

Yukon North Slope Wildlife Conservation and Management Plan 2021

# Companion Report 1: Traditional Use



#### **Publication Information**

Cover photo: Fish drying at Tapqaq. ©Michelle Gruben, 2016.

Copyright: 2021 Wildlife Management Advisory Council (North Slope)

Citation: Wildlife Management Advisory Council (North Slope). (2021). Yukon North

Slope Wildlife Conservation and Management Plan – Companion Report. Whitehorse, Yukon: Wildlife Management Advisory Council (North Slope).

Available from: Wildlife Management Advisory Council (North Slope)

P.O. Box 31539 Whitehorse, Yukon, Y1A 6K8, Canada

Download link: <a href="https://wmacns.ca/what-we-do/conservation-plan/companion">https://wmacns.ca/what-we-do/conservation-plan/companion</a>

#### Acknowledgements

Many individuals and organizations have contributed to the preparation of the *Yukon North Slope* Wildlife Conservation and Management Plan – Companion Report. Much of the western science and traditional knowledge research that is the evidentiary basis for this plan reaches back several decades.

Critical reviews by Environment Yukon, Parks Canada, the Canadian Wildlife Service, Fisheries and Oceans Canada have been helpful in addressing a wide-range of terrestrial, aquatic and marine conditions that inform the conservation requirements of the Yukon North Slope.

The principal writers of the Companion Report are Kim Heinemeyer and Joan Eamer. Kim is a conservation biologist with Round River Conservation Studies. She was ably supported by Julia O'Keefe, Maggie Triska, and Will Tyson. Joan is a former Council member, science writer, and environmental consultant. They were assisted with strong support from Mike Suitor - Environment Yukon biologist, Dave Tavares – Parks Canada science advisor, Craig Machtans – Environment and Climate Change Canada manager, and Tyler Kuhn – Environment Yukon biologist. Allison Thompson and Kaitlin Wilson – Council biologists, and Lindsay Staples – past chair – participated in all stages of report design, drafting and editing. Kirsten Madsen provided invaluable editing support.

The Aklavik Hunters and Trappers Committee assisted with and contributed to a substantial body of traditional knowledge of the wildlife and habitat, and traditional use mapping, of the Yukon North Slope that informs the report.

Jennifer Smith, Council chair, Council members and alternates, Tyler Kuhn, Matt Clarke, Craig Machtans, Billy Storr, Evelyn Storr, Colleen Arnison, and Michelle Gruben, and Council staff Allison Thompson and Kaitlin Wilson reviewed the final draft of the report.

# Companion Report to the Yukon North Slope Wildlife Conservation and Management Plan Number 1: Traditional Use

#### **Table of Contents**

About the	e Companion Report	2
Compani	on Report: Traditional Use	3
Tradition	al Use on the Yukon North Slope	4
Tradition	al Use Through Time	5
Sumn	atterns in Traditional Use ner and Fall er and Spring	14
	te Change Adaptationte Change Adaptation	
Selected	Studies and Traditional Use Research Relevant to the Yukon North Slope	21
Links to F	Plans and Programs	24
Reference	es	26
Maps		
Map 1-1. Y	ukon North Slope showing historical use footprint and historically occupied coastal sites, identified by Inuvialuit land-users	
Map 1-2.	Inuvialuit cultural sites across the Yukon North Slope	9
Map 1-3.	Spatial summary of Aklavik Inuvialuit traditional use on the Yukon North Slope	10
Tables		
Table 1-1	Terrestrial aquatic and marine animals fish and plant species harvested by Aklavik Inuvialuit	1

# About the Companion Report

This report is a companion document to the *Yukon North Slope Wildlife Conservation and Management Plan* (WMAC (NS), 2022). The *Yukon North Slope Wildlife Conservation and Management Plan* (the Plan) is grounded in traditional knowledge and Western science. It addresses traditional use and wildlife conservation and management issues affecting the Yukon

North Slope. Strategies in the Plan align with actions underway or planned by a range of agencies and organizations with jurisdiction on the Yukon North Slope.

This companion report summarizes the information that was used to support the objectives and strategies in the Plan, and provides references for the studies used in its development. The companion report draws from authoritative works, reports that synthesize knowledge and issues, and presentations of recent research findings. Sources include traditional knowledge and traditional use, scientific reports and journal articles, and management and conservation reports.

There are fourteen companion reports, addressing four selected topics of key interest as well as ten wildlife species featured in the Plan.



This companion report summarizes the information that guides the objectives, strategies and conservation requirements in the *Yukon North Slope Wildlife Conservation and Management Plan*.

## Companion Report: Traditional Use

This companion report is one of four reports on selected topics that cut across species divisions for the Plan. This report draws on traditional use studies that have been documented at a variety of levels over fifty years on the Yukon North Slope. In the 1970s, researchers mapped Inuvialuit traditional use and occupancy across the area. At that time during negotiation of the Inuvialuit Final Agreement and in the early 1990s, oral history projects documented the history of Inuvialuit cultural and subsistence use of the Yukon North Slope, and its changes from prior to European contact, through multiple cultural transitions. More recently, Inuvialuit use of this area, as well as changes or impediments to continued travel, harvesting, or cultural practices have been documented through a variety of projects.

The relationship between Inuvialuit and the Yukon North Slope is an inextricable one. Inuvialuit are part of this land and deeply connected with its wildlife and ecosystems. Maintaining and enhancing Inuvialuit traditional use is one of five objectives of the Plan. The Inuvialuit Final Agreement ensures legal protection for continued Inuvialuit use of the North Slope through

preferential and exclusive harvesting rights and the right to participate in related management decisions.

The sustainability of traditional use is tied to a range of factors. These include the conservation of harvested wildlife, fish, and plants, their associated habitats, and the ability of community members to continue accessing and using harvesting areas. Continued traditional use on the Yukon North Slope requires the preservation of Inuvialuit traditional knowledge of harvesting areas, travel routes, processing techniques, environmental conditions, and culturally appropriate practices. It also requires the necessary economic and institutional support to undertake sometimes lengthy and expensive trips to traditional harvesting areas. All of these elements must be maintained in the broader context of ecological integrity. As our climate changes, there is both increased risk and uncertainty about Yukon North Slope systems, including the ways Inuvialuit interact with the land and sea. This chapter introduces the historical and current patterns of use, highlights important traditional resources, describes impacts that affect traditional use, and summarizes available research about Inuvialuit traditional use on the Yukon North Slope.

It is important to note that while the term 'use' is employed in this report, it does not limit interactions to only consumptive or extractive activities; 'use' can and does include reciprocal relationships, with Inuvialuit as part of the ecosystem.

## Traditional Use on the Yukon North Slope

The history of Inuvialuit traditional use on the Yukon North Slope is long and complex and has been well-documented from the 1900s onwards. What has remained consistent over time is the importance of this place to Inuvialuit. Traditional use encompasses many activities and practices. Many of the more tangible uses are well-documented: food and medicinal plant harvest, hunting and trapping of furbearers, harvesting of major ungulate species, grizzly bear hunting, whaling, seal harvest, fishing, polar bear hunting, egg gathering, and bird and small mammal harvest (Usher, 2002; WMAC (NS) & Aklavik HTC, 2018b). Recent harvest studies have documented the continued reliance on traditional foods in the community of Aklavik (Inuvialuit Harvest Study, 2003; Joint Secretariat, 2018). Inuvialuit use of the Yukon North Slope is also represented in species-specific traditional knowledge reports on grizzly bear, caribou, and polar bear (Joint Secretariat, 2015; WMAC (NS) & Aklavik HTC, 2008, 2009) as well a report on Inuvialuit knowledge of wildlife habitat on the Yukon North Slope (WMAC (NS) & Aklavik HTC, 2018a). The Yukon North Slope is also significant for many other cultural uses, too. Numerous spiritual sites, burial grounds, travel routes, safe havens, and other cultural features across the landscape reflect its significance in Inuvialuit culture. Inuvialuit interact with this land and seascape in a plethora of ways that support wellbeing, such as family gatherings, personal

enjoyment and spiritual connection. These can be more difficult to quantify, but are no less important to maintain and protect.

