HG 2021a).
- Weather is different – temperatures are warmer temperatures and there are increasing icing events / frozen crust on snow, making it hard for caribou to get food and damaging their legs (HG 2021a; ACCWM 2020). Wind and storm patterns have changed and become unpredictable (ACCWM 2020). There is more rain now (ACCWM 2022).

Annual and geographic variability is also noted by harvesters however – for example, some ISR representatives suggested that the cooler, wetter summers over the past few years have likely benefited caribou most recently, as there were fewer bugs and less need for animals to travel to the coast for insect avoidance, making for healthier caribou; also, while there was freezing rain in the past couple of years, it was not likely bad enough to make crust on snow that would limit access to food (ACCWM 2022, 2021, 2020). In contrast, for caribou near Paulatuk, poor summer weather and extreme icing events in December / January likely had a strong negative effect on caribou (ACCWM 2019).

Some of these observations from the ISR are reflected in those of Gwich'in knowledge-holders, who say that they are also concerned about the things they are seeing due to climate change. Main messages in the GSA are that it used to be colder – it's generally warmer and wetter now than it used to be – and people are also seeing a lot of landslides and melting permafrost (ACCWM 2022, 2020, 2019, 2014), as well as forest fires, erosion, changes to caribou movement patterns, extreme icing events, growth of willows, and changes to seasonal timings (ACCWM 2022; Benson 2015). People concluded that weather may be having the greatest negative impact on caribou today, with harsh or strange weather and icing events causing them to starve (Benson 2015; ACCWM 2014).

Sahtú knowledge-holders also report widespread evidence of climate change and concerns in regards to how it may be impacting caribou habitat in the region, including: permafrost melting, icing / crusted snow, more erosion, changes in migration routes, unexpected and unusual weather, warmer air and water temperatures, longer ice-free periods, more wildfires, more willows and shrubby vegetation, and swampy ground (HG 2022a, b; ACCWM 2022, 2021, 2020, 2019; DEWG 2021).

Délıne Got'ıne report that overall, the climate is getting warmer; this causes water levels to rise, results in more erosion, and affects how caribou travel on the land and navigate water crossings (HG 2022b; DEWG 2021; SARC 2017). Hotter weather has also resulted in warmer surface waters in Great Bear Lake (HG 2022b), fewer ice patches / snow to protect the caribou, melting permafrost, longer ice-free periods, and an increase in shrubby vegetation in some areas (HG 2022a; SARC 2017). In some locations caribou are seen getting caught / bogged down in the mud (HG 2022a), whereas around Délıne, people say the land is drier, and Ɂekwé seem to be travelling differently on the land (DEWG 2021). Wind and weather patterns have also changed; increased frequency of freezing rain or rain-on-snow events make it hard for caribou to travel and access their food in winter (ACCWM 2021, 2020, 2014; SARC 2017). Overall, there is a worry that there is less good habitat for Ɂekwé to survive now, and habitat protection actions are being planned as a result (DEWG 2021).

Climate change is also noted to be affecting caribou in the Wek'èezhii (Tı̄chq̄ Region) (TRTI 2022), where it is presenting as warmer winters with less snow – this makes it easier for caribou to find forage but

also makes it easier for predators to hunt; there are a lot more areas with thin ice now, and caribou have been seen falling through the ice (ACCWM 2020, 2014). These conditions also impact harvesters, making it difficult and unsafe to hunt in spring – a time when people usually harvest cows (WRRB 2016). Some say that the snow condition has changed from a dry snow to a soft, slushy snow (TRTI 2022). There are observations that berries and vegetation are not as rich or plentiful as before, and there are more warble flies some years (ACCWM 2022, 2020). Knowledge-holders have noted that lichens are the prime food for caribou, but when the weather gets too hot they dry up; there is evidence that climate change is resulting in drier summers, less permafrost, more winter ice, and more forest fires (TRTI 2022). Overall, climate change means changing vegetation, younger forests, less insect and heat refuge, and changes in food quality and quantity that caribou rely on (TRTI 2022).

Climate change was identified by knowledge-holders as another factor impacting barren-ground caribou in numerous ways in the SARC 2017 report.

3.4 Caribou health (condition) – Including productivity, recruitment & adult composition

Climate change manifesting as deep snow and icing conditions from freezing rain were noted as factors that negatively impact the body condition and health of barren-ground caribou on many parts of their range in the SARC 2017 status report.

Barren-ground caribou physical condition and productivity may be negatively affected by disease and parasites; the degree to which they impact caribou varies across the NWT (SARC 2017). Caribou physical condition tends to be assessed by harvesters using a number of common indicators such as: condition of fur and internal organs, fast or slow movements, body condition (fat and muscle tone), meat quality, herd size, whether the head is held erect, and presence of a strong leader (see SARC 2017). Prior to 2017 there were indications that in general, the number of diseased barren-ground caribou was increasing, and there were new and different types of diseases and conditions being reported, including, for example, lungs stuck to rib cages, pus in joints, tape worm cysts, and ‘sandpaper skin’ (SARC 2017).

