Caribou Migration and the State of their Habitat: Tłı̨chǫ Knowledge and Perspectives on ʔekwǫ̀ (Barrenland Caribou)

Tłı̨chǫ
Traditional Knowledge Reports:
Series 2

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Tłı̨chǫ Knowledge and Perspectives on ʔekwǫ̀ (Barrenland Caribou)

By Whàehdǫǫ̀ Nowo Kǫ̀, Dogrib Treaty 11 Council

Submitted to the West Kitikmeot Slave Study Society, March 2001

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Caribou Migration and the State of their Habitat

Tłı̨chǫ Knowledge and Perspectives on ʔekwǫ̀ (Barrenland Caribou)

Copies of this report are available from the Tłı̨chǫ Government; or download free of charge at www.research.tlicho.ca.

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Cover photos: Courtesy of Allice Legat

- Phillip Zoe drying a detł'o (caribou hide with fur) at Deèzàatì, 1999
- Setting up camp at Deèzàatì, 1999
- Madelaine Arrowmaker picking kwetsı̨ (rock tripe) at ʔewaànıt'ıtì, 2001
- Elise Simpson, Deèzàatì, 1999
- Georgina Chocolate and Moise Martin at Nàdenìı̨àatì, 2000

Caribou cover photo and cover graphics: INKIT, Yellowknife, NT

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Dedication

This report is dedicated to the memory of Sammy Football or Sahme as he is called in Tłı̨chǫ Dene. Sahme trapped and hunted with his father. His family lived on the land year round and only travelled to town when they needed supplies. People looked up to his family because they worked hard, shared their good fortune, and lived according to Tłı̨chǫ values.

Photo courtesy of Bobby Gon, 1999

Sahme treated all his children, grandchildren, and great grandchildren with love; he gave them Tłı̨chǫ names and taught them Tłı̨chǫ values. He shared what he learned from his ancestors and parents, and related his experiences and observations on the land through oral narratives.

Sahme loved to tease and joke with people. His laugh was loud and clear. Sahme could often been seen walking around town stopping and talking to the children, whom he treated in fun-loving and caring ways.

Sahme was a great man. He spoke with a powerful voice that showed his strong character and his respect for Tłı̨chǫ nàowo (knowledge). Sahme's character, understanding, and kind heart will always be remembered. Future generations will learn about Sahme through Tłı̨chǫ narratives.

Tłı̨chǫ Elders

From 1995 to 2000 the following Tłı̨chǫ elders are associated with and essential to this and other traditional knowledge projects.

Behchokǫ̀		
Adele Wedawin	Annie Black	Eddie Lafferty
Elizabeth Chocolate	Elizabeth Michel	Elizabeth Rabesca
Harry Apple	Harry Koyina	Harry Quitte
Jimmy Martin	Joe Migwi	Joe Suzie Mackenzie
Johnny Eyakfwo	Joseph Rabesca	Julie Mackenzie
Laiza Germaine	Caroline Beaulieu	Liaza Mackenzie
Liza Koyina	Harry Wedawin	Madeline Martin
Matton Mantla	Moise Martin	Nick Black
Paul Rabesca	Pierre Wedzin	Robert Mackenzie
Rosalie Drybones	Roseann Martin	Theresa Lafferty
Gamètì		
Alphonse Quitte	Angelique Mantla	Amen Tailbone
Bella Zoe	Elise (Alice) Simpson	Elizabeth Chocolate
Elizabeth Mantla	Harry Simpson	John D Quitte
Madelaine Arrowmaker	Madelaine Drybone	Mary Apple
Paul Wetrade	Phillip Zoe	Pierre Mantla Jr.
Pierre Quitte	Romie Wetrade	Rosalie Tailbone
Sammy Football	Suzie J. Bruneau	Zimmy Mantla
Wekweètì		
Alexis Arrowmaker	Joseph Pea'a	Louis Whane
Madelaine Judas	Margaret Lafferty	
Whatì		
Alexi Flunkie	Annie Simpson	Albert Wedawin
Dora Nitsiza	Joe Zoe Fish	Mary Adele Moosenose
Mary Madeline Nitsiza	Phillip Nitsiza	Pierre Beaverhoe

Acknowledgements

Many people helped the research team during this project.

- Community Elders Committees advised the team when in their community.
- Regional Elders Committee oversaw the project after 1999.
- Community chiefs and councils appointed key representatives to the West Kitikmeot Slave Study Society board to help ensure this research was successfully funded.
- Dogrib Treaty 11 Council staff administered the project.
- Community members in Behchokǫ̀, Whatì, Gamètì, and Wekweètì participated in group discussions, visiting the office and camp sites.
- Language specialists and translators were always willing to talk to community researchers about language and debate the correct spelling—a particularly helpful endeavour when thinking about new terminology. Special mention to Jim Stauffer who was always willing to help us download the most up-to-date Dene fonts, and to Leslie Saxon who worked closely with the Tłı̨chǫ language specialists.
- Department of Resources, Wildlife and Economic Development (RWED) Government of the NWT (GNWT):
  - Helped to identify Latin plant names.
  - Discussed and shared digital information on the location of collared caribou in relation to known harvesting sites.
- GIS specialists Ozzi Sawiki and Mike McClellan helped to set up the geographical information system and train staff.
- Chris O'Brien helped to separate lichen and moss samples that community researchers collected, making it easier for the research team to identify Tłı̨chǫ, English, and Latin terms.
- Air Tindi pilots helped to move equipment and supplies to our research sites on the tundra; they showed their respect for elders.
- West Kitikmeot Slave Study Society funded the project, gave feedback on interim reports, and set final reports to the appropriate peer reviewer.

Acronyms

BHP ..... Broken Hills Property (mining company)

CEC ..... Community Elders Committee

CHP..... Caribou Harvesting Project (this project)

GIS ..... geographic information system

GNWT..... Government of the Northwest Territories

PAR..... participatory action research (method)

RWED..... Resources, Wildlife and Economic Development (Department of the GNWT; now called Environment and Natural Resources)

WKSS..... West Kitikmeot Slave Study Society

Tłı̨chǫ Pronunciation Key

The sounds of most Tłı̨chǫ consonants are similar to the sounds made by consonants in English.

Tłı̨chǫ has four vowels—a, e, i, o—and four kinds of vowel sounds: plain, nasal, low-tone, and nasal low-tone.

Nasal vowels	**Low-tone vowels**	**Nasal low-tone vowels**
ą ę ı̨ ǫ	à è ì ò	ą̀ ę̀ ı̨̀ ǫ̀
For nasal vowels, the air flows through the nose and mouth.	For low-tone vowels, the voice is deeper and the air flows through the mouth.	For nasal low-tone vowels, the voice is deeper and the air flows through the nose and mouth.

The following list shows some sounds that need explaining, including some consonants not found in English. The list is adapted from the Tłı̨chǫ dictionary[1].

Letter	**Pronunciation**
ʔ ɔ	The ‘click’ sound heard in the expression ‘ah-ah’ or ‘oh-oh’
Ą ą	Similar to the sound in ‘want’
Ch ch	‘Chair’; some dialects sound more like wetsuit
Ch’ ch’	Same as ch, but with the click sound as part of it; an ejective ch
Dl dl	Similar to glue; at times like badly
Dz dz	Similar to adze
E e	Usually like set, but after w it is similar to wood
Ę ę	Similar to sent
Gh gh	No similar sound in English; similar to the r sound in the French rouge
Gw gw	Similar to language

1 Dogrib Divisional Board of Education 1996

Letter		Pronunciation
I	ı	Same as ski
Į	į	Similar to the sound in means
J	j	Can be as in jet or adze, depending on the dialect
K	k	Like in kit; but in some words it is pronounced like x or h
K’	k’	Same as k but with the click sound as part of it; an ejective k
Kw	kw	Same as quit
Kw’	kw’	Same as kw, but with the click sound as part of it; an ejective kw
Ł	ł	Breathy l, similar to flip or slip
O	o	Like go; some pronounce it like goo
Ǫ	ǫ	Similar to the sound in don’t
T’	t’	Same as t but with the click sound as part of it; an ejective t
Tł	t ł	Similar to settle or in some cases more like clue
Ts	ts	Like cats
Ts’	ts’	Same as ts but with the click sound as part of it; an ejective ts
Wh	wh	Breathy wh as in when; wh with a following e sounds like whirr
X	x	No similar sound in English; sounds like a raspy h and similar to the German ch as in Bach
Zh	zh	Similar to pleasure, but in some dialects sounds more like please

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Report Summary

The decision to conduct this research came from the elders and the leadership through the Dogrib Renewable Resources Committee[2]. They wanted to ensure that Tłı̨chǫ knowledge of ʔekwǫ̀[3] and their habitat was documented; to provide baseline information, to contribute to monitoring and management initiatives related to caribou and their habitat.

This report reflects the elders' knowledge about caribou and the state of their habitat, that the elders wish to share in the public domain.

Throughout the project's four years, the research team gathered information under the premise that caribou distribution and migration patterns are dependent on the state of the habitat.

The objectives for this project were to:

- Translate relevant information on caribou movement contained in previous interviews.
- Develop Tłı̨chǫ terminology on caribou and caribou habitat.
- Document Tłı̨chǫ knowledge of caribou habitat.
- Document variations in migration patterns, and the elders' knowledge on why variation occurred during given time periods.
- Document the relationship between the Tłı̨chǫ and the caribou.
- Complete a literature review of indigenous knowledge of caribou and reindeer.

The Tłı̨chǫ are the largest Athapaskan-speaking population in the NWT. The research area is Mǫwhì Gogha Dè Nı̨ı̨tł'èè[4], an area smaller than the

2 Committee members were Harry Simpson, Romie Wetrade, Jimmy Nitsiza, Phillip Dryneck, Eddie Camille, Louis Whane, and Joe Pea'a. Violet Camsel-Blondin was the chairperson.
3 The English word caribou is used for both woodland and barrenland caribou. The Tłı̨chǫ word ʔekwǫ̀ means barrenland caribou, or as several elders say "caribou that return to their home on the tundra to give birth and winter in the boreal forest." The Tłı̨chǫ word tǫdzı means woodland caribou.
4 See maps in Appendix I.

traditional territory used by the ancestors of the people now living in Behchokǫ̀, Gamètì, Wekweètì, and Whatì.

The economic, social, and cultural importance of caribou to the Tłı̨chǫ is substantial. Tłı̨chǫ state that they and the caribou have a very close and respectful relationship. To show respect people take only what they need, use all parts of the animals that they harvest, and discard any unused parts in respectful ways. To show respect, people have knowledge of caribou and share it.

Tłı̨chǫ acknowledge some general truths about caribou, such as:

- Caribou have unpredictable migration patterns, but when they migrate to particular areas they are more likely to use certain trails and water crossings[5].
- Caribou return to the same birthing grounds.
- Caribou follow the same general annual cycle each year.
- Caribou leaders—middle-aged cows with experience—have good memories.
- Caribou migrate to where the vegetation is lush and remain in an area if the vegetation is easily accessible and plentiful.
- Caribou have a very strong sense of smell.
- Caribou are fairly adaptable to changing environments but adaptation has its limits; they are susceptible to pollutants.
- Caribou survival and continued annual migration depends on humans showing them respect.
- Only a few people have a spirit connection with the caribou and the knowledge and intelligence that comes from this. These people know where the caribou are at any given time, but cannot predict where the caribou will migrate to in the boreal forest.

The research team used the participatory action research (PAR) method. It provides a structure that incorporates the Tłı̨chǫ philosophical approach.