The continued ability of Inuvialuit to access and use the Yukon North Slope is a central goal of the Plan. Conserving habitat for harvested fish, wildlife, and plants, as well as supporting Inuvialuit land-users is critical for meeting this goal.

#### Sustaining Inuvialuit traditional use on the Yukon North Slope

The Yukon North Slope Wildlife Conservation and Management Plan identifies strategies to maintain and revitalize Inuvialuit traditional use on the Yukon North Slope. These strategies include the conservation of important wildlife, fish, plants, and their associated habitats. The Plan also identifies several priorities to directly support Inuvialuit traditional use of the Yukon North Slope:

- 1. Invest in Inuvialuit traditional use through sustainable funding that contributes to supporting and increasing the participation of Inuvialuit households in land-based activities.
- 2. Enhance the link between Inuvialuit traditional use of the Yukon North Slope and maintaining, transferring, and mobilizing Inuvialuit knowledge.
- 3. Strengthen Inuvialuit cultural attachments, especially those of young people, to the area through on-the-land activities, such as Elder host camps, and Indigenous cultural exchanges.
- 4. Monitor climate change impacts on traditional use using Inuvialuit knowledge, community-based monitoring and science.
- 5. Mobilize Inuvialuit and scientific knowledge of the climate change impacts on Yukon North Slope, along with culturally-informed adaptations, to ensure ongoing and adequate Inuvialuit traditional use.
- 6. Strengthen a proactive community-based role in the conservation and wildlife management of the Yukon North Slope including the co-production of knowledge

From the Yukon North Slope Wildlife Conservation and Management Plan (WMAC (NS), 2022)

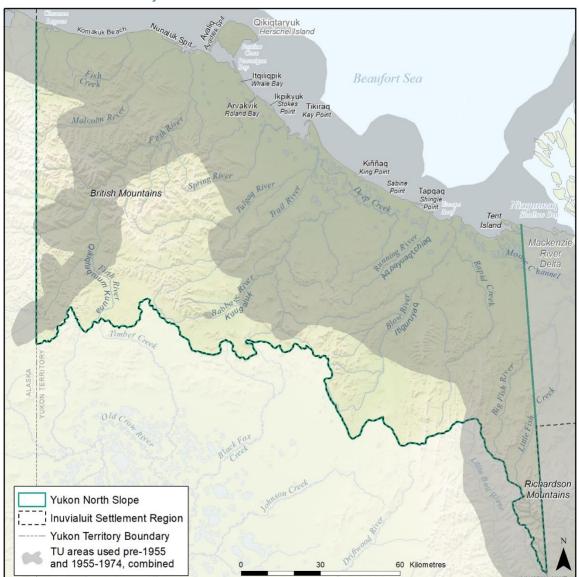
## Traditional Use Through Time

The spatial and temporal patterns of traditional use have changed through history, as Inuvialuit culture has responded to social, economic, and environmental transitions. A major factor in these changes has been the dramatic and ongoing impact of government policies and laws and industrial development. It is important to recognize and understand various forms of past and current colonial behaviour in the context of traditional use. Colonial actions and their effects continue to have repercussions today on the extent of use, the legal context within which practices occur, and even the permanent settlement in Aklavik and other NWT communities. Maintaining and enhancing traditional use over the coming decades will need to include

concerted efforts to respect, reconcile and accommodate different cultural values and management practices between Inuvialuit and federal and territorial government wildlife management models.

Archaeological evidence suggests that Inuvialuit are descendants of Thule people who migrated east from what is now Alaska over a thousand years ago. These ancestral Inuvialuit thrived on the North Slope landscape, relying heavily on the Beaufort Sea for food, heat, clothing, and travel.

At the time of European contact, Inuvialuit were divided into eight territorial groups, inhabiting the landscape from what is now known as Barter Island, Alaska, to Franklin Bay, NT (Betts, 2008; WMAC (NS) & Aklavik HTC, 2018b). Inuvialuit use occurred across the Yukon North Slope and several locations supported seasonal or year-round settlements, including Pauline Cove, Qaiñiuqvik (Clarence Lagoon), Komakuk, Nunaluk Spit, Avaliq (Avadlek Spit), Qargialuk (Ptarmigan Bay), Itqiliqpik (Whale Bay), Ikpikyuk (Stokes Point), Tikiraq (Kay Point), Kiññaq (King Point), Sabine Point, Tapqaq (Shingle Point), Aqpayuaqtchiaq (Running River), and Escape Reef (Map 1-1).



Map 1-1. Yukon North Slope showing historical use footprint and historically occupied coastal sites, identified by Inuvialuit land-users

Inuvialuit historical use and occupancy shown here have been documented through several studies (pre-1975 based on Freeman, 1976), summarized in WMAC (NS) & AHTC (2018b). The places named in the map represent a sample of the locations occupied by the Inuvialuit, as documented in these studies, and are not comprehensive. Some of these areas are no longer used due to changing environmental conditions, e.g., Nunaluk Spit was a permanent campsite but now the water is too shallow to access this by boat (Papik, Marschke and Ayles, 2003).

Inuvialuit quickly became integrated into commercial whaling and fur trading economies upon contact. The importance of these resources, along with growing trading activity with non-Indigenous people, influenced the development of more permanent settlements and trading posts along the coast (Freeman, 1976; Nagy, 1994; WMAC (NS) & Aklavik HTC, 2018b). This

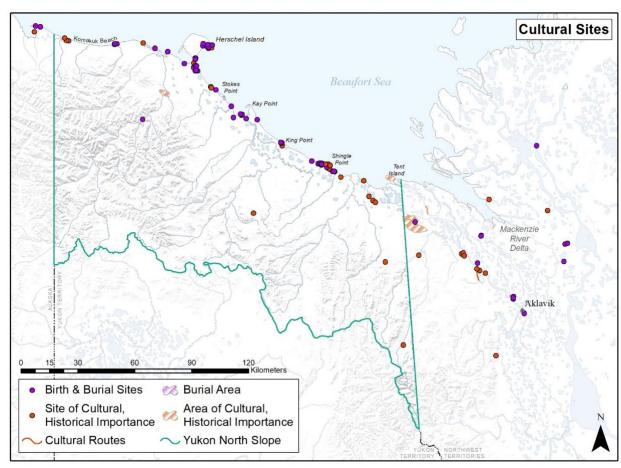
transition influenced patterns of use across the Yukon North Slope, which continued after the collapse of the whaling industry. The introduction of larger boats and a greater emphasis on whaling and fishing altered the extent of land-use compared to the 1800s, when Inuvialuit would travel further inland, following caribou on foot and with pack dogs. By the 1970s, summer caribou harvest primarily occurred in areas within walking distance of the coast (Freeman, 1976).

Increased Canadian Government and non-Indigenous presence in the arctic significantly impacted Inuvialuit use of the Yukon North Slope; many of these impacts were negative. Christian missions in Aklavik, residential schooling, government codification of trapping, and industrial activity associated with the construction of the Distant Early Warning Line (DEW Line) and the centre of Inuvik fundamentally altered the lifestyles and culture of Inuvialuit. They forced a greater reliance on wage labor and permanent settlement in Aklavik (Freeman, 1976; WMAC (NS) & Aklavik HTC, 2018b). These changes, coupled with the influence of oil exploration, which started in the Mackenzie Delta in 1958 and continued through the 1970s, and the construction of the Dempster Highway, further affected traditional use activities (WMAC (NS) & Aklavik HTC, 2018b).

Despite these monumental changes to the Inuvialuit way of life, a mixed economy persists in Aklavik. Hunting, trapping, whaling, fishing, and gathering of food and medicinal plants continue to play a major role in Inuvialuit economy and culture. A large percentage of Inuvialuit participate in harvesting of traditional foods, which make up a considerable portion of local diets. Traditional harvesting contributes to household incomes, nurtures social cohesion and individual wellness, and supports an informal trading of commodities (Inuvialuit Harvest Study, 2003; Joint Secretariat, 2018; Usher, 2002). The recent report on Inuvialuit traditional use of the Yukon North Slope also highlights the cultural importance of this place, extending beyond the measurable contributions to diets or economies. Many cultural sites, such as burial grounds, exist across the Yukon North Slope. Family histories and traditions are intimately tied to the landscape (WMAC (NS) & Aklavik HTC, 2018b) (Map 1-2).