Most recently there are several positive indicators of caribou physical health and population health being reported in the ISR. Inuvialuit harvesters in the range of Tuk Pen and Cape Bathurst caribou say they are seeing more caribou each year, and more calves in the last few years – including lots of twins, and healthy looking animals (ACCWM 2021; HG 2021a). Both bulls and cows are fat and healthy, there are fewer warble flies and generally no other signs of sickness in lungs or livers; hunters from Tuktoyaktuk said caribou are almost ‘obese’ lately, with both young bulls and cows all having a lot of fat (ACCWM 2022 2021, 2020). Inuvik hunters say bulls seem to be putting fat on earlier now, and there are fewer signs of Brucellosis or Besnoitia (ACCWM 2022). Inuvik harvesters noted that it is hard for them to comment on adult composition, as for the most part, they encounter Cape Bathurst caribou in winter, after the bulls and cows have separated; it is similarly difficult to comment on productivity, as cows have not calved yet at that point (ACCWM 2022).

For Bluenose-West caribou, recent reports are mixed in regards to body condition and health, with some reports of skinny bulls and evidence of disease in 2021, but healthy caribou seen overall (ACCWM 2022). In 2019, Paulatuk hunters had observations of good numbers of cows and bulls, lots of calves, and animals with up to 3-5” of fat (ACCWM 2020). In 2021 there was a wider variety of observations, with some hunters reporting ‘obese’ caribou and others skinny ones, but consistent numbers of bulls returning each year (ACCWM 2022). In 2021 people reported seeing a lot of calves – indicating good

population growth – however, it was also noted that calves seem to be staying with their mothers longer (ACCWM 2022).

Because Gwich'in hunters are not encountering Cape Bathurst or Bluenose-West caribou as much lately, there are few recent observations regarding health or productivity, but harvesters said they are seeing a mix of both positive and negative indicators; for example, average body condition was reported as good in 2021, with animals seeming healthy and having no signs of disease, but productivity was said to be low and there may have been fewer males than usual (ACCWM 2022). In a 2015 study, harvesters said that while body condition varies with weather and climate, caribou tend to be for the most part healthy, with the possibility their health has declined somewhat, due to poor weather, icing events, and / or predation (Benson 2015).

Sahtú harvesters that get Bluenose-West caribou said that bull to cow ratios seem to be roughly 1:1 lately and that animals are as healthy and fat as they normally are (ACCWM 2021, 2020; SRRB 2020). There were some reports in 2019 that some caribou did not have as much fat on them, suggesting that maybe they were having troubles grazing (ACCWM 2019).

There was little Indigenous Knowledge that was specific to BNE caribou health and / or body condition available in the sources reviewed for this report. In Délı̄ne, a recent harvest of 12 caribou at Caribou Point indicated that eight females were pregnant and in fair condition, and it was reported that a group of caribou observed in April were in fair condition with some chafing on legs from ice crust on snow (ACCWM 2020). Several years ago, Sahtú knowledge-holders reported that caribou were not as fat anymore (ACCWM 2014); others have noted that insects cause ɬekwé stress, so any increases in insect abundance may affect caribou health negatively (DEWG 2021). High numbers of insects cause caribou to run around in an attempt to seek refuge, resulting in decreased body condition and, in extreme cases, mortality from heat exhaustion (SARC 2017).

In the Wek'èezhii (Tı̄chq̄ Region), there were some observations of caribou not being as fat as in the past; people suggested this could be because of burns or contaminants (ACCWM 2014). More recently it has been noted that caribou seem tired and stressed; females are often giving birth prior to reaching the calving grounds – this could be due to poor habitat condition (WRRB 2016). In 2019 it was reported that caribou seemed to have a lot of warble flies, and animals that were harvested were healthy, but skinnier than before; some harvesters were seeing white spots on meat, pus on meat and legs, as well as 'white stuff' on legs (ACCWM 2020). Also in 2019, people said that not many yearlings were observed, but there were equal amounts of bulls and cows (ACCWM 2020). At a recent workshop about both kokèti and Sahtı̄ ekwò (Bathurst and Bluenose-East caribou) participants stated that in 2016 and 2017 the weather was warm, dry and buggy – many injured caribou were seen but also many calves; since 2018 the weather has been good for caribou – wet and cool with fewer insects – and animals are fat and healthy, but there are few calves (TRTI 2022). Mines and chemicals are pointed to as potentially leading to sick or injured caribou; at active mines, blasting and explosions can directly injure caribou, or lead to loose gravel with rocks that can cause caribou to hurt their legs, and at both active and abandoned mines, chemicals and dust on the land can damage hooves and cause limping caribou (TRTI 2022). More on this topic is included in the **Land use** section below.

Traditional and Community Knowledge also points to caribou collaring directly impacting barren-ground caribou through hair loss, icing, interference with feeding, and irritation or strangulation if the collar

shifts (HG 2022b; SARC 2017; WRRB 2016). Further information regarding the impacts of scientific research and monitoring on caribou is included in ***Governing systems and knowledge*** below.