5 Areas harvesters often went to and where they put up caribou fences before the late 1930s.

Elders and harvesters maintain control over how research is conducted and how their knowledge is presented. Community Elders Committees (CEC), particularly the CEC in Behchokǫ̀, provided direction on who to interview and why. At the 1999 Dogrib Assembly, the elders requested a Regional Elders Committee be set up to oversee projects that document and use Tłı̨chǫ knowledge. Several elders who took part in this project had taken part in previous research.

The research team regularly met with the CEC from each community and sought their advice and direction. The research team worked directly with elders and harvesters through discussions, interviews, meetings to verify information, etc. They collected, organized, and verified data.

On-the-job training is an important part of PAR. The research director coordinated training so that each member of the team developed better skills in their areas of responsibility. For example: Tłı̨chǫ literacy, transferring data to topographic maps, transferring data to a database, data analysis, and report writing.

Tłı̨chǫ elders documented their knowledge of caribou from the point of view of hunters who have survived by understanding caribou behaviour and caribou dè (habitat). Research activities related directly to achieving the project objectives.

The Tłı̨chǫ term and concept for habitat is ʔekwǫ̀ dè[6]. The elders consider anything linked to caribou as their habitat. This includes things such as ʔı̨k'ǫǫ̀ (spiritual power); human behaviour; predators such as wolves and people; pests such as mosquitoes and flies; landscape such as muskeg, eskers, and smooth bedrock leading to areas to cross water; weather conditions that create particular kinds of snow and ice conditions; water, wind, and temperature; and favoured vegetation.

6 Dè includes everything that is associated with land, with whom Tłı̨chǫ have a relationship that is responsive to their attention, action, and behaviour. Dè includes the spiritual and physical aspects of the land, people, wildlife, and their habitats, as everything has life and spirit.

Research results fall under three main headings:

- Oral narratives: This section describes accepted Tłı̨chǫ knowledge of ʔekwǫ̀ that has been traditionally verified through discussions among hunters and can now be shared through oral narratives.
- Life histories of ʔekwǫ̀ harvesting: This section describes specific individuals' experiences with harvesting ʔekwǫ̀.
- Field research: This section describes specific vegetation communities and landscape in specific locations in the boreal forest and in the tundra.

Research Results: Oral Narratives

Before information becomes knowledge in the oral narrative, harvesters collect information through observations and share it with others. They discuss their observations with other hunters and elders, who question and verify these observations by sharing their own oral experiences and observations. It is during these interactions that elders and harvesters think about change between seasons, years, and over decades, and why these changes have occurred.

Tłı̨chǫ understand that knowing what the ʔekwǫ̀ needs to survive is basic to respecting the relationship between them. Tłı̨chǫ elders and harvesters know that ʔekwǫ̀ need vegetation both on the tundra and in the boreal forest to build the strength of their calves and for the herds to survive during the winter. They also know that ʔekwǫ̀ require large habitat areas for migration, as the vegetation that they forage on needs to recover from time to time.

ʔewkǫ̀ migrate towards lush vegetation; human behavior can cause unpredictable migration. For this and other reasons, migration patterns change over time. Tłı̨chǫ elders and harvesters know this. Hunters understand they cannot predict where the ʔekwǫ̀ will migrate. At the same time they watch and evaluate caribou habitats with the idea they will find where ʔewkǫ̀ may migrate during the winter; where the lead cow may take them. Through experience and listening to the knowledge of others, elders and harvesters know the annual cycle—if it varies due to weather conditions

that result in particular types of snow cover and ice thickness, or an increase in forest fires.

Elders and harvesters are concerned that mining industry personnel do not realize the impacts of fumes and pollution on vegetation and therefore on ʔekwǫ̀ well-being, or the impacts directly on ʔekwǫ̀. These concerns are compounded by their knowledge that ʔekwǫ̀ have more than one type of behaviour. They stay away from the mines when grazing with their young in summer and early fall. But once they adapt to the smell and they are in migration mode they are likely to put themselves in danger.

These concerns are compounded by their knowledge that people cannot have knowledge of caribou and understand their winter behaviour by only watching and experiencing them in the summer. Caribou themselves carry knowledge of both their winter and summer habitats.

Research Results: Oral Histories of Harvesting

People harvested ʔekwǫ̀ in various locations on Tłı̨chǫ traditional territory. The data shows that in many years there were either not enough ʔekwǫ̀ for the camp or people harvested underweight ʔekwǫ̀.

During the fall 1956 and winter 1957 the harvested ʔekwǫ̀ were not enough and were underweight. This occurs at the same time as the Rae Rock mine was in full operation and when it is known that a boy in Whatì hit a ʔekwǫ̀ with a stick. The information in oral narratives reveals that the data on the maps corresponds with the elders' observations.

The oral histories of harvesting revealed that the recorded vegetation found in the mouths, stools, and stomachs of ʔekwǫ̀ was similar to the recorded vegetation in the oral narratives, for each season and environment.

Research Results: Field Research

The fieldwork served two main purposes. First, it is an excellent environment for training staff, particularly with the elders. The elders wanted the research team to see ʔekwǫ̀ habitat. This experience helps them

more clearly understand the terms, concepts, and descriptions that the elders used. This experience also helps them understand the two sets of knowledge (tundra and boreal forest) associated with ʔekwǫ̀.

Second, the fieldwork enabled the research team to collect and document data on habitat and vegetation. This data helps to accurately identify and translate terms in Tłı̨chǫ, English, and Latin.

Conclusions and Recommendations

The elders state that the most important factors that affect caribou distribution and migration are human activity and food availability. This is corroborated by many others (Klein 1999; Cronin 1998; Wolfe 1997; Cameron 1995; Reimers unknown).

Documenting these changes, as observed by Tłı̨chǫ hunters and elders, contributes to a base of knowledge that can serve as baseline data for future assessment and monitoring. This is especially pertinent given that Tłı̨chǫ knowledge covers a long period of time.

The Tłı̨chǫ Treaty 11 Council is concerned that unless Tłı̨chǫ traditional knowledge of the caribou within their habitat is recognized and used, the caribou will be harmed by existing and potential new industrial development.

This report makes the following recommendations. The overall purpose is to know and understand caribou and their relation to human activity, and to manage that activity, to properly respect and protect caribou and their habitat.

- Continue to collect baseline data on habitat within which the caribou travel in the boreal forest and the tundra.
- Protect known ʔekwǫ̀ water crossings from highway development.
- Continue to document all caribou water crossings.
- Establish baseline data for woodland caribou.
- Continue to collect Tłı̨chǫ harvesting data, on the state of the caribou taken AND the state of the habitat on which it depends.

- Protect caribou habitat.
- Develop strict guidelines to limit pollution
- Put up fences around all tailings ponds to protect caribou from using the tailings rather than ʔelà (mud) to coat themselves.
- Document additional Tłı̨chǫ knowledge on the use of stars to understand migration.
- Document additional Tłı̨chǫ knowledge to further understand the adaptability of ʔekwǫ̀ and associated problems.
- Manage/put out wildfires in the boreal forest so they do not seriously deplete caribou winter forage.

Objectives

The decision to conduct this research came from the elders and the leadership through the Dogrib Renewable Resources Committee[7]. They wanted to ensure that Tłı̨chǫ knowledge of caribou and their habitat was documented; to provide baseline information, to contribute to monitoring and management initiatives related to caribou and their habitat.

This report reflects the elders' knowledge about caribou and the state of their habitat, that the elders wish to share in the public domain.

Throughout the project's four years, the research team gathered information under the premise that caribou distribution and migration patterns are dependent on the state of the habitat. Tłı̨chǫ harvesters have observed that changes to the habitat result in changes to migration and distribution. Scientific studies agree with Tłı̨chǫ oral narratives that suggest a correlation between caribou and the state of the habitat. Tłı̨chǫ harvesters have also observed that it is impossible to predict what changes to migration will occur, but that caribou will follow their trails that lead to places with the best vegetation.

From the Tłı̨chǫ perspective, caribou habitat includes everything that is in the space that caribou inhabit. This includes, among other things: the human spirit, predators and pests, snow depth, ice cover, vegetation that caribou depend on, humans, water, landscape, wind, and temperature.

The objectives for this project were to:

- Translate relevant information on caribou movement contained in previous interviews.
- Develop Tłı̨chǫ terminology on caribou and caribou habitat.
- Document Tłı̨chǫ knowledge of caribou habitat.
- Document variations in migration patterns, and the elders' knowledge on why variation occurred during given time periods.

7 Committee members were Harry Simpson, Romie Wetrade, Jimmy Nitsiza, Phillip Dryneck, Eddie Camille, Louis Whane, and Joe Pea'a. Violet Camsel-Blondin was the chairperson.

- Document the relationship between the Tłı̨chǫ and the caribou.
- Complete a literature review of indigenous knowledge of caribou and reindeer.

Tłı̨chǫ Terminology

This report uses many Tłı̨chǫ words. We follow the orthography found in the Dogrib dictionary Tłı̨chǫ Yatìì Enı̨htł'è (1996). Or in the case of place names, we follow the spelling rules established by the Place Names project (2002).

In 2001 Dogrib is the common English term for Tłı̨chǫ. The term Tłı̨chǫ is used throughout this report, except on some maps and in names of some committees or organizations.

See the Tłı̨chǫ pronunciation guide in the front pages of this document.

Researchers and students in front of Behchokǫ̀ office. Top: Georgina Chocolate, Gabrielle Mackenzie-Scott, Dagha Scott. Middle: Camilla Nitsiza, Bobby Gon, Elsie Mantla, Sally Anne Zoe. Bottom: Darla Beaulieu, Roger Champlain. (Photo courtesy of Allice Legat)

Study Area and People

The Tłı̨chǫ are the largest Athapaskan-speaking population in the NWT. The research area is Mǫwhì Gogha Dè Nı̨ı̨tł'èè[8], an area smaller than the traditional territory used by the ancestors of the people now living in Behchokǫ̀, Gamètì, Wekweètì, and Whatì.

The Tłı̨chǫ traditionally occupied a large area between Tideè (Great Slave Lake) and Sahtì (Great Bear Lake). It extended well past Kǫ̀k'èetì (Contwoyto Lake), Ts'eèhgootì (Aylmer Lake), and ʔedaàtsotì (Artillery Lake) in the tundra to the Dehtso (Mackenzie River) in the west (See Helm, 1981).

Richardson (1851) claims the Tłı̨chǫ region extended to the Back River[9]. Back (1836:265) stated that the Tłı̨chǫ travelled to the mouth of the river during war excursions against the Inuit. Petitot (1884; 1891) stated that the Tłı̨chǫ area extended to Deèzàatì (Point Lake).

The research team found that both ʔek'atì (Lac de Gras) and Deèzàatì are extremely important areas for Tłı̨chǫ during fall caribou hunting (and for trapping). We also found that their traditional territory extends well to the east of the Mǫwhì Gogha Dè Nı̨ı̨tł'èè. Most hunters consider Kǫ̀k'èetì part of their traditional hunting territory.