Today, Inuvialuit traditional use faces many environmental and cultural challenges. The large socio-economic and cultural shifts that have occurred in recent generations have resulted in a reliance on wage labor and permanent settlement. This makes long distance travel and frequent seasonal use of the Yukon North Slope difficult (Freeman, 1976; WMAC (NS) & Aklavik HTC, 2018b). Increases in the price of fuel and supplies have outpaced wage growth, and the cost of trips to the Yukon North Slope have become a barrier to frequent use (Nickels, Furgal, Buell, & Moquin, 2005; Pearce et al., 2011; WMAC (NS) & Aklavik HTC, 2018b). Environmental change, particularly climate change, compounds these difficulties. Unpredictable weather, less predictable wildlife movement, altered snow and ice conditions, lower water levels, changing vegetation patterns, and stronger ocean wave action all impact traditional use. These changes, and the resulting changes in wildlife distribution, health, and abundance, make it more difficult to access, harvest, and consume traditional foods or maintain cultural infrastructure (Friendship & Community of Aklavik, 2011; Nickels et al., 2005; WMAC (NS) & Aklavik HTC, 2018b).

Programs, such as the Inuvialuit Harvesters Assistance Program (IRC, 2019) seek to address many of the economic or social barriers to continued traditional use. Community climate change adaptation plans identify new strategies that may be necessary to support continued traditional use (Friendship & Community of Aklavik, 2011). The continued ability of Inuvialuit to access and use the Yukon North Slope is a central goal of the Plan. Conservation of fish and wildlife habitat and support for Inuvialuit land-users is critical for meeting this goal.



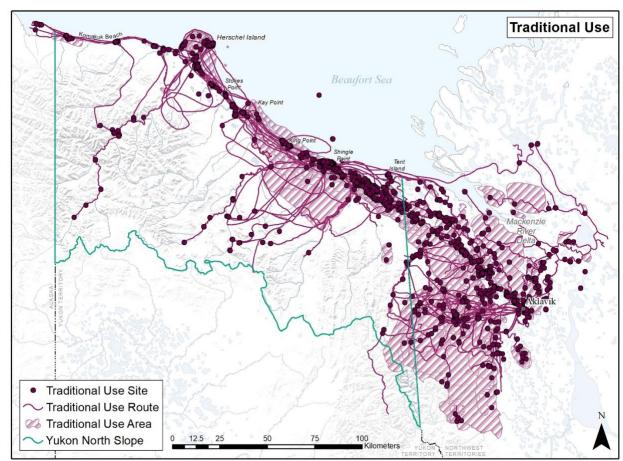
Map 1-2. Inuvialuit cultural sites across the Yukon North Slope

Adapted from the Yukon North Slope Inuvialuit Traditional Use Study (WMAC (NS) & Aklavik HTC, 2018b). Interview participants mapped culturally or historically significant locations within their living memory. This does not include the numerous archaeological sites across the YNS that pre-date the memories of current land-users. Used with permission.

### **Current Patterns in Traditional Use**

Current patterns of travel and land-use across the Yukon North Slope vary based on seasonal and environmental conditions, with the highest use in the eastern and coastal areas (Map 1-3). Historically, travel and land-use were more evenly spread across the Yukon North Slope,

particularly with permanent and seasonal settlements across the landscape. The growing importance of wage labour, permanent settlement, and use of modern travel methods has led to a greater emphasis on harvesting in areas closer to Aklavik (WMAC (NS) & Aklavik HTC, 2009, 2018b). This shift results in a high reliance on coastal areas and Aullaviat/Aunguniarvik (the eastern Yukon North Slope) (WMAC (NS) & Aklavik HTC, 2018b).



Map 1-3. Spatial summary of Aklavik Inuvialuit traditional use on the Yukon North Slope

As part of the Yukon North Slope Inuvialuit Traditional Use Study (WMAC (NS) & Aklavik HTC, 2018b), land-users were asked to identify traditional use areas, travel routes, and sites within their living memory. This mapping effort is the most recent depiction of the spatial footprint of Inuvialuit traditional use on the Yukon North Slope. Used with permission.

Current use of the Yukon North Slope is diverse and varies based on environmental conditions, seasonal species availability, community needs, and individual preference. The recent traditional use study identifies over 50 species of mammals, birds, fish, and plants harvested on the Yukon North Slope within the living memory of study participants (Table 1-1). Caribou are consistently identified as the most significant harvested species in the study area (Inuvialuit Harvest Study, 2003; Joint Secretariat, 2018; Usher, 2002; WMAC (NS) & Aklavik HTC, 2009, 2018b). However,

summer whaling camps, spring grizzly bear and polar bear hunting, fishing, berry gathering, and many other harvesting activities shape Inuvialuit use of the Yukon North Slope. Harvesting on the Yukon North Slope is adaptive and responds to environmental conditions, species movements, and community needs.

Table 1-1. Terrestrial, aquatic, and marine animals, fish, and plant species harvested by Aklavik Inuvialuit

Common name	Inuvialuktun name (Uummarmiutun dialect)	Binomial name		
Terrestrial, aquatic, and marine mammals				
Caribou	Tuktu	Rangifer tarandus		
Moose	Tuttuvak	Alces alces		
Dall's Sheep	Imnaiq	Ovis dalli dalli		
Grizzly bear	Aklaq	Ursus arctos		
Polar bear	Nanuq	Ursus maritimus		
Wolf	Amaruq	Canis lupus		
Wolverine	Qavvik	Gulo gulo		
Lynx	Niutuiyiq	Felix lynx		
Muskrat	Kivigaluk	Ondatra zibethicus		
Beaver	Kiqiaq, Paluqtaq	Castor canadensis		
Mink	Itigiaqpak	Mustela vison		
Snowshoe hare (rabbit, hare)	Ukalliq	Lepus americanus		
Arctic ground squirrel	Sikrik	Spermophilus parryii		
Arctic fox (white fox)	Tigiganniaq	Alopex lagopus		
Red fox (coloured fox)	Kayuqtuq	Vulpes vulpes		
Beluga whale (white whale)	Qilalugaq	Delphinapterus leucas		
Bowhead whale	Arviq	Balaena mysticetus		
Ringed seal	Natchiq	Phoca hispida		
Waterfowl an	nd other birds			
American black duck		Anas rubripes		
American wigeon	Ugiuhiug	Anas americana		
Brant	Nirglingaq	Branta bernicla		

Cackling goose		Branta hutchinsii
Canada goose	Uluagullik	Branta canadensis
Common	Qauraviq	Somateria mollissima
Common goldeneye		Bucephala clangula
Greater scaup		Aythya marila
Greater white- fronted goose (yellowlegs)		Answer albifrons
Green- winged teal		Anas crecca
Lesser scaup		Aythya affinis
Long-tailed duck (Old Squaw)	Ahaliq	Clangula hyemalis
Mallard duck		Anas platyrhynchos
Northern pintail	Ku ugaq	Anas acuta
Northern shoveler		Anas clypeata
Red- breasted merganser		Mergus serrator
Rock ptarmigan	Niksaqtuniq	Lagopus mutus
Spruce grouse (partridge)	Ittuktuuq	Facipennis canadensis
Surf scoter	Aviluqtuq	Melanitta perspicillata
White- winged scoter	Aviluqtuq	Melanitta fusca
Willow ptarmigan	Qargiq, Nasaullik	Lagopus lagopus
Fish		
Arctic char (Dolly Varden char, red char, char)	Iqaluqpig	Salvelinus malma
Arctic cisco (herring)	Qaaqtaq	Coregonus autumnalis

Arctic grayling (grayling)	Suluqpauraaq	Thymallus arcticus
Broad whitefish (whitefish)	Aanaarlirq	Coregonus nasus
Burbot (loche)	Titaalirq	Lota lota
Inconnu (coney)	Siirgarq	Stenodus leucichthys
Lake herring		Coregonus artedi
Lake trout		Savelinus namaycush
Lake whitefish (humpback, crooked back)	Pikuktung	Coregonus clupeaformis
Least cisco (herring, big-eye herring)	Iriqpaligaurat	Coregonus sardinella
Longnose sucker (sucker)		Catostomus catostomus
Northern pike (jackfish, pike)	Siuliq	Esox lucius
Pacific herring (blue herring, bluefish, herring)	Qaluhaq	Clupea harengus
Plants		
Blackberry	Paunraq	Empetrum nigrum
Blueberry	Uquk, Asiaq, Asiavik	Vaccinium uliginosum spp. microphyllum
Cranberry	Kimmingnaq	Vaccinium vitis-idaea spp. minus
Liquorice root (bear root, rat root)	Masu	Hedysarum Americanum
Wild rhubarb	Qusimmait	Polygonum alaskanum
Yellowberry (salmon berry)	Aqpik	Rubus chamaemorus

This table was adapted from the Yukon North Slope Inuvialuit Traditional Use Study (WMAC (NS) & Aklavik HTC, 2018b). Used with permission.