4.0 Human Factors: Key themes⁸

4.1 Land use (development) – Including human disturbance

Industrial development or resource extraction (mining, oil and gas, hydroelectric development, etc.) is considered to be one of the most significant factors affecting barren-ground caribou in the NWT; the impacts from development are thought to be worse in the winter, potentially resulting in loss of habitat, increased predation, and added hunting pressure, while development on or near calving grounds and migration corridors is also considered to have negative impacts on caribou (SARC 2017). For the most part, caribou are said to avoid large development activities, potentially resulting in altered migration routes, with caribou sometimes not returning to affected areas for many years. Resource exploration and development have increased in some regions of the NWT, and there is concern about the ability of some herds to withstand current and future pressures (SARC 2017).

The main land use impact likely to be impacting barren-ground caribou in the ISR is the newly completed Inuvik-Tuktoyaktuk Highway (ITH). The highway opened in November 2017 and may be leading to increased access to Cape Bathurst and Tuk Pen caribou on their winter range, as well as many associated impacts that include increased infrastructure, dust on vegetation, permafrost exposure and erosion, as well as other types of human disturbance associated with the all-season road, such as noise and traffic (ACCWM 2022, 2021, 2020, 2019; HG 2021a).⁹ It is as yet unclear whether caribou are habituating to the road, and whether the overall impacts will be negative or positive (HG 2021a; ACCWM 2020, 2019) but there are recent observations that the ITH is changing migration routes and movement patterns (ACCWM 2022). There are increasing concerns that new cabins being built around Aginalik (on Husky Lakes) since the ITH was built are acting like a barrier to caribou migration; harvesters estimate there may be as many as 100 cabins and tent frames in the area where the CB caribou used to migrate (ACCWM 2022). Inuvialuit harvesters indicate that caribou are now staying further east, away from the road, and that cows no longer follow bulls into the treeline, but stay on the barrens (ACCWM 2022). In 2021 knowledge-holders from the ISR also commented that they used to see thousands of caribou very close to Inuvik, year-round, but that stopped after seismic activity began, and numbers have been declining since that time (ACCWM 2022).

Little other industrial or human disturbance is taking place on CB / TP / BNW range in the ISR other than flights (associated with military exercises, mining, and research) (ACCWM 2021, 2020, 2019, 2014). In regards to Cape Bathurst caribou, representatives from the ISR presented additional community concerns about increasing boat traffic associated with the cabins at Husky Lakes, saying that when the caribou come down in late summer / early fall they wait to cross the ice, otherwise they have to go all the way around the lake (ACCWM 2022). There were also concerns that at the crossing points there are too many hunters, which is leading to more stress when the caribou are migrating (ACCWM 2022).

⁸ See corresponding Table 3.

⁹ Previous radio-collar information indicates that caribou from both the Cape Bathurst and Tuktoyaktuk Peninsula herds are likely to use the area of the new highway corridor between the months of October and April; caribou from the Bluenose-West herd have also been known to use that area when their numbers are high (ENR 2013).

Gwich'in representatives said there is relatively little land use or human disturbance currently impacting CB and BNW caribou in the GSA (ACCWM 2022, 2021). There are differing points of view as to how much developments such as the ITH and the oil and gas industry are impacting caribou, but some concerns have been consistently raised at annual status meetings for these herds, as has the issue of increases in poaching associated with the new highway (ACCWM 2022, 2021, 2020, 2019; Benson 2015).

For the Sahtú, knowledge-holders said that while caribou are impacted by human disturbance and move away from noise and smells, there has been little or no disturbance in BNW range recently (ACCWM 2021, 2014). Concerns are being raised about impacts that are likely to be associated with the proposed Mackenzie Valley Highway however, such as increases in access, poaching, more erosion, changes to waterways and vegetation, traffic, and noise (HG 2022b, 2021b; ACCWM 2020). People also said that they are worried the development will impact waterways and peoples' hunting areas (HG 2022b).

In Délı̨ne, harvesters raised concerns that they cannot provide new information regarding how development may be impacting caribou, as there is less opportunity to monitor caribou now they are far away (ACCWM 2021, 2020). It was also pointed out that with Délı̨ne Got'ı̨ne Government (DGG) efforts to get people back out on the land, more structures are being built and people are moving into some areas where they haven't been for many years; there are observations that these changes could eventually impact the migration of caribou – people have seen caribou migration patterns change in response to hunting in a certain area for generations (HG 2022b). Impacts of land use and development are both direct (e.g., noise, pollution) and indirect (e.g., impacts to caribou habitat). Some of the specific impacts of industrial activities and developments that Sahtú knowledge-holders want to see considered and monitored for caribou include: air and land pollution (e.g., sewage, diesel generators), noise pollution (e.g., helicopters, drilling activities), exploration, roads, and the increased human access associated with roads (ACCWM 2014).