> *My mother used to tell me stories. Every once in a while I asked her for old stories and she would tell me stories. So she told me at one time, "your father and the others went to the tundra and they were not back. They were gone and still gone." It is said, when there's no caribou, they have to travel all the way to Kǫ̀k'èetì or to Yabàahtì[10] or to ʔek'atì. When there's no caribou at the edge of the tree line and when there's no caribou during the summer. It is said, that's how far they had to travel. They used just the birch-bark canoes. (Joe Suzie Mackenzie, age 83. CHP-98/05/26)*

8 See maps in Appendix I for locations of Mǫwhì Gogha Dè Nı̨ı̨tł'èè and communities

9 The research team was unable to document the Tłı̨chǫ name for Back River.

10 There are two Yabàahtì: one translates as Yamba Lake and the other as the Arctic Ocean. This one is the Arctic Ocean.

Since the 1921 Treaty agreement between Mǫwhì and the federal commissioner, the Tłı̨chǫ acknowledge that their land base diminished to those lands encompassed within the Mǫwhì Gogha Dè Nı̨ı̨tł'èè.

Tłı̨chǫ and Caribou

The economic, social, and cultural importance of caribou to the Tłı̨chǫ is substantial. Both the territorial and federal governments have long acknowledged the importance of caribou to the Tłı̨chǫ through harvesting studies. Tracey and Kramer (2000:47) found that 96.8% of the residents of Rae-Edzo (Behchokǫ̀) consumed caribou at least once a year; compared with 89.6% who consumed fish, 20.4% who consumed moose, and 76.7% who consumed berries.

Tłı̨chǫ continue to have community hunts. Most families have at least one full-time hunter and several women who continue to dry meat, tan hides, and make winter clothing.

Tłı̨chǫ state that they and the caribou have a very close and respectful relationship. To show respect people take only what they need, use all parts of the animals that they harvest, and discard any unused parts in respectful ways. To show respect, people have knowledge of caribou and share it. Lack of knowledge and therefore respect result in the caribou migrating elsewhere and a population decline. Tłı̨chǫ knowledge is collected through harvesting activities, verified through discussions with harvesters and elders, and shared through oral narratives.

Tłı̨chǫ acknowledge some general truths about caribou, such as:

- Caribou have unpredictable migration patterns, but when they migrate to particular areas they are more likely to use certain trails and water crossings[11].
- Caribou return to the same birthing grounds.
- Caribou follow the same general annual cycle each year.

11 Areas harvesters often went to and where they put up caribou fences before the late 1930s.

- Caribou leaders—middle-aged cows with experience—have good memories.
- Caribou migrate to where the vegetation is lush and remain in an area if the vegetation is easily accessible and plentiful.
- Caribou have a very strong sense of smell.
- Caribou are fairly adaptable to changing environments but adaptation has its limits; they are susceptible to pollutants.
- Caribou survival and continued annual migration depends on humans showing them respect.
- Only a few people have a spirit connection with the caribou and the knowledge and intelligence that comes from this. These people know where the caribou are at any given time, but cannot predict where the caribou will migrate to in the boreal forest.

As well as traditional knowledge projects, the Tłı̨chǫ consistently support science programs that monitor and protect caribou such as the RWED caribou collaring project conducted by Anne Gun.

Tłı̨chǫ elders believe that industrial development and associated infrastructure—once it is built—becomes part of *dè*. Mining and other developments—on their own and cumulatively—have potential to become very disruptive to caribou, their habitat, and migration patterns.

Elders think that this type of human activity can destroy caribou habitat and that it will take several hundred years for the vegetation that caribou rely on to rejuvenate. They wanted to document their knowledge so that all people concerned with caribou have access to information about their basic needs.

West Kitikmeot Slave Study Society (WKSS)[12]

The West Kitikmeot Slave Study Society was set up in 1995 to collect environmental and socioeconomic information from the perspective of both science and Aboriginal traditional knowledge. The overall purpose was to gather information to better inform planning decisions and to contribute baseline data to assess and mitigate cumulative effects of development.

The study area extends from the boreal forest of the NWT to the tundra of Nunavut and the NWT; from Great Slave Lake to the Arctic Ocean. It overlaps a large part of Tłı̨chǫ traditional territory. The area has extensive mineral deposits; the discovery of diamonds at Lac de Gras (ʔek'atì) in 1992 led to the biggest staking rush in world history.

Nine organizations came together to form the WKSS. Members included representatives from federal and territorial governments, environmental organizations, Aboriginal communities and governments, and the mining industry. Partners contributed funding and participated on the board. They developed a research strategy and formed a traditional knowledge steering committee and a project steering committee. Together they contributed close to $10 million (about 80% spent directly on research) and funded projects related to the following areas:

- Wildlife and habitat studies, with a focus on caribou.
- Physical environment, such as water quality.
- Socioeconomic, such as developing indicators and a community-based monitoring system.

12 WKSS Final Report 2001

Communities in the WKSS area have populations that range from less than 100 to more than 18,000 people. Aboriginal people that use the area are:

- Tłı̨chǫ of Behchokǫ̀, Gamètì, Wekweètì, and Whatì in the NWT.
- T'atsaot'íne of Dettah and Ndilo in the NWT.
- Denesųłıné of Łutselk'e in the NWT.
- Inuvialuit and Inuit of Bathurst Inlet, Cambridge Bay, Kugluktuk, and Umingmaktok in Nunavut.

Inuit, Inuvialuit, Dene, and Métis still travel their ancestors' trails. Hunting, trapping, fishing, and gathering berries and medicines are widely practiced. People visit communities within their own region and travel long distances to visit other regions. Today people use snowmobiles, aircraft, trucks, ATVs, and motor boats more frequently than canoes, kayaks, and dog teams.

The WKSS five-year mandate ended on March 31, 2001. The final year was largely spent bringing the research projects to the final report stage and working out a proposal for next steps. This included a planning process to recommend a successor organization to WKSS, and a research program to monitor cumulative effects in the WKSS area.

Participatory Action Research (PAR) Methodology

The research team used the participatory action research (PAR) method. It provides a structure that incorporates the Tłı̨chǫ philosophical approach. Elders and harvesters maintain control over how research is conducted and how their knowledge is presented.

Community Elders Committees (CEC), particularly the CEC in Behchokǫ̀, provided direction on who to interview and why. They wanted to document the Tłı̨chǫ relationship with the land and the caribou for their descendants. They wanted to document knowledge to provide baseline data, so they recommended elders over 75 years of age. At the 1999 Dogrib Assembly, the elders requested a Regional Elders Committee be set up to oversee projects that document and use Tłı̨chǫ knowledge.

Several of the elders who took part in this project, had taken part in previous research. Some worked with June Helm in the 1970s and others with Tom Andrews. Still others knew about the research that Joan Ryan did in Whatì in the late 1980s, and that Allice Legat did in Gamètì during the early 1990s.

Research Team and PAR

From 1996 to 1999 the research team regularly met with the CEC from each community, and sought their advice and direction. The research team worked directly with elders and harvesters through discussions, interviews, meetings to verify information, etc. They collected and organized data.

Research assistants in the communities collected and documented the life histories of harvesters, following the system designed by the research team. The GIS Administrator input data to the electronic database and GIS system. The data related to the spatial distribution of harvested caribou, water crossings, and location of caribou fences.

The research director worked with researchers to ensure reliable research techniques. She was responsible to:

- Ensure consistent data collection and analysis.

- Do the accounting and ensure funding was spent according to budget plans.
- Oversee field research, data management and analysis, and report writing.
- Coordinate training.

The researchers and research director verified data with the CEC in Behchokǫ̀ and with the Regional Elders Committee. About 80 elders, currently residing in Behchokǫ̀, were invited to a meeting. The research team read the caribou report to verify information, noted discrepancies, and made changes if directed to do so.

WKSS provided peer review of the annual reports and the final report.

On-the-job Training and PAR

On-the-job training is an important part of PAR. The research director coordinated training so that each member of the team developed better skills in their areas of responsibility. For example: Tłı̨chǫ literacy, transferring data to topographic maps, GIS, transferring data to a database, data analysis, and report writing.

Fieldwork is an important part of training, particularly with elders. The elders want the research team to see and experience ʔekwǫ̀ habitat so they understand more clearly the terms, concepts, and descriptions they use. They want to ensure that the research team understands the two sets of knowledge associated with ʔekwǫ̀: boreal and tundra.

People have jobs today because of the experience and training they received during this and similar PAR research projects.

PAR and Research Activities

Tłı̨chǫ elders documented their knowledge of the caribou from the point of view of hunters who have survived by understanding caribou behaviour and

caribou dè (habitat). Many research activities between 1997 and 2000 relate directly to project objectives.

Objective: Translate relevant information on caribou movement contained in previous interviews.

- The Community Elders Committee directed the research team to review and translate past research and elders' narratives of caribou. They wanted this information included. It became apparent that translators and researchers had not consistently documented most of the terminology associated with caribou and their habitat. Translators and researchers stressed the importance of focussing on the terminology.
- Researchers translated 44 taped interviews from previous projects.
- As the researchers learned to understand and explain the elders' oral narratives, they summarized the interviews in report format, as the translations were time consuming.

Objective: Develop Dogrib terminology on caribou and caribou habitat.

- Researchers first worked with Madeleine Chocolate for about one hour per week on literal and conceptual interpretations of terms.
- Researchers held two terminology workshops: November 1997 and February 1998. They discussed with elders the issues and problems they came across when using traditional terms to discuss caribou and habitat during interviews.
- Dr. Leslie Saxon, a linguist from the University of Victoria, worked with the researchers to spell the terms according to their Tłı̨chǫ sounds.
- A botanist from RWED worked with the researchers to determine the Latin names for the plants.

Objective: Document Dogrib knowledge of caribou habitat.

- To start, researchers completed 20 hours of interviews with the CEC. After transcribing the interviews, the researchers worked with the elders to put relevant habitat on topographic maps.
- In 1998, researcher Georgina Chocolate and high school student Roger Champlain travelled with elders Jimmy Martin, Louis Whane, and

Elizabeth Michel to ʔek'atìɂetsʒ̨l̨l̨[13] (outflow from fat lake) to observe caribou and document the tundra vegetation that they eat.

- In May 1999, researcher Georgina Chocolate travelled to ʔı̨hdaatì (Stagg River) with 15 elders from Behchokǫ̀ to document vegetation that caribou forage on in the boreal forest. They completed eight taped interviews, 19 field forms, and nine rolls of film.
- In August 1999, researcher Georgina Chocolate worked with elders at Deèzàatì (Point Lake) to document information on caribou habitat on the tundra. The elders were Romie Wetrade, Elizabeth Chocolate, Jimmy Martin, Louis Whane, and Phillip Zoe.
  - They completed 24 field forms. Field conditions made it more appropriate to videotape interviews. They photographed, pressed, and identified vegetation; they photographed habitat types.
  - Research assistant Joseph Whane videotaped about two hours of elders and harvesters hunting, butchering, and using caribou.
  - Research director Allice Legat took part in all the activities: documenting Tłı̨chǫ plant names, reviewing researchers' field notes, and clarifying information collected by other team members. They included Sally Anne Zoe (responsible for mapping) and Madelaine Chocolate (responsible for accurately documenting Tłı̨chǫ place names, habitat names, vegetation, and terms associated with caribou and land.)

Objective: Document variations in caribou migration patterns and the elders' knowledge on why variation occurred during given time periods.

- Researchers first conducted 33 interviews with 25 elders from Behchokǫ̀, Gamètì, Wekweètì, and Whatì. This produced 54 hours of taped information.
  - After transcribing the tape the researchers worked with the elders to put relevant places and trails on topographic maps.
- Once researchers understood the general information, they worked with harvesters. The elders gave the information but could not read topographic maps. Harvesters knew the places the elders were talking

13 See maps in Appendix I for location of Tłı̨chǫ place names.

about and could point to the places on the maps so the researchers could document the information for the GIS administrator to plot on MapInfo.