#### Summer and Fall

During ice-free months, land-users primarily travel by boat and harvest along the coast. Major activities include seasonal whaling camps and fishing, but also the harvest of a wide range of terrestrial species, including caribou, berries, moose, small game, ducks, and geese (Harwood, Norton, Day, & Hall, 2002; Usher, 2002; WMAC (NS) & Aklavik HTC, 2018b). Travel and harvest occur along the length of the Yukon North Slope shoreline and include trips to Qikiqtaruk (Herschel Island).

In the spring or summer we try to get all our caribou from along the shore. When it's a lot of mosquitoes they always go, you know, towards the wind, from the ocean. That's where they always go. When it's hot too they can't stay up on the mountains, they always go towards the sea.

Barbara Allen, reproduced from Aklavik Local and Traditional Knowledge About Porcupine Caribou (WMAC (NS) and Aklavik HTC, 2009, p. 29)

A major site of importance during the ice-free months is Tapqaq (Shingle Point). Inuvialuit land-users maintain approximately 60 cabins at Tapqaq, which serves as a staging point for whaling, fishing, terrestrial harvesting, and other family activities (WMAC (NS) & Aklavik HTC, 2018b). Travel to and from Tapqaq occurs by boat, through the western edges of the Mackenzie Delta and along the coast. Every July, Inuvialuit participate in a beluga whale harvest at Tapqaq, lasting 4-6 weeks (Harwood et al., 2002), and the coastal waters are heavily used for fishing (Usher, 2002; WMAC (NS) & Aklavik HTC, 2018b).

The importance of Tapqaq is not limited to the marine. In the 2018 Yukon North Slope traditional use study, nearly every form of harvesting activity was mapped at or nearby Tapqaq, including harvest of caribou, moose, waterfowl, furbearers, grizzly bear, and berries or medicinal plants. Inuvialuit describe hunting caribou that come to the breezy shoreline for insect relief, and will often opportunistically combine harvesting activities based on species availability and seasonal conditions (WMAC (NS) & Aklavik HTC, 2009, 2018b). Tapqaq is also important for other traditional uses. It is the location of numerous cultural sites, a safe haven for travelers, and

Shingle Point is the best. You have a lot of access to a lot of things. You can pick berries, or you can make yourself dried fish, caribou meat, everything... That's my favourite place in Yukon, is Shingle Point, and that's where I brought up my little ones. I teach my oldest daughter how to make dry fish. Every year she would bring dry fish; and it's just the way it's been made.... You just can't start cutting for dry fish. You have to learn to clean the fish, and you've got to learn how to drain the blood out of the dried fish.

PIN 105, reproduced from *Yukon North Slope Inuvialuit Traditional Use Study* (WMAC (NS) and Aklavik HTC, 2018, p. 100)

the site of cultural events, such as the Shingle Point Summer Games (WMAC (NS) & Aklavik HTC, 2018b). Understanding how climate change will continue to influence Inuvialuit use is critical to maintaining important cultural practices and connections.

Shingle Point is the best. You have a lot of access to a lot of things. You can pick berries, or you can make yourself dried fish, caribou meat, everything... That's my favourite place in Yukon, is Shingle Point, and that's where I brought up my little ones. I teach my oldest daughter how to make dry fish. Every year she would bring dry fish; and it's just the way it's been made.... You just can't start cutting for dry fish. You have to learn to clean the fish, and you've got to learn how to drain the blood out of the dried fish.

PIN 105, reproduced from Yukon North Slope Inuvialuit Traditional Use Study (WMAC (NS) and Aklavik HTC, 2018, p. 100)

Travel and use of the Yukon North Slope in the summer and fall extend far beyond Tapqaq, all the way to the Alaskan border (Map 1-3). Though recent use of the western portion of the Yukon North Slope has diminished due to the increased difficulties of making long trips due to the high cost of fuel and equipment and increasing extreme weather, this area is still highly significant to Inuvialuit land-users. A large concentration of cultural and archaeological sites represent this historic use and continued community importance (WMAC (NS) & Aklavik HTC, 2018b).

#### Winter and Spring

Travel by snowmobile has replaced the use of dog teams as the primary form of access to the Yukon North Slope during winter and spring. Winter conditions make inland travel easier, resulting in trips farther from the coast to access seasonally available resources (WMAC (NS) & Aklavik HTC, 2018a, 2018b). Inuvialuit winter harvest includes caribou, sheep, furbearers, arctic char, grizzly bears, and polar bears. Harvesting locations are often determined by proximity to Inuvialuit camps and cabins (WMAC (NS) & Aklavik HTC, 2008) or seasonally specific locations, such as char overwintering sites (WMAC (NS) & Aklavik HTC, 2018b). Frequently used areas include the Richardson Mountains or the mountains behind Tapqaq (WMAC (NS) & Aklavik HTC, 2008, 2018b); however, harvesting still occurs at the farthest reaches of the Yukon North Slope. For example, grizzly harvest in Ivvavik National Park (WMAC (NS) & Aklavik HTC, 2008) and caribou harvest on Qikiqtaruk (WMAC (NS) & Aklavik HTC, 2009).

I've seen a number of them [graves] out on the land. Not much in the Mackenzie Delta; it's more out on the Yukon Coast. At Shingle Point, up on the hillside, there's a fair number of our ancestors there. At King Point on the west side of the big bay. Over at Niakolik [Point], another [one]. These are all campsites where Inuvialuit would have stayed. The majority of our older ancestors, our elders, were born along the coast, be it Shingle Point, Kay Point, Ptarmigan Bay, along the coast, Herschel Island, over right into Alaska. All throughout here in the early days there'd be camps,

ten fifteen, twenty miles apart. And there'd be people being born here. I was born here November 1956 in the dead of winter [pointing to Komakuk Beach]. There's old gravesites here [pointing to the YNS on the map]....These ones are noticeable, with the fences here and here. But these other ones are just open with logs that are put a certain way....My granddad is here....my dad's dad....right on the west side of that little hill there [at Ptarmigan Point].... My grandma is way over here....just before Demarcation Bay.

PIN 101, reproduced from Yukon North Slope Inuvialuit Traditional Use Study (WMAC (NS) and Aklavik HTC 2018, p. 47)

The timing and route of the spring caribou migration determines spring land-use. Inuvialuit harvesters typically hunt caribou in areas south and west of Aklavik in the spring, when the herd passes on their migration (WMAC (NS) & Aklavik HTC, 2009). While migration patterns have always varied, migration routes and timing have become less predictable, resulting in changes to associated patterns of Inuvialuit land-use (WMAC (NS) & Aklavik HTC, 2009, 2018b, 2018a). Given this, it is difficult to attribute a specific location or time to winter or spring caribou harvest, as land-users react each year to opportunities as they arise.

In the spring, for us it's easier, because you can cross all the valleys, and there's lots of snow. So, you're not really scared to go anywhere. Some creeks in the fall time, we won't even cross or we won't even go beside, because we know – if we see an animal, we know we get on that side of the creek, we know once we get into the creek, we can't come out of it.

Anonymous, reproduced from Aklavik Local and Traditional Knowledge about Grizzly Bears of the Yukon North Slope (WMAC (NS) and Aklavik HTC, 2008, p. 28)

Grizzly bear and polar bear harvests are major focal points of land-use during the frozen months. Polar bear harvest occurs on near shore ice. Inuvialuit hunters follow pressure ridges to find places where polar bear hunt seal (Joint Secretariat, 2015). Grizzly bear harvest occurs primarily in the spring when bears emerge from their winter dens. Major areas of importance for grizzly bear harvesting are the Richardson Mountains and adjacent river valleys, which are accessible from Aklavik via snowmobile, though harvesting of grizzly bears occurs as far west as Ivvavik National Park (WMAC (NS) & Aklavik HTC, 2008, 2018b). It is also common practice to combine hunting trips for both polar bear and grizzlies, harvesting along snowmobile travel routes (Joint Secretariat, 2015; WMAC (NS) & Aklavik HTC, 2008, 2018b).