Currently, there is relatively limited industrial development on BNE range in Wek'èezhii (Tı̨chq̄ Region), and no new disturbance with respect to exploration or development (ACCWM 2021, 2020). Nonetheless, there is plenty of evidence regarding the problems that pollution, development, and habitat loss can create for caribou. Mines and chemicals are consistently pointed to as leading to sick or injured caribou; predation, sickness, and stress caused by harassment and disturbance along mine roads were all mentioned as possible causes for lower calf survival or failed pregnancy in cows (TRTI 2022). Mines have resulted in many important changes to caribou and the land. Since the first mine was started in 1996, Elders have seen changes in caribou migration, more abandoned mine sites, and a lot of noise, dust, and contamination (TRTI 2022). Tı̨chq̄ elders have been speaking out about mining developments that block caribou migration routes, and how there needs to be greater understanding of habitats that Sahtı̨ ək̄w̄ need in summer, fall, winter, at water-crossings and narrows, as well as a better understanding of how to treat caribou respectfully (WRRB 2016). Some developments effectively create 'a wall' against caribou migration – airports, highways, and winter roads are barriers and some caribou water crossings have been destroyed by industry (WRRB 2016). Areas around industrial development also cause broader loss of habitat, becoming poor foraging areas due to dust deposition and noise. Overall, caribou are tired and stressed due to lack of food and a need to travel additional distances (WRRB 2016). Some people that feel industrial developments are taking much needed space from caribou, and more places should be 'left alone' or set aside for caribou protection (WRRB 2016).

Specific land use impacts on BNE caribou raised for the Wek'èezhii (Tłı̄chǫ Region) include: noise, traffic, and pollution created by mineral exploration and mining; increased access and harvesting that comes with road development; and increased predator use of roads (ACCWM 2021, 2014). At a recent workshop, participants stressed that not just one variable but several are impacting caribou; mines were identified as one of the important factors (TRTI 2022). In addition, some Tłı̄chǫ elders feel that many non-Dene and younger Dene do not know how to behave around caribou; this is a problem because caribou avoid human activities that demonstrate a lack of knowledge and respect such as building wide winter roads, chasing caribou with snow machines and airplanes, as well as scientific research methods such as collaring (WRRB 2016). More on disrespectful behaviours and their impacts on caribou survival is included in the ***Governing systems and knowledge*** section below.

The 2017 SARC report summarized Traditional and Community knowledge that indicates the current declines being seen in barren-ground caribou herds are, in part, the result of decreases in the amount of suitable habitat.

Habitat fragmentation and degradation is occurring in the barren-ground caribou range as a result of numerous factors: the destruction to habitat caused by forest fires, climate change, access roads, pipelines, mining and mineral exploration projects, hydroelectric developments, disturbances from vehicles and machines, seismic lines, and utility corridors. Available traditional and community knowledge sources have highlighted decline in the amount of suitable habitat in the NWT (SARC 2017:xi)

Resource extraction is identified as one of the most immediate and imminent anthropogenic factors affecting barren-ground caribou. This is largely attributed to the scale of impacts from mining and oil and gas operations, and the fact that resource exploration and development have increased in some regions of both the NWT and Nunavut. The report goes on to say that current and proposed access roads—both winter and all-season—are a serious concern (SARC 2017).

The threat posed by expanding resource exploration and development can in part be countered by the protection of key habitat. While further work remains to be done on this, habitat protection that can be beneficial to barren-ground caribou has already taken place in key areas such as the BNW calving grounds, and can be achieved through land use planning instruments such as the Gwich'in, Sahtú, and Tłı̄chǫ Region land use plans, and the six community conservation plans in place in the Inuvialuit Settlement Region (SARC 2017).

4.2 Harvest (and harvest practice) – Including changes to access, pressure, and regulations

Generally, caribou harvesting patterns tend to shift over the long term in association with cycles in regional barren-ground caribou abundance, and as habitat changes as the result of disturbances such as forest fire (SARC 2017). TKCK sources indicate that relative to harvests 30 or 40 years ago, the total number of barren-ground caribou harvested by subsistence hunters has decreased in much of the NWT; reasons given for this decrease include changing needs, increased costs, and harvest restrictions (HG 2022a, b; ACCWM 2022, 2021, 2020, 2019, 2014; SRRB 2021, 2020; SARC 2017; Benson 2015).¹⁰

¹⁰ All non-Aboriginal harvest of TP caribou has been suspended since 2006; there are no restrictions on Inuvialuit harvest but no hunting allowed Apr. 1-Jun. 15 to allow CB caribou to migrate. All harvest of the CB herd has been suspended since 2007. Non-Aboriginal harvest of BNW caribou has been suspended since 2006; Aboriginal harvest