- Researchers included Bobby Gon and Christine Sanspariel in Behchokǫ̀, Adele Tatchia and Noella Kodzin in Wekweètì, and Gloria Ekendia in Gamètì.
- Harvesters included Joe Migwi and Charlie Bishop in Behchokǫ̀, Joseph Whane in Wekweètì, and Joe Mantla in Gamètì.

- Researchers interviewed 28 elders and harvesters, to document their oral histories associated with harvesting caribou. These interviews resulted in 1269 data entries, spanning from 1917 to 1998.
  - The information related to: location of caribou in a given year; foraging habits, health, and fitness; and whether there were enough caribou for the harvester and their family or not.
  - Oral narratives provide the most reliable form of baseline data, as there is no other source capable of providing a long-term perspective.
  - Elders from Behchokǫ̀: Suzie J. Bruneau, Sammy Football, Joseph Rabesca, Moise Martin, Adele Wedawin, Liza Lamouelle, Matto Mantla, Joe S. Mackenzie, Harry Koyina, Liza Koyina, Nick Black, Paul Rabesca, Zimmy Mantla, Madeline Martin, Elizabeth Michel, Annie Black, Elizabeth Rabesca, Elizabeth Mantla, Robert Mackenzie, Joe Migwi, Charlie Bishop.
  - Elders from Gamètì: Madeline Drybone, Romie Wetrade, Alphonse Quitte, Louis Zoe, Joe Mantla.
  - Elders from Wekweètì: Margaret Lafferty, Louis Whane.

Objective: Document the relationship between the Tłı̨chǫ and caribou.

- In 1997, researcher Bobby Gon and elders Jimmy Martin and Robert Mackenzie travelled on the winter road to the BHP Ek'atì mine. They observed and discussed caribou, and peoples' relationship to caribou.
- From May 22 to May 29, 1998, researchers Georgina Chocolate and Bobby Gon interviewed 13 elders at Whagweèhtì (Russel Lake). The interviews focused on ways of knowing and respecting caribou; how respecting caribou affects the relationship between caribou and humans. The interviews produced 22 tapes.

- Researcher Georgina Chocolate reviewed the tapes on caribou translations and summaries for information on respect.
- In 1999, GIS Administrator, Sally Anne Zoe, and Research Director, Allice Legat, travelled between Whatì and Gamètì with Romie Wetrade, Angelique Mantla, and Adele Wedawin to observe caribou in their winter range, and human behaviour associated with the winter road.
- Researchers and the research director worked together with elders to understand the concept of respect in relation to the caribou.

Objective: Complete a literature review of indigenous knowledge of caribou and reindeer.

- Researchers first did a literature search of indigenous knowledge on caribou and reindeer through the University of Calgary (Alberta), the University of Aberdeen (Scotland), the Scott Polar Institute (Cambridge, England), and related websites. They reviewed 53 references for links with this study.
- Many traditional knowledge studies (Zhigunov 1961; Herre 1956) were done in other languages and money was not available for translation.

Research report

It was agreed that the research team should only write what the elders wanted to share, based on what they thought the decision-makers in government and industry would understand: caribou behaviour, habitat that caribou frequent, vegetation communities associated with the habitat, and known migration routes based on harvesting practices. Elders did not want their spiritual relationship with caribou or the land to be the focus.

We sent reports to all Dogrib band offices and schools, and made them available to delegates at the annual Dogrib General Assemblies.

Other activities

To support the elders' discussion of mining activities, Gabriel Mackenzie-Scott was contracted in 1998 to compile a report of archival information on mining activity and caribou distribution in Mǫwhì Gogha Dè Nıı̨tł'èè, as recorded by Wildlife Officers. Seventy-one years of mining data was entered

into the GIS (Scott 1998). When needed, we can compare this information to where people harvested caribou during that period.

To support the elders' concerns about fires destroying important caribou habitat, the research team requested and received fire data from RWED. The team entered 24 years of information into the GIS. We can compare this information to where caribou were located during that period.

The research team produced photos for families whose members participated in the research.

Material and data storage

All materials and data from the project are now the property of the Tłı̨chǫ government. When the project ended, staff catalogued and organized tapes and photos. People worked to enter the information into a data base so the material is accessible to Tłı̨chǫ students and groups.

Audio and video tapes and photos were stored in locked safes. Topographic data was stored in access; maps were in MapInfo format on computers where data can be continually updated. Plant specimens were pressed and stored in metal cabinets. Topographic maps were storied in filing cabinets but were transferred to map drawers.

Research Results

The basis for this research was the premise that ʔekwǫ̀ migration depends on the state of the habitat. The elders discussed ʔekwǫ̀[14] from the point of view of hunters who survived by knowing caribou behavior and their habitat. They have a sophisticated understanding of wildlife management in relation to dè and the inter-relations between animal and human behaviour.

The interviews were done in the context of the elders' concern for the future, especially in relation to their grandchildren, whose lifestyle will most be affected by industrial development. The elders want the caribou and their dè to be respected so their grandchildren will thrive and continue to use the Tłı̨chǫ traditional territory.

Within the PAR context, the elders were responsible to share knowledge that had been verified through the traditional methods of group discussions. Researchers—chosen by elders—were responsible to document caribou knowledge that has been verified and shared through oral narratives.

This report offers research results under three main headings:

- Oral narratives: This section describes accepted Tłı̨chǫ knowledge of ʔekwǫ̀ that has been traditionally verified through discussions among hunters and can now be shared through oral narratives.
- Life histories of ʔekwǫ̀ harvesting: This section describes specific individuals' experiences with harvesting ʔekwǫ̀. During harvesting activities hunters observe and come to understand the knowledge that is contained in the oral narratives. They share their experiences among groups of harvesters where their experiences are verified by others and then become part of Tłı̨chǫ oral narratives that are told and retold to pass on the knowledge of caribou.
- Field Research: This section describes specific vegetation communities and landscape in specific locations in the boreal forest and in the

14 The English word caribou is used for both woodland and barrenland caribou. The Tłı̨chǫ word ʔekwǫ̀ means barrenland caribou, or as several elders describe "caribou that return to their home on the tundra to give birth and winter in the boreal forest." The Tłı̨chǫ word tǫdzı means woodland caribou.

tundra. During field research trips the researchers took photos, pressed plants, and filled in data forms specific to the ʔekwǫ̀ habitat described in oral narratives.

Throughout the life of the project the research team spent time considering concepts relevant to understand the elders' knowledge. The English concept habitat is not easily translated. In public meetings the term habitat is usually translated as tı̨ts'aàdiì ʔeʔǫǫ or animal den. The researchers and elders found this is too narrow a meaning.

A more appropriate concept for habitat is the term ʔekwǫ̀ dè[15]. This allows the elders to discuss anything that they consider to be linked to the caribou: such as ʔı̨k'ǫǫ̀ (spiritual power), human behaviour, predators such as wolves and people, pests such as mosquitoes and flies, landscape such as eskers and smooth bedrock leading to areas to cross water, weather conditions that create particular kinds of snow conditions, and favoured vegetation.

Dora Nitsiza, Zimmy Mantla, Allice Legat, Romie Wetrade, and Elizabeth Michel on an esker at ʔewaànıt'ıı̀tì (Courageous Lake) August 2001 (Photo courtesy of Georgina Chocolate)

15 Dè includes everything associated with land, with whom Tłı̨chǫ have a relationship that is responsive to their attention, action, and behaviour. Dè includes the spiritual and physical aspects of the land, people, wildlife, and their habitats, as everything has life and spirit.

The following table lists terms related to migration, that researchers and elders used during interviews. These concepts express ʔekwǫ̀ actions and are meaningful to hunters who are trying to understand ʔekwǫ̀ behaviour in relation to their dè.

Table: Terms associated with migration of ʔekwǫ̀

Detsìlààʔekwǫ̀	ʔekwǫ̀ that winter in the boreal forest
Hoziʔekwǫ̀	ʔekwǫ̀ that winter on the tundra
Naèdaadii	ʔekwǫ̀ that summer in the forest
Nadeʔà	Migrating ʔekwǫ̀
Nı̨̀zaa	ʔekwǫ̀ migrating towards the forest in the fall
Nadèezoǫ	ʔekwǫ̀ migrating to the birthing grounds
ʔekwǫ̀keè	ʔekwǫ̀ tracks

Research Results: Oral Narratives

This section describes accepted Tłı̨chǫ knowledge of ʔekwǫ̀ that has been traditionally verified through discussions among hunters and can now be shared through oral narratives. Tłı̨chǫ elders discussed caribou from the perspective of hunters within the dè.

The research team interviewed elders from Whatì, Gamètì, Wekweètì, and Behchokǫ̀. During the first segment of research the researchers interviewed, documented, and transcribed the oral narratives on caribou migration and caribou habitat. The CEC[16] directed researchers to interview the most qualified and knowledgeable elders: elders over the age of 75, who rarely (if ever) worked for a wage; elders who used canoes to travel throughout Tłı̨chǫ territory, and have the most intimate knowledge of the dè.

16 The Behchokǫ̀ CEC oversaw the project. Members included Jimmy Martin, Adele Wedawin, Robert Mackenzie, and Elizabeth Michel.

Most interviews were done in groups of four to six. We asked elders to discuss their own personal experiences in relation to past Tłı̨chǫ knowledge contained in oral narratives. Interviews took place in camps in the boreal forest, on the tundra, and in the office in Behchokǫ̀.

We designed the interview guidelines to solicit the elders' knowledge on caribou migration and habitat. The guidelines included open-ended questions such as:

- Please talk about where caribou travel and why.
- Please talk about how dè influences where caribou travel and why.

After the interview, the research team documented the knowledge contained in oral narratives on data sheets. We designed the data sheets to direct current and future researchers to specific tapes for information on elders' knowledge. A professional translator translated the tape if the team considered an oral narrative as particularly useful; for example if it clarified or clearly stated what many other elders have expressed to be true.

We also translated any tapes where the elder speaking is the only one to make a certain point, based on their knowledge of a particular area or experience that contributed significantly to the data[17]. The research team used these translations to direct discussions with elders, to evaluate and analyze data, and to write reports.

Oral narratives provide information, in context, to the listener. In this case the context is land claims, self-government, and industrial development. Elders consistently talk about their concerns around mining and their desire to have authority over decisions about caribou, habitat, and the probable over-development that affects caribou and the Tłı̨chǫ.

The research team continued making inquiries that allowed elders to share information through oral narratives. We asked for more detailed information about foraging behaviour, relationship with predators, and distribution. In

17 As one hour of taped interview takes about 40 hours to translate, we devised a system to select relevant tapes to translate, rather than translating them all.

order to accomplish this, the researchers had to let the elders know that they understood what they had learned to date. To do this we:

- Used appropriate terms and concepts. On one occasion the CEC spoke firmly to a researcher about using terms that had not been verified and that only one elder had used in a descriptive way. They felt that classic Tłı̨chǫ terms should have been discussed to verify the meaning. By using the misunderstood term it had misled the elders, confused the issue, and was seen as attempting to have elders talk about what they did not know.
- Verified the information written in the annual report.
- Asked open-ended questions that contained information that was previously verified, to avoid asking leading questions. For example, all the elders agreed that smoke and fumes cause caribou to move away from those smells. They also agree that caribou travel wherever they want when they are on the move during migration. The researcher pointed out that oral narratives appear to be contradictory and asked if the elders could further explain what they meant.