In between Kay Point and King Point, my uncle used to always go in between there, and sometimes we'll see maybe three or four bears in one area in that place. And they used to be big bears, like eight-footers, nine-footers. And my uncle even told us to go there one time, and sure enough. He told us to go about five mile out, ten miles out, and as soon as we went that far out there, we started seeing polar bears all over – polar bear tracks all over the place there.

Pin 13, Aklavik, reproduced from *Inuvialuit and Nanuq A Polar Bear Traditional Knowledge Study* (Joint Secretariat, 2015, p. 86)

## Climate Change and Traditional Use

Climate change is having a large impact on Inuvialuit traditional use. There are few studies that exclusively examine this impact on the Yukon North Slope, but the community of Aklavik and its reliance on the area has been incorporated into regional efforts to understand the impacts of environmental change on Inuvialuit communities. Due to their long and intimate relationship with the landscape, Inuvialuit are well-positioned to identify a range of environmental impacts associated with climate change (Table 1-2), many of which have a direct effect on traditional use. Across the ISR, community members have described a loss of cultural sites, increased difficulty of travel due to changing landscapes and weather, altered species migrations, and a change in the availability and quality of harvested resources (Bartzen, 2014; Friendship & Community of Aklavik, 2011; IRC, 2016; Nickels et al., 2005; WMAC (NS) & Aklavik HTC, 2009). Climate change impacts may vary widely based on the specific resource, mode of access (e.g., travel by boat or snowmobile), or location.

Table 1- 2. Climate change impacts observed by Inuvialuit traditional knowledge holders, and selected references

Theme	Observation	Selected Sources
ldlife	Changing migration routes and timing	(Bartzen, 2014; Furgal & Seguin, 2006; Nickels et al., 2005; WMAC (NS) & Aklavik HTC, 2009, 2018a)
s to W	Changes in species abundance, range, or frequency of observation	(Bartzen, 2014; WMAC (NS) & Aklavik HTC, 2009, 2018a)
e Impacts to Wildlife d Habitat	Changes to denning timing or behavior	(WMAC (NS) & Aklavik HTC, 2018a; WMAC (NS), Yukon Environment, Aklavik HTC, & Parks Canada, 2008)
Change and	Changing quality of harvested fish and wildlife	(IRC, 2016)
Climate Change and	Changes to wildlife habitat	(Joint Secretariat, 2015; WMAC (NS) & Aklavik HTC, 2009, 2018a)
	New or invasive species	(IRC, 2016)
\$ L	Stronger storms	(IRC, 2016; Nickels et al., 2005)
Changes weather and ice	Greater frequency of freezing rain events	(Nickels et al., 2005; WMAC (NS) & Aklavik HTC, 2009, 2018a)
<b>5</b> 1	Later freeze up, earlier breakup	(Nickels et al., 2005)

	Changing near shore ice conditions	(IRC, 2016; Joint Secretariat, 2015; Nickels et al., 2005; WMAC (NS) & Aklavik HTC, 2018b)
nd anges	Lower water levels, less fresh drinking water	(Furgal & Seguin, 2006; Nickels et al., 2005)
Landscape and Vegetation Chang	Increased sedimentation due to erosion or runoff	(Nickels et al., 2005; Papik, Marschke, & Ayles, 2003; WMAC (NS) & Aklavik HTC, 2018b)
Lan	Permafrost thaw and ground subsidence	(Nickels et al., 2005)
\ \	Increased shrub proliferation	(IRC, 2016)

Only research and observations that occurred in the community of Aklavik are referenced. This table originally appeared in *Arctic Climate Change Research and Monitoring A Review for Use on the Yukon North Slope* (WMAC (NS), 2020). Used with permission.

Inuvialuit have described how climate change alters the availability or quality of resources, including the following examples: changing environmental conditions have caused a decrease in berry production and an associated increase in harvesting difficulty; increased frequency of winter freeze/thaw events have impacted caribou foraging and health; warmer temperatures and lower water levels have changed the quality of harvested fish; and fresh drinking water is less available on the Yukon North Slope (IRC, 2016; Nickels et al., 2005; WMAC (NS) & Aklavik HTC, 2018a). Additionally, due to the cumulative impact of multiple stressors on certain species, harvesters are witnessing changes that may be difficult to exclusively link to climate. For example, when discussing changes in Porcupine caribou herd population size and migration patterns, Aklavik Inuvialuit offer a range of possible explanations that place climate change impacts alongside stressors such as harvesting pressure or harassment from radio collaring (WMAC (NS) & Aklavik HTC, 2009).

The caribou are coming later. Sometimes they don't come, they go by a different route, way up... Old Crow Flats... sometimes they don't make it for the calving ground, they have calves in the mountains in spring time. So they die off – too much snow... deep snow in the valley they can't make it down. Lots of young ones die. They say it's overhunting, it's not that. It's the weather, climate change.

Anonymous, reproduced from Aklavik Local and Traditional Knowledge About Porcupine Caribou (WMAC (NS) and Aklavik HTC 2009, p. 23)

Climate change effects on physical landscapes and weather patterns also impact Inuvialuit access to cultural sites and infrastructure on the Yukon North Slope. Receding sea ice leads to stronger wave action, as well as changing water levels and shoreline erosion, which make travel by boat more difficult and dangerous (Nickels et al., 2005; WMAC (NS) & Aklavik HTC, 2018b). A later freeze up and earlier breakup shortens the snowmobile travel season (Nickels et al., 2005).

Climate change has also made weather less predictable and increased the frequency of strong storms, making travel more dangerous (IRC, 2016; Nickels et al., 2005). Inuvialuit infrastructure, such as cabins, are threatened by increasing coastal erosion, which has also impacted archaeological sites in the region (Irrgang, Lantuit, Gordon, Piskor, & Manson, 2019). These changes have made traveling on the Yukon North Slope more difficult. The knowledge and strategies developed through generations of traditional use may not apply to rapidly changing conditions.

There's a whole bunch of them [burial places] right there, Ptarmigan Bay....within that island. That island is very small. It's eroding. In fact, my cabin, I had to move it three times because I'm losing ground....

PIN 121, reproduced from Yukon North Slope Inuvialuit Traditional Use study (WMAC (NS) and Aklavik HTC 2018b, p. 50)

Taken as a whole, the wide-ranging climate change impacts across the Yukon North Slope create significant challenges to Inuvialuit traditional use. In isolation, it can be difficult to assess the magnitude of a single environmental change; however, when viewing the breadth of impacts facing Inuvialuit, the pace of change in the region, and the wide geographic and ecological extent of these changes, it is difficult to understate the significance of climate change in the region and its impact on traditional use of this land.

Loss of resources and harvesting opportunities, increased travel risks, the shifting ability to apply traditional teachings, the loss of traditional sites and connection to place: all of these outcomes of climate change have immediate effect on Inuvialuit traditional use. But more than that, these changes have a cost to the mental and physical wellbeing of individuals and communities (Middleton, Cunsolo, Jones-Bitton, Wright, & Harper, 2020). It is clear that maintaining and enhancing traditional use is an utmost priority for conservation of the Yukon North Slope.

If it's good travelling, there's ice, it's safe to travel between the ice. But then one time we were stranded for a month because of the wind. We went down [to Kaktovik, Alaska] for a funeral and we ended up staying there for a month and coming back.... We had to wait for the weather because there was no ice. And it's not safe to travel without ice.... So we have to travel when it's nice.... because it took us about eight hours, I think, from Kaktovik to Shingle [Point]. We ended up camping at Shingle and coming back home.... A lot of it depends on the weather – if it's good.