Currently, the main conservation concern raised in regards to harvesting barren-ground caribou in the ISR is the fact that tags issued as part of a Total Allowable Harvest (TAH) for Bluenose-West are now being used in an area with Cape Bathurst caribou – this could be impacting the CB herd (ACCWM 2021, 2020). The Tuk Pen herd has also started coming into the expanded area of I/BC/06 in winter where tags can be used, and it is difficult if not impossible to tell which herd harvested animals in this area are from (ACCWM 2021). Some additional factors that could be negatively impacting caribou include poaching and selling meat, wastage, and increased access to Husky Lakes and TP caribou with the new highway (ACCWM 2022, 2021, 2019; HG 2021a). Otherwise, harvesters in the ISR for the most part feel that current management actions seem to be working and there are more caribou around – people are generally harvesting less and mostly taking bulls (ACCWM 2021, 2020, 2019). The Inuvik HTC hasn't filled their quota for Cape Bathurst caribou in years, as people are focussed on the Porcupine herd (ACCWM 2022). Nonetheless, some concern was expressed about harvest pressure further north at crossing points over Husky Lakes – where people said there is too much traffic and people are not letting the caribou cross; animals are stopped and turned around at their main migration points because there are too many people and boats (ACCWM 2022). In 2021 Tuktoyaktuk harvesters mentioned that CB harvests are being under-reported, with some individuals poaching and selling meat (ACCWM 2022).

In Paulatuk, harvesters report meeting their needs, but point out that because the harvest study is currently paused, some information about harvest levels is missing (ACCWM 2022). There are indications that while the community hunt was small in 2021, there were more individual hunters and increased traffic (ACCWM 2022).

In the GSA, with good access to Porcupine caribou in recent years and due to changes in BNW migration / distribution, fewer people have been harvesting Bluenose-West or Cape Bathurst caribou (ACCWM 2022, 2021, 2020; Benson 2015). People in this area are also concerned about potential poaching of CB and BNW caribou along the highway (ACCWM 2019; Benson 2015) and similar to some other regions, there are worries that bulls-only harvesting can be problematic for the herd (SARC 2017; Benson 2015; ACCWM 2014).

In the Sahtú region, Colville representatives said that not many people are hunting BNW caribou as they haven't been coming close to the community in recent years (ACCWM 2021, 2020, 2019), and Délı̄neḡ has chosen to curtail their harvest to less than 50 neregha ɬekwê (north shore or BNW caribou) (ACCWM 2020).

Across all regions of the NWT, there have been many changes in hunting equipment (e.g., snow machines, guns) and knowledge / information that have in turn changed hunting practices and success over time (HG 2022a). Traditional and Community Knowledge documented in public meetings in the Sahtú approximately ten years ago indicated that a lot more people were out harvesting, roads had increased access in some areas, and skidoos and all-terrain vehicles had made it easier to hunt (ACCWM 2014). At the same time, people said that in some areas there had been no recent changes in harvesting;

is limited with a quota. Non-Aboriginal harvest of BNE caribou has been suspended since 2006; as of 2019, a total harvest of 193 bulls is allowed in Wek'èezhii, but actual harvest has been much lower in recent years. As the primary harvesting community of BNE caribou in the Sahtú, Délı̄neḡ has implemented its own community-based caribou conservation plan, which supports a limited harvest of 150 caribou (mostly bulls) and allows for community self-regulation of caribou harvesting. (ENR 2022a, b).

in fact there was evidence of an opposite trend, as with the cost of harvesting increasing, gas prices rising, and people having to go further to hunt, they were actually harvesting less (ACCWM 2014). Most recently, Délı̨nę Got'ı̨nę report that fewer people are harvesting caribou now (HG 2022a, 2022b, 2021b); there was little to no reported harvest of ɔ́ekwè in 2020, 2019, or the preceding years (ACCWM 2021, 2019; SRRB 2021).

Access to the BNE herd has been similarly limited in the Wek'èezhii (Tłı̨chq̓ Region) in recent winters (TG and ENR 2022); for example, in 2021 Sahtı̨ ɔ́ekwè were only near the community of Wekweèti, so other Tłı̨chq̓ communities gave their tags to Wekweèti to be used there (ACCWM 2021). Harvest levels were also well below the Total Allowable Harvest in 2020 and 2019 (ACCWM 2021, 2020). Nonetheless, some concerns regarding unsafe, illegal, and disrespectful hunting practices and wastage on the mine winter roads were raised after the 2020/21 winter harvest season (TG and ENR 2022). Prior to that, other concerns raised by knowledge-holders focused on the fact that while people had been limiting their harvesting to help caribou recover, business / industry / developers hadn't done their part, as despite harvest restrictions, the population continued to decline (WRRB 2016). There are ongoing concerns that trophy hunters have targeted the big bulls (TRTI 2022). Community engagements also documented concerns regarding increased access and harvesting due to roads, and the need to monitor hunters better (ACCWM 2014). Even at that time there were observations that Tłı̨chq̓ used to harvest more in the past – with more people working and using store-bought food now, the effect on caribou numbers could be positive, but there are other impacts such as fires affecting them (ACCWM 2014).

Non-traditional harvest practices were also listed as a threat to barren-ground caribou in the 2017 status report, including reckless shooting, overuse of motorized vehicles, wasting meat and leaving carcasses on the ground, not sharing meat, and not using the entire carcass (SARC).