Interviews usually emphasized one of the following:

- Relationship between ʔekwǫ̀ migration patterns and the behaviour of humans.
- Annual cycle of ʔekwǫ̀.
- Spring and fall ʔekwǫ̀ routes.
- ʔekwǫ̀ migration in relation to vegetation and their ability to forage.

Oral Narratives: Relationship between ʔekwǫ̀ migration and the behaviour of humans

The relationship between the Tłı̨chǫ and caribou is based on mutual respect. ʔekwǫ̀ show their respect towards people by travelling to the Tłı̨chǫ from their birthing grounds. The elders say that even though ʔekwǫ̀ know that they will be killed they still come to the Tłı̨chǫ. By giving themselves to the Tłı̨chǫ the ʔekwǫ̀ spirit will be reborn and the ʔekwǫ̀ population will remain strong.

People show their respect towards caribou in various ways. First, all individuals must have knowledge of caribou. Second, people must use all possible parts of the caribou that they harvest. Third, people must care for the stored meat and discard bones and other unused parts in a manner that does not offend caribou. Fourth, people must obey the rules regarding caribou respect. Georgina Chocolate has heard several elders, including her grandfather Pierre Quitte, state that,

> *…The caribou are like the creator, when they know you need them they will come to you; when you are alone and you pray to them they will come and you will have food and clothing. Like the creator they take care of us. When they know you are in need they will help you. (Personal communication-00/02/29)*

Tłı̨chǫ elders insist that no one can ever know where the ɂekwǫ̀ will migrate. Their oral narratives explain how to find sites where ɂekwǫ̀ frequent and where, in the past, people harvested ɂekwǫ̀. Some of these places are around Wekweètì, ʔek'atì (Lac de Gras), Gots'ǫ̨kàtì (Mesa Lake), and Kǫ̀k'èetì (Contwoyto Lake).

> *…Louie Whane's father used to tell [him] a story. …Louie's father used to canoe to Kok'eghotì with birch bark canoe. And to ʔek'atì [Lac de Gras] where there is a mine today around that area there used to be lots of ɂekwǫ̀ [barrenland caribou]. Because there's a place called Kwek'aghotì [southern end of Point Lake] and that's where there is a lot of ɂekwǫ̀, that's where the water crossing is. That's why there's people living around that area. (Eddie Lafferty, age 71. CHP-97/04/17)*

Tłı̨chǫ generally believe that ɂekwǫ̀ migrate to people who respect all beings and live by Dene values.

> *When I was a young man I lived at Whatì, there used to be ɂekwǫ̀ around there at the time. But someone had hit the ɂekwǫ̀ with the stick, and the elders had said "if you guys [the older elders] are right, next year there will be lots and lots of ɂekwǫ̀." Sure enough that next year there was ever lots of ɂekwǫ̀. But that next year after that, there was no more ɂekwǫ̀. Because the ɂekwǫ̀ was hit, that's why. Now I'm over seventy years old. … From then on [and] for the next 30 or 40*

> *years thereabout, only then will the animal return they say. (Johnny Eyakfwo, age 73. CHP-97/04/17)*

With the loss of ʔekwǫ̀ to the Whatì area for about 30 years, many Tłı̨chǫ are very cautious about how ʔekwǫ̀ are treated and what developments are placed in their migration paths. The ʔekwǫ̀ stopped migrating to the Whatì area when a young man hit the ʔekwǫ̀ with a stick; and about the same time as Ray Rock uranium mine was under construction.

Elders continually encourage all people to treat the ʔekwǫ̀ with respect because

> *ʔekwǫ̀ are the ones that struggle to get to us, even though they know they are going to be killed. They are happy to see people. We are not the ones to struggle for the ʔekwǫ̀. (Caroline Beaulieu, age 86. CHP-98/02/05)*

Elders consistently state that it is important to respect ʔekwǫ̀ if they are to continue coming back to them. As Rosalie Drybones explained, an important way to respect ʔekwǫ̀ is to use all that they have to offer.

> *The ʔekwǫ̀ are not human. They are not human, but like prophets they can foresee everything that's on this part of the land. … The old timers really respected the ʔekwǫ̀ because we depend on them. People don't do things without the ʔekwǫ̀ being aware of it. We depend on the ʔekwǫ̀ and so, when we kill a ʔekwǫ̀, we show it respect. If we don't do that and we don't treat them really well, the ʔekwǫ̀ know about it. They say, "People don't treat us very well and they don't show us respect at all."*
>
> *Right now, during the spring when the ʔekwǫ̀ start to migrate, there are usually many of them. The young men go hunting and bring back fresh meat. If their wives are not able to prepare or fix the fresh meat, why do they bother to go hunting and kill that many ʔekwǫ̀?*
>
> *We depend on these animals and we are supposed to show them respect. But some people don't do that and that's why we find ʔekwǫ̀ hides, meat, heads, and various other parts at the garbage dumps. We hear about all the wasted ʔekwǫ̀ meat being thrown away at the dumps. As old timers, that is something we don't like at all.*

> *If they bring ʔekwǫ̀ meat to us we will prepare or fix the meat because we love the animal. And the ʔekwǫ̀ knows about these things. That was the way our elders talked to us about these things.*
>
> *As for the ʔekwǫ̀ leader who they follow, she was born with the grace of God and it is like she knows what is up ahead of them. That's the way it is with the ʔekwǫ̀. They don't see people all year but ... they leave the tundra for the treeline when they start migrating. So it is said that when they see the people for the first time, they are really, really happy. That is when they see people the first time.*
>
> *We are happy too, because we depend on them to survive. It is said, they probably sense that they will be killed but they're still happy anyway. In the old timer's way, ʔekwǫ̀ are like our relatives and we depend on them, so we are really happy. In the same way, they know they will not live but they are happy too. That's when they see people for first time and that's what is said. How long do we have to talk, is that it? [Laughter] Did I speak a little bit too long? Ok that's all. (Rosalie Drybones, age 82. CHP-98/02/05)*

Tłı̨chǫ elders know it is human behaviour on the ʔekwǫ̀ dè (caribou habitat) that is the most important factor affecting ʔekwǫ̀ migration patterns. The elders frequently mention the importance of human behaviour, while biologists concentrate on other predators and pests such as wolves, mosquitoes, and black flies. When asked about predators, the elders made statements such as:

> *Wolves, fox, raven, and people are supposed to eat [and use] ʔekwǫ̀. Raven and fox scavenge on the ʔekwǫ̀ and wolves, grizzly, and people harvest the ʔekwǫ̀. (Joe Suzie Mackenzie, age 80. Personal communication-95/05/20)*[18]

The mines are the product of human behaviour and humans are an aspect of ʔekwǫ̀ dè. The possible effects of mines and their infrastructure on ʔekwǫ̀ migration and distribution concern the elders. This type of activity affects ʔekwǫ̀ habitat and therefore shows disrespect for ʔekwǫ̀. Tłı̨chǫ elders think that the developers seem to build without adequate knowledge of ʔekwǫ̀.

18 Also in Legat et al. 1995:16

They fear this lack of knowledge affects the dykes for the tailings at the Diavik mine site. Several elders made the comment, "We do not think they know how strong the ice is, and if the walls around the tailings break, how much pollution will be in the water?"

> *Although we have all seen ʔekwǫ̀ in association with the ice road, the ʔekwǫ̀ do not like to cross roads unless they are in the migration mode. They become very skittish when trying to cross roads, when they are not in migration mode and simply foraging during the winter as they can smell the human scent. If ʔekwǫ̀ sniff our scent, they will turn back. (Romie Wetrade, age 77. BHP[19]-95/05/10)*

Tłı̨chǫ generally believe that ʔekwǫ̀ migrate to people who live well and behave properly.

Respect through knowledge

The elders acknowledge that during an earlier time the ʔekwǫ̀ did not come to the Tłı̨chǫ territory within the boreal forest. It is said that,

> *A long time ago when the ʔekwǫ̀ did not travel the trails to this area, the Tłı̨chǫ were starving. A man had a dream and the next day he walked straight to the tundra and invited the ʔekwǫ̀ to follow him to this land. (Romie Wetrade, age 77. Legat et al. 1995)*

Tłı̨chǫ know that the ʔekwǫ̀ did not always migrate to the boreal forest. They are very concerned about knowing everything about the ʔekwǫ̀ and not creating a situation that will cause the ʔekwǫ̀ to stay away or migrate elsewhere. Probably the most important way to show respect is to know everything they can about ʔekwǫ̀; and to respect people who have the intelligence to know more about ʔekwǫ̀, and those who know the spirit of the ʔekwǫ̀.

The elders know that to lack knowledge will result in lack of respect. For example, taking more ʔekwǫ̀ than is needed, destroying ʔekwǫ̀ dè and therefore their food, water crossings, and travel routes.

19 From one of the tapes from past research (with BHP) that we reviewed for information on ʔekwǫ̀.

Tłı̨chǫ, like other Dene, understand that people who know little about ʔekwǫ̀ will act in ways that destroy ʔekwǫ̀. They also understand that no one can know everything.

> *You must know the ʔekwǫ̀ and observe the ʔekwǫ̀ and if the ʔekwǫ̀ does something that is different than you expect, then you must watch it even harder so you understand why it did not behave the way you expected it to. (Amen Tailbone. Legat et al. 1995)*

Tłı̨chǫ elders emphasized that there is different ʔekwǫ̀ nàowoò[20] for the tundra and the boreal forest. People should know both; they should know the difference between tǫdzı (woodland caribou) and ʔekwǫ̀ (barrenland caribou) as a sign of respect. To know that tǫdzı are darker than ʔekwǫ̀; tǫdzı have white around the throat, they have long legs, and they are bigger, more like a moose. Tǫdzı prefer the habitat of the plateau west of Whatì yet they like the same food as ʔekwǫ̀.

People show respect by knowing that there is only one type of ʔekwǫ̀, even though people use names such as hoziʔekwǫ̀ and detsììlààʔekwǫ̀. The names have more to do with where each winters: hoziʔekwǫ̀ on the tundra and detsììlààʔekwǫ̀ in the boreal forest. Knowing details is also respectful. For example, ʔekwǫ̀ is dark grey with white around the throat; lighter in the winter, almost a reddish brown in the summer with the same white around the throat.

People show respect for caribou by knowing caribou behaviour, and how to think and talk about caribou. This means knowing terms associated with caribou. When discussing migration patterns and distribution of caribou, male elders often start by discussing the importance of respecting the animal. They often suggest we go to the bush with a video camera and name the caribou parts as the animal is butchered. Female elders often begin by discussing what to do to properly store meat and prepare it for a meal; what should be made with different types of hides.

20 Caribou knowledge

The research team realized that if the people do not respect caribou and use them properly after they give their lives, they may not return. As one elder explained during a discussion of ʔekwǫ̀ leaders directing her followers:

> *… If the people show you respect, and if they show respect for your bones, then you're to go back to them. (Elizabeth Charlo, age 91. CHP-98/02/05)*

The Wildlife, Land, and Environment Committee in Łutselk'e documented similar issues of respect and knowledge. In Łutselk'e knowledge of caribou terminology is considered to be an indicator of change and stability in community members' knowledge of Denesųłiné ways and skills[21]. We assume the concern about this knowledge is based on the importance of caribou for survival, just as with the Tłı̨chǫ.

The CEC in Behchokǫ̀ thought that not knowing caribou terms showed disrespect and could significantly affect caribou distribution. The tables in this section list some Tłı̨chǫ terms that are important to respecting caribou.