PIN 108, reproduced from Yukon North Slope Inuvialuit Traditional Use study (WMAC (NS) and Aklavik HTC 2018, p. 32)

#### Climate Change Adaptation

Aklavik land-users are participating in efforts to adapt to the challenges of climate change. At an individual level, many harvesters and travellers have already adopted new techniques or

strategies for coping with a changing environment. Individual adaptations include measures such as traveling with more gas and emergency supplies, using new forms of emergency communication and navigation, and changing the harvesting areas for certain species (Friendship & Community of Aklavik, 2011; Nickels et al., 2005; WMAC (NS) & Aklavik HTC, 2018b; Worden, 2018). At a community level, adaptation efforts may take the form of discussions about harvesting species whose populations are less threatened (e.g. muskox or moose) or purchasing infrastructure such as community freezers to support year-round availability of traditional food (Friendship & Community of Aklavik, 2011). At an institutional level, the Community of Aklavik participates in an ISR-wide climate change adaptation strategy, as well as the National Inuit Climate Strategy; both strategies prioritize supporting continued subsistence harvesting and traditional use (Friendship & Community of Aklavik, 2011; IRC, 2016; ITK, 2019).

Increased understanding of environmental changes on the Yukon North Slope, through both Indigenous monitoring and Western scientific research, is critical for adaptation efforts. Inuvialuit observations of species health and environmental conditions are incorporated into park management plans and monitoring programs (Cooley, Eckert, & Gordon, 2012; Herschel Island-Qikiqtaruk Management Plan Review Committee, 2018; Parks Canada, 2018). The management of the Porcupine Caribou Herd is informed by land-user knowledge and observation (ABEKS, 2018; Russell, Svoboda, Arokium, & Cooley, 2013). Inuvialuit participate in joint harvest and sampling efforts of fish and marine mammals (DFO, 2010; Harwood et al., 2002). Increasingly, scientific research is guided by the priorities and concerns of local land-users. For example, extensive research on shoreline erosion has documented the threat to Inuvialuit cultural sites and infrastructure on the Yukon North Slope (Irrgang et al., 2019; Konopczak, Manson, & Lantuit, 2016).

More research is needed on the future of traditional use and the specific challenges facing the Yukon North Slope. Climate change impacts are likely to vary with local geographies, and may be experienced differently by land-users on the Yukon North Slope compared to other regions of the ISR. A recent summary of climate change research throughout the arctic recommends the development of place-based research and monitoring and increased ecological modeling to better understand potential future changes across the landscape (WMAC (NS), 2020). In some applications, such as assessing the threat to cultural sites due to shoreline erosion, predictive modeling has already helped to quantify threats to Inuvialuit traditional use (Irrgang et al., 2019). Efforts to extend this level of understanding across land-user values and climate change impacts will better support continued traditional use of the Yukon North Slope.

Because of the direct link between ecosystem health and Inuvialuit traditional use, the research described throughout the Plan is directly relevant to climate change adaptation efforts. Ensuring the availability and health of fish and wildlife resources, understanding threats to Indigenous wellbeing, infrastructure, cultural sites and practices, and planning for scenarios of ecological change are all essential for sustaining the continued use of the Yukon North Slope.

The effects pathways resulting from climate induced changes to the North Slope environment carry cascading impacts on wildlife, their habitat and the Inuvialuit who share it. These introduce special challenges for co-management and will require a heightened capacity and commitment by management partners to anticipate and respond to ecological uncertainty and wildlife and human population-level surprises that are difficult to predict at present. Future Inuvialuit traditional use of the North Slope will depend a great deal on these responses and associated management actions (Staples, 2013).

# Selected Studies and Traditional Use Research Relevant to the Yukon North Slope

This section is an annotated listing of selected traditional use reports, papers, and other resources that provide support to the *Yukon North Slope Wildlife Conservation and Management Plan* and highlight issues and research that will be important to consider during its implementation. The studies described below are the foundational publications that inform the understanding of traditional use in the Plan.

- ➤ Inuit Land Use and Occupancy Project (Freeman, 1976)
  - As part of the Inuit Land Use and Occupancy Project report, traditional use of the Beaufort Sea and YNS was mapped across three time periods: the whaling and fur trade prior to 1930, the period between 1930 and 1955 when the fur trade became well-established in the Mackenzie Delta, and the period between 1955 and 1974, which was characterized by the development of the DEW Line and establishment of Inuvik. Traditional use was documented on 1:500,000 scale maps, and shows harvest areas for caribou, moose, sheep, muskox, grizzly bear, polar bear, beluga whale, seal, waterfowl, snowshoe hare, arctic hare, arctic ground squirrel, furbearer trapping, and fishing sites.
- Yukon North Slope Inuvialuit Oral History (Nagy, 1994)
  Researchers accompanied Inuvialuit land-users on field trips across the Yukon North Slope
  - and Qikiqtaruk (Herschel Island) to describe the history of the landscape and Inuvialuit relationship with the land. The project discusses lifestyle changes that accompanied major social shifts in the region, such as the development of the DEW Line, and describes traditional reliance on the Yukon North Slope for sustenance and economic support. The project documented 120 place names in the study area and serves as an account of Inuvialuit historical presence on the landscape.
- ➤ Inuvialuit Food Use and Food Preferences in Aklavik, Northwest Territories, Canada (Wein & Freeman, 1992)
  - This study examined the annual frequency of use of 32 species of mammals, fish, birds, and plants in Inuvialuit households in Aklavik and rated the degree of preference for each food

source. The most frequently consumed traditional foods were caribou, beluga, whitefish, and hare. Overall, traditional foods were widely preferred to store-bought foods.

- Inuvialuit Use of the Beaufort Sea and its Resources, 1960-2000 (Usher, 2002)

  Comprehensive surveys of Inuvialuit harvesters were conducted as part of three different studies: The Area Economic Surveys (1960s), Inuit Land Use and Occupancy Project (1970s) and the Inuvialuit Harvest Study (1990s). These studies show the impact of a move away from dog teams for transport and the adoption of snow machines, as the mean annual harvest of country foods declined with less of a need to feed dogs. The composition of yearly harvest also shifted during this period, with the balance between marine and terrestrial food sources changing from 75:25 in the 1960s to 45:55 in the 1990s. The overall importance of traditional foods, however, remained high, and the authors emphasize the importance of ongoing harvest studies for economic planning and fish and wildlife management.
- Unikkaaqatigiit Inuit Perspectives on Climate Change (Nickels et al., 2005)
  In response to rapid environmental change in the arctic, the Inuit Tapiriit Kanatami, the Nasivvik Centre for Inuit Health and Changing Environments at Laval University, and the Ajunnginiq Centre at the National Aboriginal Health Organization cooperated with regional Inuit communities to conduct a series of workshops discussing environmental change and its impacts on Inuit land-users. These workshops were held between 2002 and 2005, and included the ISR communities of Aklavik, Inuvik, Tuktoyaktuk, Paulatuk, and Ulukhaktok (known then as Holman Island). The workshops were community-focused, not landscape-specific, so it is not possible to identify which Akalvik responses were directed towards changes on the Yukon North Slope and which responses were made in relation to other parts of the ISR. However, Aklavik residents identified a range of environmental changes that impact traditional use. These include changes in ice conditions and resulting impacts to travel, changes in sea level, decreased health in fish and wildlife, and changing precipitation patterns, all of which impact traditional use of the land.
- Aklavik Local and Traditional Knowledge about Grizzly Bears of the Yukon North Slope (WMAC (NS) & Aklavik HTC, 2008)
  - As part of a six-year grizzly bear research project on the YNS, Aklavik land-users contributed to an interview series that discussed grizzly bear habitat and natural history on the YNS, as well as Aklavik Inuvialuit relationships with and harvest of grizzly bears. With respect to traditional use on the YNS, this document is an important reference, as it details Inuvialuit harvesting practices and locations.
- ➤ Aklavik Local and Traditional Knowledge about Porcupine Caribou (WMAC (NS) & Aklavik HTC, 2009)
  - The purpose of this study was to document Inuvialuit traditional knowledge of the Porcupine caribou herd. Specifically, Aklavik land-users were interviewed on herd movement patterns, population trends, range, habitat requirements, and overall heard health, as well as the

relationship between Aklavik Inuvialuit and caribou. Study results are important for informing conservation and management of the herd and contributing to harvest management. While this is not strictly a traditional use study, much of the knowledge reported in this document has been gained through generations of harvesting caribou, and a primary goal of caribou management bodies is to ensure continued sustainable harvest. The knowledge shared in this report provides a foundation for understanding Inuvialuit seasonal land-use, conservation concerns, and goals for the continued harvest of the Porcupine caribou herd.