4.3 Governing systems and knowledge

This additional category has been created in an attempt to better accommodate Indigenous cosmologies and ways of thinking in cumulative effects modelling scenarios (HG 2022a). It includes reflections on how knowledge systems and governance can directly and / or indirectly impact caribou populations. Information is presented by region to honour cultural and governance differences, however, there are many commonalities in the issues raised that are relevant across most or all of the ranges of these four herds in the NWT.

Governing systems and knowledge includes: management plans & stewardship activities; Traditional / Indigenous Knowledge, laws & practices; conflicts with Western scientific knowledge systems; cross-cultural and cross-regional collaboration.

Some of these topics were included in the 2017 SARC status report on barren-ground caribou – this indicates a significant shift in Species at Risk assessments, as while important and impactful, these factors tend to be more challenging to quantify or accommodate in Western science based research / management frameworks. For example, non-traditional harvest practices were considered in the barren-ground status assessment as a threat – this included concerns regarding reckless shooting, overuse of motorized vehicles, wasting meat, and leaving carcasses on the ground (SARC 2017). Indigenous perspectives regarding how disrespectful scientific research and monitoring practices can present a threat to caribou were also represented in that report – specifically mentioning that caribou

collaring can impact caribou through hair loss, icing, interference with feeding, and irritation or strangulation if the collar shifts (SARC 2017). These physical concerns with collaring remain a concern in most regions today, but there are also broader cultural concerns about this research method that are based in Indigenous understandings of respectful behaviour.

Choppers. They catch them – they are just loud and I start feeling for the caribou. They are just shaking. It would be like us if we had no gun and a grizz was chasing us, we would be scared to death... They did that around Délı̄ne, and then they moved. A few years ago, the biologists scared them maybe to death and they never go back to that place. We have to be careful about that. We have lots of TK and we can handle the management like that. I wanted to say that, thanks for listening. Inuvik, Tuk, and the Gwich'in, when they take care of [the caribou], I feel the caribou are in good hands (Richard Kochon in ACCWM 2022:51).

Similar views about collaring activities are found in all four regions covered by this report. Other governance issues that tend to span more than one region include: the need for additional support to maintain traditional ties to the land and traditional activities; the importance of education and teaching younger generations about TK; the value of cross-regional collaboration and cooperation; and the importance of having regulatory frameworks accommodate more cultural and socioeconomic factors.

ACCWM Member Boards also pointed out in 2021 that divergent management systems (e.g., tags vs community management plans) are also impacting governance and conservation across regions – they have the potential to increase tension, and highlight the need for structures that build trust between organizations, communities, and across regions (ACCWM 2022). In 2021 and 2020 representatives at the ACCWM status meetings also commented that the COVID-19 global pandemic has impacted air travel and changed how much time harvesters spend on the land. The pandemic has impacted the ability of Member Boards to conduct in-person consultation and interviews, meaning that there are some gaps in the Traditional or Indigenous Knowledge that has been documented recently, as well as collaborative work (ACCWM 2022, 2021).

Inuvialuit

Harvest restrictions and scarcity have impacted values, limited sharing, and made poaching a concern in the ISR for at least the last ten years (see ACCWM 2014). Educating younger generations about traditional Inuvialuit practices is seen as essential, as conflicts between traditional ways and scientific frameworks have already resulted in some lifestyle changes, but Inuvialuit have always had their own ways and approaches to managing for caribou (ACCWM 2021, 2020, 2019; HG 2021a). Hunting restrictions make it harder to pass on traditions about respectful harvesting and sharing; the tag system influences how people share, whether they can provide for elders and others in the community, and whether they pass on their knowledge (ACCWM 2014). As mentioned, scientific research methods (such as collaring) are also seen as disrespectful or too intrusive, and need to be replaced with less intrusive methods (ACCWM 2022). Better education and communication can in part address concerns about poaching and selling meat, but it could also require more monitoring and enforcement to fully address this issue (ACCWM 2022, 2021). Overall, management planning needs to consider how people will meet their needs to be effective (ACCWM 2014).

Gwich'in

Today, Gwich'in hunters are not encountering Cape Bathurst or Bluenose-West caribou as much as in the past, and instead have been focussed on harvesting Porcupine caribou when they are more available to the communities (ACCWM 2022, 2021, 2020, 2019; Benson 2015). Since hunting regulations prevent hunters from harvesting Bluenose caribou except in a location very far from Inuvik, it has become more difficult for Gwich'in harvesters to monitor them, however Gwich'in have always valued caribou by hunting them in a respectful way, and there is interest in relying more on TK and information from Gwich'in hunters to manage for caribou (Benson 2015). People stress that it is important that research and monitoring methods are adapted to minimize stress on caribou; that locals are trained and employed to do more of this work and share information; and that everyone is involved in collaborative decision-making (ACCWM 2014).