Respect by knowing how to use and using ʔekwǫ̀

Tłı̨chǫ use ʔekwǫ̀ for food (fresh, dry meat, pemmican, marrow); clothing (moccasins, mitts, gloves, parkas, pants, dresses, hats); and rugs, shelter, and tools. They give their dogs ʔekwǫ̀ scraps for food. Women use the brains to tan hides and blood to make blood soup. They use some ʔekwǫ̀ bones when making fat. From ʔekwǫ̀ hides come sled toboggan covers, tents, ʔekwǫ̀ hair blankets, dog harnesses, string, drums, balls for games, and snowshoes. Skins may be dried or tanned. Sometimes the hair comes off and sometimes it stays on. The meat and hides must be smoked with the most appropriate rotten wood found in the bush.

Respect by knowing the right way to discard

For Tłı̨chǫ elders it is just as important to discard unused ʔekwǫ̀ bones in an appropriate way as to use the animals properly. For example, bones, hair,

21 Parlee, personal communication-99/02 and 99/03

and the intestines of the ʔekwǫ̀ should be put down crevasses or left in places where they cannot be seen.

> *We are supposed to treat the ʔekwǫ̀ with respect, but some young people just throw caribou parts at the dump. (Rosalie Drybones, age 82. CHP-98/02/05)*

Table: Terms to show knowledge and respect—Caribou Parts

Deghǫ	Caribou hair
Detɬ'o	Caribou hide with thick, bushy fur
ʔedza	Hind legs
ʔedzekw'ǫǫ̀	Cartilage inside the caribou heart
ʔedzets'ìì	Tendons of the caribou heart
ʔeghatsìì	Stubble on caribou hide
ʔeghohkwǫ̀	Meat from the thigh and buttocks of caribou
ʔekè	Caribou hoof
ʔenǫhgò	Stomach of caribou which is long and fatty
ʔet'oòkwǫ̀	Caribou nose meat from around the eyes
ʔenǫ̀hgòwò	Caribou intestine
ʔekwǫǫ̀	Bones
ʔenǫkw'ǫǫ̀	Backbone
ʔetsı̀hta	Breast meat of caribou
ʔewò	Caribou hide

Table: Terms to show knowledge and respect—Summer Range

ʔekwǫ̀	Barrenland caribou
Tǫdzı	Woodland caribou

Robert Mackenzie admires Elise Simpson's newly scraped ɔewò (caribou hide) at Deèzàatì August 1999 (Photo courtesy of Allice Legat)

Table: Terms to show knowledge and respect—Caribou Age

ʔekwǫ̀tsıa	Caribou calf in the first year
Dets'è	Mature female caribou
Dets'èa	Young caribou cow
K'ǫ̀ǫtsıa	Born in summer, first winter
Ts'ıdaa	Immature female caribou
Wedzıaa	Small bull caribou
Wedzıh	Biggest bull caribou
Wezhàa	Mother caribou

Table: Terms to show knowledge and respect—Caribou Age	
Whaàtsıa	Second year caribou calf
Yaagoa	Third year bull caribou/next in size to yaagoo
Yaagoo	Bull caribou next in size to yaagoocho
Yaagoocho	Fourth year bull caribou/next in size to wedzih

Table: Terms to show knowledge and respect—Uses of Caribou	
Deghǫɔeh	Caribou hide parka with hair left on
Deghǫdzih	Mitts of caribou hide with hair left on
Detɬ'oɔeh	Caribou skin coat
Detɬ'ots'ò	Caribou skin blanket
ʔedzawàhke	Caribou leg skin (mukluks)
ʔekwǫ̀wò tɬ'aɔeh	Caribou hide pants
ʔekwǫ̀wò (ɔekwò)	Caribou hide, softened caribou hide, white hide, new hide
ıdàa kwǫ̀ǫ̀	Caribou left overnight before butchering
Deghǫ	Hair from a caribou skin
ʔekw'ǫǫ̀tɬeè	Bone fat
Bògǫǫ̀	Drymeat
ʔekwǫ̀kwǫ̀	Caribou meat

Table: Other terms to show knowledge and respect	
ʔek'àhgoò	Maggots from caribou throat
ʔenogòo	Maggots in caribou hide
ʔetsǰhtagǫo	Larva in caribou hide

During discussions on the proper etiquette for discarding what is not used, elder Jimmy Martin expressed the importance of carefully putting unused caribou in their proper place.

> *When I was a young man my father used to have me build a cache on the trees and store all the caribou bones and scrap, then they would spill all the caribou bones where nobody goes. Maybe like between rocks. Our parents used to tell us to take them by dog team out farther away to spill these bones of caribou. That's how much the old people used to respect the ʔekwǫ̀ because the ʔekwǫ̀ was really important to them, for food as well clothing too. (Jimmy Martin, age 75. CHP-97/03/11)*

Oral Narratives: Migration Patterns over Time

All Tłı̨chǫ elders agree that they never predict where ʔekwǫ̀ will migrate or travel. But they do tell stories about where ʔekwǫ̀ have been and at what time of the year they expect ʔekwǫ̀. Adele Wedawin tells of a time when the ʔekwǫ̀ did migrate to Behchokǫ̀.

> *The ʔekwǫ̀, there used to be ʔekwǫ̀ [Behchokǫ̀], said my late father. Since then, since they hit a ʔekwǫ̀, there been no more ʔekwǫ̀ he said. Nothing! Nothing! Nothing! There was none and there remain none. (Adele Wedawin, age 84. CHP-97/04/17)*

Matton Mantla adds to this.

> *In the past, ʔekwǫ̀ have migrated much further to the southwest than they presently do. The ʔekwǫ̀ used to come to Behchokǫ̀ and to the plateau that runs from Whatì to Fort Providence. (Matton Mantla, age 84. CHP-98/02/09)*

According to most elders the ʔekwǫ̀ no longer migrate as far south as Behchokǫ̀ or Whatì, but they do come further south than Gamètì. Archival evidence suggests that migration as far as Behchokǫ̀ fluctuated through time. George Ramsey Rae stated[22] that in 1910, when the RCMP made their first patrol to Behchokǫ̀, they observed that people were starving because of the

22 Scott, 1998:5

complete absence of ʔekwǫ̀. Father Roure, a missionary at Old Fort Rae for 42 years, said it was the first time they failed to arrive.

Jimmy Martin gave a personal account stating that when he was a young man the ʔekwǫ̀ migrated twice as far south as Old Fort Rae, but have not done so since[23]. Like other elders, he explains the importance of knowing when ʔekwǫ̀ migrate.

> *When it gets warm [on the tundra] and when the ʔekwǫ̀ ... fetus is growing, [the ʔekwǫ̀ will return to] where it is used to raising its young. (Jimmy Martin, age 75. CHP-97/04/17)*

The elders go on to explain that often the ʔekwǫ̀ travel towards the boreal forest in the fall and then turn back to the tundra.

> *... When they [ʔekwǫ̀] get to the border of the tundra, and they are not all that keen on swimming across ... [the water] ... they will go back again and then return [to travel to the boreal forest]. (Johnny Eyakfwo, age 73. CHP-97/04/17)*

The oral narratives contain much on the places where ʔekwǫ̀ are more likely to cross water.

> *... Many of the ʔekwǫ̀ go through when they migrate. Kwekaghoòtì as we call it, it is the place where ʔekwǫ̀ swim across. (Edward Lafferty, age 71. CHP: 97/04/17)*

As well as specific locations about where to find the ʔekwǫ̀, oral narratives also contain knowledge of behaviour. Elders state that because the ʔekwǫ̀ move between very different environments they follow a leader, who is the mother of a large bull. This middle-aged cow shows other ʔekwǫ̀ the way and leads them to food. The leader may change the migration route depending on food availability, and whether she decides to swim across lakes and rivers or not.

> *Wherever there is lichen; that is where they [the ʔekwǫ̀] roam. (Adele Wedawin, age 84. CHP-97/04/17)*

23 Tape: CHP-97/03/11

> *... When we see ʔekwǫ̀ roaming on [the eskers], that's [often] where we find ʔekwǫ̀. On top the hill! What else would it live on? Gravelly rocks and lichen. (Edward Lafferty, age 71. CHP-97/04/17)*

The elders explain that when calves are weaned from their mother's milk they begin to follow her example and eat the lichen and fungus as she does.

> *When the calf is about to go off milk, it will eat whatever its mother eats. Its mother will teach it. (Jimmy Martin, age 75. CHP-97/04/17)*

Often the ʔekwǫ̀ encounter deep snow when returning to the tundra in the spring or when travelling in the boreal forest in the winter. At this time a number of small herds come together, and each of the herd leaders will take turns breaking trail through deep snow.

> *When the ʔekwǫ̀ runs into deep snow ... the leaders of the ʔekwǫ̀ go first and the other ʔekwǫ̀ follow the leader. When their leader jumps off to the side, then another leader takes over. They all take turns, which is how they lived. (Jimmy Martin, age 75. CHP-97/03/11)*

The elders say that the ʔekwǫ̀ migrate to the boreal forest …

> *... Because there's no trees in the tundra and the ʔekwǫ̀ are not so cold in the bush; they will move into the bush [during the winter]. (Jimmy Martin, age 75. CHP-97/04/17)*

The elders also explained that the ʔekwǫ̀ move to the boreal forest because they can forage easily by digging through the snow with their hooves. In the tundra, the snow is hard packed from the wind and the cold.

> *In the boreal forest, even if it snows, the ʔekwǫ̀ will kick away the snow and get to the ground and that's how they eat till they have their fill. (Jimmy Martin, age 75. CHP-97/04/17)*

The middle aged cows lead groups of ʔekwǫ̀, while the larger bulls protect the smaller, weaker members from dangerous animals such as wolves.

> *If there were some other animals or a wolf, a bigger ʔekwǫ̀ would block [the smaller ʔekwǫ̀ from] it, they say. Because that big ʔekwǫ̀ have antlers, the wolf is afraid of it, they say. But the smaller ʔekwǫ̀, they are unable to defend themselves, so the big animal like a big ʔekwǫ̀ will shield the little ʔekwǫ̀. That is how they move. If it were*

> *not so and if the bigger animal were not with it, [the wolves] would easily kill it. That is what we learned from our elders. (Johnny Eyakfwo, age 73. CHP-97/04/17)*

Oral Narratives: Annual Cycle

The elders' oral narratives explained the annual cycle of ʔekwǫ̀, which starts with the birthing grounds on the tundra. The elders consider the birthing grounds as the home of ʔekwǫ̀.

> *Before in the past the ʔekwǫ̀ used to live out on the tundra. But now today it roams out toward here in our land for people to kill it. But it was not like that before. ʔekwǫ̀ used to live only out on the tundra and that is why they return there to give birth. (Harry Wedawin, age 82. CHP-97/04/11)*

The elders explain that the ʔekwǫ̀ move away from the birthing grounds in late summer and arrive in the boreal forest in early fall. It is the middle-aged cows that lead the herd to the food and who keep the herd from returning to the same spot. In the spring, the females are the first to return to the tundra, followed by the bulls.

The following elder's statements best describe the annual cycle of ʔekwǫ̀.