- Inuvialuit and Nanuq A Polar Bear Traditional Knowledge Study (Joint Secretariat, 2015)
  This report is an effort to better represent aboriginal knowledge of polar bear in published literature. Researchers interviewed 72 traditional knowledge holders across the six ISR communities to discuss polar bear natural history and Inuvialuit relationships with polar bears, including the harvest of bears. Inuvialuit knowledge of a wide range of polar bear traits, including the sensory abilities of polar bears, interactions between bears and other species, their diet, behaviors, assessment of body condition, movement patterns, denning behaviors, and interactions with people, are included. With respect to traditional use, this study discusses Inuvialuit harvesting techniques in detail, as well as the necessary understanding of environmental conditions and travel practices gained through generations of knowledge holders that enables a successful hunt.
- Inuvialuit Harvest Study (Joint Secretariat, 2018)
  Regular surveys across the Inuvialuit Settlement Region measured the harvesting of birds, fish, and mammals in each Inuvialuit community. This allowed for a comparison of reported harvest across years and communities, and counted the number of community members that participated in harvesting. While these studies did not specifically identify harvest that occurred on the Yukon North Slope, they provided a quantitative measurement of species-specific harvesting trends and community participation in Aklavik.
- ➤ Yukon North Slope Inuvialuit Traditional Use Study (WMAC (NS) & Aklavik HTC, 2018b)
  In 2015, 40 Inuvialuit community members were interviewed in the community of Aklavik to describe their traditional use of the Yukon North Slope. Interviewees were asked to map traditional use within their "living memory," including kill sites and harvesting areas for fish, wildlife, berries, and medicinal plants, as well as cultural sites, such as cabin and tent sites, birth sites, burial locations, and places of cultural, historical, or personal importance. Interviewees also documented travel routes and safe havens. In total, 2,091 features were mapped on 1:125,000-scale maps. Interviewees also described the shifts that have occurred in traditional use over their lifetimes, including adoption of new technologies, response to landscape and climate change, and the impacts of societal change. When compared to previous research, this mapping effort documents a change in the geographical extent of traditional use by Aklavik Inuvialuit over time. A contraction in the spatial footprint of traditional use is attributed to numerous factors, including the collapse of the fur trade, a shift to permanent year-round residency in Aklavik, the impacts of mandatory schooling and

reliance on wage labor, increasing costs of purchasing and maintaining harvesting equipment, and less predictable weather patterns due to climate change. However, the Yukon North Slope continues to make a significant contribution to Inuvialuit livelihoods, and the importance of the landscape cannot be quantified simply in economic or subsistence terms. Interviewees were clear to emphasize their personal connections to this land and the role that the landscape plays in their culture.

# Links to Plans and Programs

This section lists plans and programs that link to the objectives and strategies of the *Yukon North Slope Wildlife Conservation and Management Plan*. These plans and programs informed the development of the Yukon North Slope Plan and are an integral part of its implementation.

- Integrated Ocean Management Plan for the Beaufort Sea: 2009 and Beyond (BSP, 2009)

  The plan includes objectives, strategies, and actions for supporting the on-going traditional use of the Beaufort Sea and promoting a local subsistence economy.
- Beaufort Sea Beluga Management Plan (FJMC, 2013)
  The plan contains a mandate to promote continued traditional knowledge transmission, supporting opportunities for youth to gain the necessary skills for continued beluga harvest and processing.
- Harvest Management Plan for Porcupine Caribou Herd in Canada and Implementation Plan (PCMB, 2010, 2016)
   Harvest allocations are set for regions of overlap with Porcupine caribou herd. Inuvialuit
   Game Council has committed to providing harvest data, coordinating with governments, and

implementing an annual allowable harvest, where necessary.

- Aklavik Inuvialuit Community Conservation Plan (Aklavik HTC, Aklavik Community Corporation, WMAC (NWT), FJMC, & Joint Secretariat, 2016)
  Population trends, conservations status, and traditional use are described for a range of species that occur within the Aklavik planning area. This area includes, but is not limited to, the Yukon North Slope.
- Inuvialuit on the Frontline of Climate Change: Development of a Regional Climate Change Adaptation Strategy (IRC, 2016)
   Workshops and interviews were held in all six Inuvialuit Communities to discuss climate

change impacts and adaptation strategies. Each community produced an adaptation plan. Subsistence hunting is one of five categories where adaptation efforts are described. The plan is not Yukon North Slope-specific but lists strategies to support continued traditional harvesting for the community of Aklavik.

- Inuvialuit Settlement Region Polar Bear Joint Management Plan (Joint Secretariat, 2017) and Consensus Agreement Respecting the Implementation of the Inuvialuit Settlement Region Polar Bear Joint Management Plan and Framework for Action (NWT Conference of Management Authorities, 2018)
  - The plan recognizes the cultural importance of polar bear harvest and discusses strategies to support continued traditional harvest in the face of environmental change. Objective 2 of the plan is to adaptively co-manage the population, which requires more frequent and timely communication with harvesters to describe current conditions.
- Integrated Fisheries Management Plan for Dolly Varden (Salvenlinus malma malma) of the Gwich'in Settlement Area and Inuvialuit Settlement Region Northwest Territories and Yukon North Slope (DFO (Department of Fisheries and Oceans Canada), Fisheries Joint Management Committee, Gwich'in Renewable Resources Board, & Parks Canada, 2019)

  The management goal of the plan is to ensure long-term conservation, rebuilding, and sustainable use of Dolly Varden stocks. This plan includes descriptions of conservation strategies such as closing of fish holes to harvesting, reduced sport fishing pressure, and updated population assessments. It also ensures the harvest of at least 150 adult Dolly Varden for cultural and subsistence purposes.
- ➤ Inuvialuit Harvesters Assistance Program (IRC, 2019)
  - Sustainable resource harvesting is a cornerstone of Inuvialuit culture but has become more difficult due to a combination of factors, including the anti-fur lobby, decreased fur prices, and an associated reduction in incomes. The harvesters assistance program was created by the IRC, Inuvialuit Game Council, and the Government of the Northwest Territories to "provide assistance to Inuvialuit individuals and groups to engage in traditional and emerging renewable resources activities." The program also encourages the reestablishment of traditional skills needed for harvesting, particularly in youth. Subsistence harvesters can apply for funding through the program to offset the costs associated with traditional harvesting, such as equipment purchasing.