Sahtú

There is a strong message about the need to treat caribou with respect throughout the information available for the Sahtú region. Colville – like other Sahtú communities – has stressed that if people treat caribou disrespectfully then the animals will make themselves unavailable to people (SRRB 2020). As a result, many of the actions and decisions made by the Colville leadership in regards to caribou are founded in a very deep sense of respect and prioritize the need to maintain this type of relationship with caribou (ACCWM 2022; HG 2022b). Colville representatives emphasize that being out on the land is an important part of management, and necessary to take care of caribou; more support is needed to ensure people can continue to go out, and this could be done in collaboration with ENR staff (ACCWM 2022).

By early 2020 Colville had a plan for management rooted in traditional laws, had stopped their community harvest at Horton Lake, and were working to promote alternative harvesting (ACCWM 2022, 2020). In order to be able to communicate their ideas and work with others more easily, Colville has been putting ideas to paper, and a Community Conservation Plan (CCP) for Colville Lake is now being finalized (ACCWM 2022, 2021; SRRB 2021). Some of the actions being undertaken by Colville will occur in collaboration with Fort Good Hope and will include non-invasive research to address information gaps about BNW caribou, encouraging trappers to go to areas they are seeing more wolves, and asking outsiders to get permission to hunt in the area (ACCWM 2021, 2019; SRRB 2021).

Délıne has also had a CCP in place for several years that is providing local leadership and guiding stewardship actions that can impact both BNE and BNW caribou (DEWG 2021). During focus group discussions conducted in the Sahtú as part of this project, Délıne Got'ıne pointed out that 'Human factors' (presented as a category for modelling scenarios) encompass much more than just hunting regulation (HG 2022a). This has also been emphasized during recent caribou public listening sessions or hearings in the region (SRRB 2021, 2020, 2016). Plans such as 'Délıne's Belare wıle Gots'ę ʔekwę – Caribou for All Time' present a much fuller picture regarding key Dene understandings of caribou / human relationships that underlie and inform conceptualizations of conservation (DEWG 2021). Within this framework it is critical to consider the broader context of what may be required to sustain caribou, and go beyond regulating and monitoring harvest levels.

A key Sahtú Dene concept from the prophet ʔehtsáó ʔeráyha (Grandfather Ayha) teaches that if you don't 'take care' of caribou, they won't be here any longer – taking care of caribou relies on respectful behavior towards not just caribou, but also the land and environment (HG 2022a; SRRB 2020). Underpinning this is the belief that ʔekwé can actually look after itself – humans do not need to directly intervene for caribou to survive (HG 2022b; DEWG 2021; SRRB 2016). Within this framework of Indigenous governance, it can be seen as irrelevant to monitor harvesting activities if other disrespectful behaviours continue to undermine this sacred balance (Winbourne 2021). Some approaches to conservation based in Western scientific frameworks and research methods (such as collaring) threaten the human / caribou relationship as they are not only disrespectful to caribou but also invasive and physically harmful (ACCWM 2022, 2014; HG 2022b; SARC 2017; SRRB 2016). Similar to reports from ISR communities, Déljñę knowledge-holders stress that territorial regulatory systems have broken down the human / caribou relationship in many regards. Allocation systems have led to competition for quota between regions and within communities – families struggle to share their harvest, trust and confidence in decision-makers has declined, and Sahtú communities are not working together well under these frameworks (DEWG 2021; SRRB 2021, 2016; ACCWM 2021, 2014).

In the future, communities feel that harvest regulation for caribou populations needs to be subject to the broader measures that tend to characterize the CCPs and are based in Indigenous governance systems (SRRB 2020). Because CCPs and self-government initiatives tend to focus on rebuilding and strengthening the relationship between people and caribou, they can have positive impacts for caribou over the long term (HG 2022b; DEWG 2021; SRRB 2016). Some Dene approaches that can be beneficial to caribou through promoting a return to traditional systems of respectful relationships as laid out in plans such as the Déljñę one include: an emphasis on harvesting alternate species, ceremonial activities, promoting mixed harvests based on traditions, prioritizing sharing Traditional Knowledge and practices, land protection, and non-invasive research methods, among others (HG 2022b; ACCWM 2021, 2014; DEWG 2021; SRRB 2021, 2020, 2016; WRRB 2016). As more Dene context and way of life is included in governing systems, and communities have more control over decision-making, there will be a shift in how people relate to and use the land that can benefit ʔekwé (HG 2022b).

Greater Sahtú Dene control over decision-making may also be beneficial to caribou in regards to the impacts of industry and development; many community members have stressed that despite their concerns about the negative impacts of industry on caribou and their habitat, development still often goes ahead even when Sahtú organizations and co-management boards have made recommendations against it (WRRB 2016; ACCWM 2014). Re-establishing Dene laws and mechanisms for decision-making based on respectful harvesting and sharing, using Dene knowledge, and with an emphasis on collaboration and cooperation is seen as an effective way forward in managing for caribou (ACCWM 2014).

The broader approach typical of the CCPs better fits Sahtú Dene and Métis understandings that all parts of the environment are interconnected and each has an important role to play in maintaining balance or harmony – this includes human beings (Winbourne 2021; DEWG 2021; SRRB 2016). Some of these concepts were underscored during the 2016 BNE hearings, when Déljñę elders spoke about the meaning and importance of collaboration / working together not just in relation to Dene, but as well as with wildlife and all living things (SRRB 2016). If these principles and protocols are not followed, systems may break down.