> *Our parents used to tell us stories about how the ʔekwǫ̀ migrate and roam around on the land. First of all, we start when the ʔekwǫ̀ live on the tundra. Later, when it starts to freeze-up, they start to migrate into our land. It is said, the ʔekwǫ̀ have k'àowo [a leader, who is the mother of a large bull]. When many ʔekwǫ̀ are migrating, she goes ahead of them and they follow her. That is the way they roam on the land. … They feed on the land and go to wherever they remember a good feeding area. She goes ahead of them to these places. She goes ahead of the other ʔekwǫ̀. That is what they do and that's how they travel to places where it is good for feeding. They really know the land. (Rosalie Drybones, age 82. CHP-98/02/05)*
>
> *When … [the calf] is about to go off its mother's milk ... The month of July ... is when they start moving again. They are moving in this direction [southwest]. ... We paddled [in a birch bark canoe towards them. Often meeting ʔekwǫ̀] around [Beʔaıtì north of Wekweètì,*

ʔek'atì, Kǫ̀k'èetì]. The young calves were really small. They looked like they still nursed from their mothers, but they walked after their mother. (Jimmy Martin, age 75. CHP-97/04/17)

Since it's their land [tundra] that's where they roamed around in that area until fall time. Just when they become wedzıaa [small bull] and fat, they roamed back into the bush. They do that every year and that's what they do with themselves. They don't roam in this area only, they roamed all over to Łutselk'e … that's how far they travelled to. Therefore, all the people over there depend on it since it's their livelihood, too. They travelled to here and to Sahtì and towards treeline and that's what the ɔekwǫ̀ does. … Whatever its knowledge is, it doesn't get rid of it [it travels the same route wherever their good feeding ground is]. (Joe Zoe Fish, age 70. CHP-97/08/22)

… However the animal roams around it doesn't usually go back the same way, even our ancestors say that. .... Like out in Wekweètì near where they call Kw'ıąkw'atì. And it goes straight to Nǫdìì [the plateau west of Whatì]; we know that. And when it has to travel back to the tundra it goes all the way back on the other side of Wekweètì called Ts'inàzèe, back to tundra. (Johnny Eyakfwo, age 73. CHP-97/03/11)

The ɔekwǫ̀ travelled towards our area [Whatì] and then they travelled towards Behchokǫ̀ and roamed around in that area. That was a long time ago. And then, they travelled towards ʔıts'èetì and Gamètì and once they all come on the land, they travelled towards our area. ... And then, they all go towards a ridge or high hill, but I haven't been there, therefore, I don't know that area. But all the ɔekwǫ̀ travelled towards the high hill, since there's lots of twigs that are good [to eat]. … They travelled towards the treeline, looking for good plants to eat. When they get fatter, they roamed back towards the tundra. …

After the ɔekwǫ̀ have their calves on the tundra, and when they get a little bit bigger [the calves], they lead their calves back to the bush. ... After it has its calves, they wander into the bush, and they rubbed off the velvet of their antlers by rubbing their antlers against the trees. They rubbed their antlers against the trees so that they can get rid of the velvet from their antlers.

After their antlers are dry, only then they go back into the tundra. It lives on the great tundra and when it gets fall time, that's when it gets excited and they wandered back into the bush again. … When the ɂekwǫ̀ came to ʔɻhdaak'ètì [Marian Lake], the ice was still slushy when the ɂekwǫ̀ came. The full-grown ɂekwǫ̀ that arrived were really fat. ...

I recall when I was a young man we used to live in Behchokǫ̀. At that time the ɂekwǫ̀ migrates back, they come back when it just getting to warm up, that's when they're full-grown, that's when they come back. They [the hunters] take their dog team to Behchokǫ̀ for ɂekwǫ̀ and they used to shoot ɂekwǫ̀ that were full grown, that's what I recalled.

The ɂekwǫ̀ used to travel past Behchokǫ̀ and towards Yahtideèkǫ̀ [Fort Providence] as far as to a place called K'ití and along Edazı [high hill or ridge]. And once they settled in the area, if the food is plentiful, they lived and ate there for a long time. Later on, when they're travelling back, sometimes they come back when there's no snow on the ground at all.

That's how the ɂekwǫ̀ survived on the land, therefore the animals have stronger mind than the human. They travelled to any land that they set their mind to. They travelled from the tundra, along Yabàahtì [Yamba Lake] all the way near Kwedzèhkǫ̀ [Wrigley] and to Sahtì [Great Bear Lake]. ... That's how far the ɂekwǫ̀ travelled to. Although there are no ɂekwǫ̀ beyond Dehtso [Mackenzie River], the ɂekwǫ̀ travelled around to near Dehtso. (Joe Zoe Fish, age 70. CHP-97/08/22)

… When it gets warm, the snow melts and it gets warmer, that is when the smaller cow called ts'idaa start migrating. They move first. When the fetuses start to get big, they [the females] start to migrate before the wedzih [bull caribou]. … The cows migrate to the great tundra, back to their calving grounds. They travel back there, back to the tundra and that's what the cows do. That is where they probably give birth to their calves, in spring or in the summer.

As for the wedzih, they start to migrate when all the snow melts and turns really slushy. … And they have leaders for themselves as well. They have a leader for themselves just like we have leaders for us, right here. That's the way it is and when they feel that it is time, and

when snow starts to melt and it gets really slushy, that is when they start to migrate last.

As for ʔekwǫ̀ antlers, their antlers get really long and it's all covered with velvet. … They live here all winter and migrate in the spring [when snow melts and gets slushy] and their antlers grow all the time. Their antlers grow about a foot and it's usually covered with velvet. The wedzih [bull caribou] start to migrate to the tundra when that happens. When they feel that it's time, they go back to their country on the tundra and live there all summer.

They probably roam around and feed on the tundra. In the summer or in the autumn, they return to this land as they done before. And they do this by following their leader. That's the way it is and for them to head back this way again, their minds turn this way. So that is why it is said, when it's the autumn, the ʔekwǫ̀ migrate back this way all together. That is what they do.

The dets'è [cow caribou] calves that were born on the tundra, migrate with all the other ʔekwǫ̀'s, along with the cows and they all travel this way. They come to our land. They come to our land again for all winter. The calves are two feet high when you see them and they follow their mothers. They are small but they still manage to travel great distances here with their mothers, the cows. And so, they come back here again, to live here all winter.

As for the antlers that grow about a foot long … they grow all summer and in the autumn they get really huge. ... So they continue to migrate down this way and arrive into the tree line. They have velvet on their antlers so they scrape their antlers in the bushes to get them off. Later their antlers become clean of the velvets and they come off. It is said, that is the reason why the bull caribou with big antlers start migrating into the treeline.

Afterwards they live here all winter. From recalling where they roamed the year before and places they know of or where they know of good feeding areas, they return there again. They live there too. They travel around and when there's no food there, they go to a different place. They travel to places where they know it's a good area for feeding and that's how they travel around. (Rosalie Drybones, age 82. CHP-98/02/05)

> *When they travelled back to the tundra, they just love it when the snow is melting and slushy. They just like it when it gets really slushy and that ice is melting, that way they swim through the water, so that their ʔekwǫ̀ leg isn't in pain and also their hoofs aren't in pain, too. Therefore, if there's ice on the lake, they're careful while they walk on the ice, if they have to they all go back to the hozìi [tundra] and it's like that every year. (Joe Zoe Fish, age 72. CHP-97/08/22)*

The elders further explain that in the spring the ʔekwǫ̀ return to the tundra to give birth and raise their calves, and only return to the boreal forest in the fall when the calves are older.

> *When it gets warm [on the tundra] and when the ʔekwǫ̀ ... fetus is growing, [the caribou will return to] where it is used to raising its young. … In fall time the ʔekwǫ̀ migrate toward this way. Near our land; passing nearby Behchokǫ̀ toward the side of the Snare hydro, all the way to Gamètì toward Nǫdìì. Way past Whatì that's where it migrates to. (Jimmy Martin, age 75. CHP-97/04/17)*

The elders go on to explain that often the ʔekwǫ̀ travel towards the boreal forest in the fall and then turn back to the tundra.

> *... When they [ʔekwǫ̀] get to the border of the tundra and they are not all that keen on swimming across ... [the water] ... they will go back again and then return [later to the boreal forest]. (Johnny Eyakfwo, age 73. CHP-97/04/17)*

This is exemplified by following the route of one radio-collared cow on the map in Appendix III.

Elders' statements indicate that annual cycles have changed over time. Several elders stated that there was a time when people had to travel much further to find ʔekwǫ̀.

> *Before, in the past, the ʔekwǫ̀ used to live out on the tundra. But now today it roams out toward here in our land for people to kill it. But it was not like that at all, ʔekwǫ̀ used to live out on the tundra only … in the past. (Harry Wedawin, age 82. CHP-97/04/11)*
>
> *In the past they used to use dog teams, canoes, and by walking. In order to hunt ʔekwǫ̀ they had to walk long ways. Before, in the past, there use to be ʔekwǫ̀ as far as Ts'iedaa [an important site on*

Courageous Lake]; that's how far there used to be ʔekwǫ̀ at that time. But now today the ʔekwǫ̀ comes to our land every year. (Moise Martin, age 86. CHP-97/09/11)

The Tłı̨chǫ used to travel long ways for ʔekwǫ̀, all the way canoeing to Kǫ̀k'èetì; because the ʔekwǫ̀ used to live as far as Ts'iedaa; because before in the past the ʔekwǫ̀ doesn't come around here. [He's talking about the story when he was a young man] This here we call Tideè [Great Slave Lake]. Not long ago, when I was a young man the ʔekwǫ̀ came to Great Slave Lake; let's say like twice; once at Nishik'e [Old Fort Rae] too. And Great Slave Lake, all over there is how the ʔekwǫ̀ used to migrate in the past. … Ever since that time, there was ʔekwǫ̀ for people to live on. Till today people are still living on it. Now there is ʔekwǫ̀ at Łutselk'e. (Jimmy Martin, age 75. CHP-97/03/11)

Oral Narratives: Spring and Fall ʔekwǫ̀ Routes

The elders discussed the extensive distribution of ʔekwǫ̀ that migrate to Tłı̨chǫ traditional territory. The oral narratives describe the ʔekwǫ̀ ranging from the Dehtso (Mackenzie River), Kwedzèhkǫ̀ (Wrigley), Sahtì (Great Bear Lake), Łutselk'e, and the Arctic Ocean.

More specifically the elders discussed places where they expect to find ʔekwǫ̀ during fall and spring migration. For example, they expect ʔekwǫ̀ will swim across Deèzàatìdeè at ʔehdaaghoò and "over here on this lake, over beyond Deèzhàatì a place called Kwik'ìiʔedaà it is said the ʔekwǫ̀ swim across this great lake at this point." The Tłı̨chǫ also expect to find

ʔekwǫ̀ɔetǫ (caribou trail) in tł'otìa (wet, marshy grass), Deèzàatì. August 1999 (Photo courtesy of Allice Legat

ʔekwǫ̀ in such locations as Wets'iìtì where caribou fences were erected during the spring migration. See the maps in Appendix I and Appendix II for locations and other data.

The Dene Mapping Project in the 1970s first documented the trails on the map in Appendix II. The marked trails are consistent with the travel narratives that the Tłı̨chǫ told in the 1990s. Although variations occur, the documented trails and oral narratives show how the Tłı̨chǫ travelled towards the calving grounds with routes leading to Kǫ̀k'èetì, a large lake just west of the birthing grounds. The information shows how they travelled by birch bark canoe, harvesting ʔekwǫ̀ through ʔezǫtì, ʔewaànıt'ııtì, Nǫ̀dìihatì, Deèzàatì, Deèzàatìdeè, and ʔek'atì in the fall.

Louis Whane explains travelling on one of the routes towards Kǫ̀k'èetì (Contwoyto Lake) from Wekweètì.