#### References

- ABEKS. (2018). Arctic Borderlands Ecological Knowledge Society Strategic Plan 2017-2020.
- Aklavik HTC, Aklavik Community Corporation, WMAC (NWT), FJMC, & Joint Secretariat. (2016). *Aklavik Inuvialuit Community Conservation Plan Akaqvikmiut Nunamikini Nunutailivikautinich*.
- Bartzen, B. (2014). Local Ecological Knowledge of Staging Areas for Geese in the Western Canadian Arctic. Environment Canada.
- Betts, M. W. (2008). Subsistence and Culture in the Western Canadian Arctic: A Multicontextual Approach. *Canadian Museum of Civilization, Mercury Se*(Archaeology paper No. 169).
- BSP. (2009). *Integrated Ocean Management Plan for the Beaufort Sea: 2009 and Beyond*. Beaufort Sea Partnership.
- Cooley, D., Eckert, C. D., & Gordon, R. R. (2012). Herschel Island—Qikiqtaruk Inventory, Monitoring, and Research Program Key Findings and Recommendations. Retrieved from Yukon Parks website: http://www.wmacns.ca/pdfs/369\_Herschel-Qikiqtaruk-Ecological-Monitoring-YukonParks2012.pdf
- DFO. (2010). Integrated Fisheries Management Plan for Dolly Varden (Salvelinus malma malma) of the Gwich'in Settlement Area and Inuvialuit Settlement Region, Northwest Territories and Yukon North Slope, 2011-2015. Volume 2: Appendices. Fisheries and Oceans Canada.
- DFO (Department of Fisheries and Oceans Canada), Fisheries Joint Management Committee, Gwich'in Renewable Resources Board, & Parks Canada. (2019). Integrated Fisheries Management Plan for Dolly Varden (Salvelinus malma malma) of the Gwich'in Settlement Area and Inuvialuit Settlement Region, Northwest Territories and Yukon North Slope. Volume 1: The Plan–2019 Update. Department of Fisheries and Oceans Canada, Fisheries Joint Management Committee, Gwich'in Renewable Resources Board, and Parks Canada Agency.
- FJMC. (2013). Beaufort Sea Beluga Management Plan. 4th Amended Printing. Inuvik, NT: Fisheries Joint Management Committee.
- Freeman, M. M. R. (Ed.). (1976). *Inuit Land Use and Occupancy Project Report*. Retrieved from http://publications.gc.ca/site/eng/9.850125/publication.html
- Friendship, K., & Community of Aklavik. (2011). *Climate Change Adaptation Plan: Community of Aklavik, Northwest Territories*. Retrieved from https://www.cakex.org/documents/climate-change-adaptation-action-plan-community-aklavik-northwest-territories
- Furgal, C., & Seguin, J. (2006). Climate change, health, and vulnerability in Canadian northern Aboriginal communities. *Environmental Health Perspectives*, *114*(12), 1964–1970. https://doi.org/10.1289/ehp.8433
- Harwood, L. A., Norton, P., Day, B., & Hall, P. A. (2002). The harvest of beluga whales in Canada's Western Arctic: Hunter-based monitoring of the size and composition of the catch. *Arctic*, *55*(1), 10–20. https://doi.org/10.14430/arctic687
- Herschel Island-Qikiqtaruk Management Plan Review Committee. (2018). *Herschel Island-Qikqtaruk Territorial Park Management Plan June 12, 2018*.
- Inuvialuit Harvest Study. (2003). Inuvialuit Harvest Study: Data and Methods Report 1988-1997. Inuvik,

- Northwest Territories: The Joint Secretariat.
- IRC. (2016). *Inuvialuit on the Frontline of Climate Change: Development of a Regional Climate Change Adaptation Strategy.* Inuvik, NT: Inuvialuit Regional Corporation.
- IRC. (2019). Inuvialuit Harvesters Assistance Program. Retrieved June 24, 2019, from Inuvialuit Regional Corporation website: https://www.irc.inuvialuit.com/program/inuvialuit-harvesters-assistance-program
- Irrgang, A. M., Lantuit, H., Gordon, R. R., Piskor, A., & Manson, G. K. (2019). Impacts of past and future coastal changes on the Yukon coast threats for cultural sites, infrastructure, and travel routes. *Arctic Science*, *5*(2), 107–126. https://doi.org/10.1139/as-2017-0041
- ITK. (2019). *National Inuit Climate Change Strategy*. Retrieved from Inuit Tapariit Kanatami website: https://www.itk.ca/national-inuit-climate-change-strategy/resources/
- Joint Secretariat. (2015). *Inuvialuit and Nanuq: A Polar Bear Traditional Knowledge Study*. Joint Secretariat, Inuvialuit Settlement Region.
- Joint Secretariat. (2017). *Inuvialuit Settlement Region Polar Bear Joint Management Plan*. Joint Secretariat, Inuvialuit Settlement Region.
- Joint Secretariat. (2018). Inuvialuit Harvest Study. Retrieved November 25, 2018, from https://jointsecretariat.ca/isr-cbmp/inuvialuit-harvest-study/?fbclid=IwAR0kjt4Vqn7OFiTceSkdgy\_Hdf\_a-5e4qPNiPf1udEsfZTkX5oldThCDlkY
- Konopczak, A. M., Manson, G. K., & Lantuit, H. (2016). Coastal erosion and resulting impacts along the icerich permafrost coast of the Yukon Territory, Canada. *EPIC3XI. International Conference on Permafrost, Potsdam, 2016-06-20-2016-06-24.* Retrieved from http://epic.awi.de/41521/
- Middleton, J., Cunsolo, A., Jones-Bitton, A., Wright, C. J., & Harper, S. L. (2020). Indigenous mental health in a changing climate: A systematic scoping review of the global literature. *Environmental Research Letters*, *15*(5). https://doi.org/10.1088/1748-9326/ab68a9
- Nagy, M. I. (1994). Yukon North Slope Inuvialuit Oral History. Government of the Yukon, Heritage Branch.
- Nickels, S., Furgal, C., Buell, M., & Moquin, H. (2005). *Unikkaaqatigiit-Putting the Human Face on Climate Change: Perspecitives from Inuit in Canada*. Ottawa, ON: Joint publication of Inuit Tapiriit Kanatami, Nasivvik Centre for Inuit Health and Changing Environments at Université Laval and the Ajunnginiq Centre at the National Aboriginal Health Organization.
- NWT Conference of Management Authorities. (2018). Consensus Agreement Respecting Implementation of the Inuvialuit Settlement Region Polar Bear Joint Management Plan and Framework for Action.
- Papik, R., Marschke, M., & Ayles, B. (2003). *Inuvialuit Traditional Ecological Knowledge of Fisheries in Rivers West of the Mackenzie River in the Canadian Arctic.* Canada/Inuvialuit Fisheries Joint Management Committee Report 2003-4.
- Parks Canada. (2018). Ivvavik National Park of Canada Management Plan. Parks Canada.
- PCMB. (2010). *Harvest Management Plan for the Porcupine Caribou Herd in Canada*. Retrieved from Porcupine Caribou Management Board website: https://www.pcmb.ca/documents/Harvest Management Plan 2010.pdf
- PCMB. (2016). Implementation Plan, A Companion Document to the Harvest Management Plan for the

- Porcupine Caribou Herd in Canada.
- Pearce, T., Ford, J. D., Duerden, F., Smit, B., Andrachuk, M., Berrang-Ford, L., & Smith, T. (2011). Advancing adaptation planning for climate change in the Inuvialuit Settlement Region (ISR): A review and critique. *Regional Environmental Change*, 11(1), 1–17. https://doi.org/10.1007/s10113-010-0126-4
- Russell, D. E., Svoboda, M. Y., Arokium, J., & Cooley, D. (2013). Arctic Borderlands Ecological Knowledge Cooperative: can local knowledge inform caribou management? *Rangifer*, *33*(2), 71. https://doi.org/10.7557/2.33.2.2530
- Usher, P. J. (2002). Inuvialuit Use of the Beaufort Sea and its Resources, 1960-2000. *Arctic*, *55*(December 2001), 18–28.
- Wein, E. E., & Freeman, M. M. R. (1992). Inuvialuit food use and food preferences in Aklavik, Northwest Territories, Canada. *Arctic Med Res*, *51*(4), 159–172. https://doi.org/10.1016/j.saa.2012.12.026
- WMAC (NS). (2020). Arctic Climate Change Research and Monitoring A Review for Use on the Yukon North Slope.
- WMAC (NS). (2022). Yukon North Slope Wildlife Conservation and Management Plan.
- WMAC (NS), & Aklavik HTC. (2008). Aklavik Local and Traditional Knowledge about Grizzly Bears of the Yukon North Slope: Final Report. Whitehorse, YT: Wildlife Management Advisory Council (North Slope).
- WMAC (NS), & Aklavik HTC. (2009). *Aklavik Local and Traditional Knowledge about Porcupine Caribou*. Retrieved from Wildlife Management Advisory Council (North Slope) website: http://www.wmacns.ca/pdfs/287\_WMAC\_rpt\_pcbou\_knwldg\_web.pdf
- WMAC (NS), & Aklavik HTC. (2018a). *Inuvialuit Traditional Knowledge of Wildlife Habitat, Yukon North Slope*. Whitehorse, YT: Wildlife Management Advisory Council (North Slope).
- WMAC (NS), & Aklavik HTC. (2018b). *Yukon North Slope Inuvialuit Traditional Use Study*. Whitehorse, YT: Wildlife Management Advisory Council (North Slope).
- WMAC (NS), Yukon Environment, Aklavik HTC, & Parks Canada. (2008). Yukon North Slope Grizzly Bear Population Study (Mid-Term Project Report).
- Worden, E. (2018). "Everything is changing so much": Community Perspectives on the Declining Beluga Whale Harvest in Aklavik, NT. Univrsity of Manitoba.