Wek'èezhii (Tłı̨chǫ Region)

Similar concepts were emphasized during a recent barren-ground caribou workshop in the Wek'èezhii (Tłı̨chǫ Region), where Tłı̨chǫ participants communicated that all living and nonliving elements of dè (the land), including humans and caribou, live in a dynamic network of interdependent relationships based in respect (TRTI 2022). Voices in the Wek'èezhii (Tłı̨chǫ Region) also echo those heard in the Sahtú in regards to how harvesting regulation needs to consider the 'bigger picture' (WRRB 2016). Human / caribou relations are being broken down by current regulatory circumstances and Dene are forgetting traditional rules about how people should treat all animals (TRTI 2022; WRRB 2016). Elders have pointed out that the caribou have 'gone away' due to a lack of respect for caribou and for the land, and because of a loss of traditional ways (TRTI 2022; SARC 2017). Limitations on hunting are having negative impacts on the continuity of culture, language, and way of life in the Wek'èezhii (Tłı̨chǫ Region) (TG and ENR 2022; TRTI 2022). Tłı̨chǫ are spending less time on the land, taking shorter trips with many snow machines and bigger rifles; some say there is less respect and understanding, and as a result the caribou are stressed (TRTI 2022). Tłı̨chǫ knowledge-holders say that humans have to start talking about themselves and being responsible for their own behaviour, accepting they are part of the ecosystem rather than separate from it, and acknowledging the role of human impacts (WRRB 2016).

Similar to some Délı̨nę Got'ı̨nę perspectives, Tłı̨chǫ elders have pointed out that people are not the boss of caribou, and that caribou are beings with their own agency to make decisions and act (TRTI 2022). Currently, the Tłı̨chǫ Government (TG) is expanding programs focused on cultural practices on the land, including sustaining cabins, traditional canoe trails, and winter skidoo trails to harvesting areas, among other programs and activities (TG and ENR 2022). These programs also benefit caribou by promoting alternative harvesting, documenting and teaching Traditional Knowledge, protecting key habitats, and ultimately conditioning people with the skills and knowledge of the land that they will need when caribou return (TG and ENR 2022; WRRB 2016). There are also numerous efforts in communication and engagement, as well as education / public awareness initiatives to promote traditional ways of harvesting, improve hunter practices, and reduce wounding and wastage – all of which can be beneficial for Sahtı̨ Ɂekwǫ̨ (TG and ENR; ACCWM 2021, 2014).

The importance of collaboration between regions has also been emphasized – improved information sharing amongst Sahtú and Tłı̨chǫ members can lead to better circumstances for caribou, with stronger understandings of shared goals and values in both regions (ACCWM 2020). Collaborative work with government is also seen as key to the survival of caribou; as a result, the Tłı̨chǫ Government and ENR are cooperating on TK and scientific research and monitoring regarding climate change and other factors impacting caribou health, abundance, and habitat condition, as well as land use planning processes (TG and ENR 2022; TRTI 2021; ACCWM 2021). Collaboration is not always easy – for example, while caribou collars are necessary for ENR (and other non-Dene) to acquire information; for many Tłı̨chǫ, they are seen as disrespectful due to cultural understandings of respectful human-animal relations, and collars are known to be one of the reasons why caribou are not returning to the people in larger numbers (TRTI 2022; WRRB 2016).

There is still much more work to be done to better incorporate traditional perspectives, understandings, and knowledge in regional and cross-regional caribou conservation frameworks and efforts (HG 2022a, b; HG 2021a; SRRB 2021, 2020, 2016; ACCWM 2022, 2021, 2020, 2014; SARC 2017).

5.0 Conclusion

This report indicates that the cumulative effects impacting tuktuvialuk, vadzaih, ɔedə, neregħa goɔekwé and Sahtı ɔekwò / ɔehdaıla ɔekwé are numerous, complex, and varied, spanning both human and natural factors. While there are some differences between regions – for example, the threat of wildfire is perhaps greater in barren-ground caribou habitat in the Tı̄chq and Sahtú regions than the ISR – there are also many common themes that span the ranges of the Cape Bathurst, Tuktoyaktuk Peninsula, Bluenose-West and Bluenose-East herds. In all areas the compounding threats of climate change, industrial activity, and habitat loss or degradation are seen to be intensifying and increasingly having a negative impact on caribou survival. Predation is also seen to be a potential threat requiring attention in some regions, and new and expanding species are making it difficult for knowledge-holders to know what ecosystem balance looks like today. None of the TKCK sources reviewed for this project indicated that subsistence harvesting is playing a major role in recent caribou declines, yet each region recognizes a need to strengthen, re-assert, and educate harvesters about Traditional Knowledge, practices, and protocols in order to re-build the human / caribou relationship in a more respectful manner and ultimately be beneficial for caribou.

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