> *The people would continue on to Wekweètì, using birch-bark canoes along here [checking the spot where ʔekwǫ̀ swim across the lake] and on to ... Beʔaitì searching. If they did not find anything, they would go north to [check the water crossing at] Ts'ootì [and from there they would travel to] they would go towards Deèzàatìdehtì.*
>
> *Again, if there was nothing to be found there, they would proceed along the great route leading to Sǫdeè. ... The people would then go north to Deèzàatì- all the way to Kwik'ìiʔedaàts'ahtì. They would continue to search hoping to find ʔekwǫ̀. Then they would all assemble at one place by canoe. ....*
>
> *Once they have canoed to one area and assembled and having said that they wanted to go to the great lake, my father said that they would go to ... Yabàahtì [Yamba Lake]. ... [Then to] Kǫ̀k'èetì. And they would camp and live at various bays, points, and along channels between islands. ... Once they have canoed to live in a series of camps, if the forward camps sighted ʔekwǫ̀, they would send back messages. Then at channels where the ʔekwǫ̀ swam across, the ʔekwǫ̀ would be killed by spearing. (Louis Whane, age 76. CHP-95/10/28)*

Pierre Wedzin, also from Behchokǫ̀, describes travelling and hunting through ʔek'atìtata (area south of ʔek'atì), ʔek'atì, and up to Kǫ̀k'èetì. He also describes the campsites where ʔekwǫ̀ were harvested.

> *ʔek'atì, that which they call ʔek'atì, every year I work on it. When I was younger every year I work there ... [We were at the end of ʔek'atì and] I killed a ɂekwǫ̀. ... It was on this point that a great many people lived for the ɂekwǫ̀. It was from there that he paddled after me. That point was called ʔek'adiìlǫ. ... At the end of ʔek'atì where there was a river flowing, that river flowing from ʔek'atìtata was where my uncle had shot ɂekwǫ̀ for himself. ... At the end of ʔek'adiìtso a great many people lived there; a great many people. We lived there for the ɂekwǫ̀. ... There was no lack of ɂekwǫ̀. But today, this mine that is there, it is hard to predict if wildlife will continue [to be there]. (Pierre Wedzin, age 94. BHP-95/05/11)*

Moise Martin from Behchokǫ̀ describes a slightly different route.

> *We have worked in the land stretching far beyond the tree line since we became aware [of our existence]. Since I became aware—and before my time—the people used to travel past Wekweètì, to a place called Kwedaahsìi. The people used to go there by canoe for ɂekwǫ̀. There, they killed ɂekwǫ̀ with spears. So it was said. At the end of the place called Kwedaahsìi the ɂekwǫ̀ used to swim across there. They killed a lot of ɂekwǫ̀ there. (Moise Martin, age 85. CHP-96/03/13)*

Although ɂekwǫ̀ do not like deep snow, they often encounter it when returning to the tundra in the spring or when travelling in the boreal forest in winter. At this time a number of ɂekwǫ̀ leaders and their bands come together and each of the leaders take a turn breaking trail through deep snow.

> *When the ɂekwǫ̀ runs into deep snow ... the leaders of the ɂekwǫ̀ go first and the other ɂekwǫ̀ follow the leaders. When their leader jumps off to the side another leader takes over the lead. They all take turns. That is how they lived. (Jimmy Martin, age 76. CHP-97/03/11)*

In the spring ɂekwǫ̀ prefer slushy snow, deep or otherwise. According to the elders, slushy snow soothes their hooves. And according to Alphonse Quitte, ɂekwǫ̀ put their heads in the snow to soothe their sun-burned eyes.

> *Even the moose, the caribou, the wolf, all of them; all of them, even the raven can catch nawhì [snow blindness], it is said. … When it is snow blind, at this time, it cries out like. It cries out like. It says that because it's tormented. .... That's what they used to say. They use to*

> *say that as they talked to one another. … During this time when the ʔekwǫ̀ catches nawhì, it walks as if its head were on the snow. It can't look up. Because of nawhì; because it can't look up because of nawhì, it wanders like that. Sometimes, because it wants to cool its eyes, it would dunk its head in the snow like that. So, when its eyes are cooled, it'll continue to wander. It'll do that, I remember. That's how my late grandmother talked about this time of the year. (Alphonse Quitte, age 80. CHP-95/04/21)*

Oral Narratives: Vegetation and Foraging Behaviour in Relation to Migration

Most Tłı̨chǫ know that the ʔekwǫ̀ put on weight on the tundra because they have lots of fresh, lush vegetation to forage on. The layer of fat they develop in the summer is what helps them survive during the cold winters and deep snow.

> *In the summer when there is bad weather the ground is kind of moist. The ʔadzı̨̀ı̨ [lichen], especially the ʔadzı̨̀ı̨degoo [white lichen] gets soft, that is what the ʔekwǫ̀ really like. They get fat with it. (Rosalie Drybones, age 83. CHP-98/02/05)*

All the Tłı̨chǫ elders agreed that the ʔekwǫ̀ know where to find the best food. Many say they do not know how the ʔekwǫ̀ consistently go directly for the best food. Many elders stated that the ʔekwǫ̀ know the land.

> *They really know the land. They live on the land all winter and feed and that's why they know where their food is. They remember. (Rosalie Drybones, age 82. CHP-98/03/05-1/3)*

> *We know what they eat by their droppings. … The ʔekwǫ̀ seem to know where the good food is, possibly they see and smell through the snow, we don't know how the ʔekwǫ̀ know where the good food is, but they do. (Moise Martin, age 87. CHP-98/12/12-1/1)*

Jimmy Martin agrees that the ʔekwǫ̀'s sensitive sense of smell allows them to find the best foraging areas.

> *We are telling each other stories about the ʔekwǫ̀. Though the ʔekwǫ̀, we say, is an animal but it knows what to eat every day to survive. Even for us, some time passes beyond the time for us to eat.*

> *Sometimes, there does not seem to be anything. Perhaps it is that way for the animals too. They travel to be able to feed. In their migration should they encounter a burnt area, a large burnt area, they will not eat over the expanse of that area.*
>
> *Because it lives on the land, if the wind is blowing from an unburned area, it will be able to detect the scent of even the trees; it will be able to detect this scent even from a long distance. Detecting the scent of fresh, green trees, they will travel towards them. Once it has arrived at this destination, for instance in a swampy area, it will get a good feed from it even if it's in the snow once it has pushed the snow away. It is said that the ʔekwǫ̀ eats a large variety of things. (Jimmy Martin, age 76. CHP-98/03/20)*

In oral narratives, elders spoke of the vegetation that ʔekwǫ̀ prefer at different locations and different times of year.

> *ʔekwǫ̀ eat k'òò, ʔadzìidego. … I guess that ʔadzìi turns to fat on ʔekwǫ̀, that's why they like to eat it. (Elizabeth Charlo, age 91. CHP-98/02/05)*
>
> *The ʔekwǫ̀ also eat lichen-like vegetation, called dààghò that are on trees. … There is a lot of this vegetation on the trees, they also eat this. (Robert Mackenzie, age 63. CHP-97/03/20)*
>
> *When they come to this land, they must like ʔadzìi, especially kwetsı̨. Also, if there is a muskrat push-up, they will go to it and look. … They also live on tł'oga at these times during the winter. (Eddy Lafferty, age 71. CHP-97/03/20)*
>
> *There is good ʔekwǫ̀ food around Wekweètì. … If there are muskrat dens, ʔekwǫ̀ always seem to crush the den, probably because the ʔekwǫ̀ eat the tł'o in it. … In summer there is good ʔekwǫ̀ feed: tł'o, hoziʔı̨tǫ̀, k'òòʔıt'ǫ̀, ʔadzìi. (Moise Martin, age 87. CHP-98/12/14)*
>
> *In winter, the ʔekwǫ̀ eat tł'o, especially tł'odzìi [type of grass/sedge] found on the shoreline. (Madeline Martin, age 79. CHP-98/12/14)*
>
> *On the tundra there are lots of dègogaet'ıì, which the ʔekwǫ̀ eat even if the plant is lying on the ground (Madeline Martin, age 79. CHP-98/12/15)*

Elders made comments such as, "The stomach shows all the food that the ʔekwǫ̀ has been eating: tł'o, ʔadzìi, ʔı̨t'ǫ̀, kwetsı̨." Most elders believe the

ʔekwǫ̀ continue looking until they find the very best food source. The following table lists the vegetation mentioned in oral narratives.

Table: Vegetation preferred by ʔekwǫ̀ (from oral narratives to Feb. 2000)

Tłı̨chǫ	**English Translation**
ʔadzìì	Lichen-general
ʔadzı̨̀degoo	White lichen
Kwetsı̨̀	Rock tripe
ʔadzìidetł'e	Type of lichen
ʔadzìidezo	Type of lichen
Dààghò	Lichen-like vegetation on trees
Dègogaet'ıì	Red vine-like plant
Dlòodìì	Type of mushroom
Dzıwaʔı̨t'ǫ̀	Blueberry leaves
Gots'ǫkaʔı̨t'ǫ̀	Cloudberry leaves
Hozıı̨t'ǫ̀	Tundra leaves
K'òòʔıt'ǫ̀	Willow leaves
Tł'odzìì	Type of sedge or dog berries
Tł'odzììʔı̨t'ǫ̀	Leaves of type sedge or dogberries
Tł'o	Various type of grass and sedge

The elders' statements suggest that ʔekwǫ̀ change their dè seasonally to ensure access to adequate food and shelter. Within their winter dè they make regional and local changes to ensure ease of travel and adequate food. ʔekwǫ̀ leave the tundra and wander throughout the boreal forest in the winter because the trees give them some shelter and protection from the bitter winds and cold of the tundra. Elders agree that lichen—ʔekwǫ̀'s preferred food—is easier to access in the boreal forest than the tundra,

because the snow there is easier to dig with their hooves than the hard packed and crusty snow above the tree line.

> *There are no trees on the tundra and the ʔekwǫ̀ are not so cold in the bush [of the boreal forest], they will move into the bush [during the winter]. (Jimmy Martin, age 76. CHP-98/04/17)*
>
> *Often the ʔekwǫ̀ will swim across [moving towards the boreal forest] at such places as Kwekaghoòtì as we call it. It is the place where ʔekwǫ̀ swim across. (Edward Lafferty, age 71. CHP-97/04/17)*

The elders' statements also demonstrate that ʔekwǫ̀ migration patterns are related to the availability of food on a more regional level. The data from the elders suggests that the ʔekwǫ̀ travel to particular regions based on their ability to know where food is available. The leader may change the migration route depending on if she smells lush vegetation.

> *This middle-aged cow shows the other ʔekwǫ̀ the way and leads them to food. (Jimmy Martin, age 75. CHP-97/03/11)*
>
> *… Wherever there is good lichen; that is where they [the ʔekwǫ̀] roam. (Adele Wedawin, age 76. CHP-97/04/17)*
>
> *When the calf is about to go off milk, it will eat whatever its mother eats. Its mother will teach it to eat the ʔadzìì [lichen] and kwetsį̀ [black rock tripe] as she does. Within the boreal forest ʔekwǫ̀ prefer to eat white lichen but will also eat yellow grass, green leaves, and twigs. [They will] kick away the snow and get to the ground so they can forage. (Jimmy Martin, age 75. CHP-97/04/17)*
>
> *Even though we do not see the ʔekwǫ̀ give birth, we know the mother teaches their young to survive. … We all know the ʔekwǫ̀ eat lichen; in summer time they eat grass. … All animals are like people; they parent their young and teach them what they need to survive. (Jimmy Martin, age 76. CHP-98/05/23)*

ʔekwǫ̀ will not migrate to a region if the area has been burned. The elders state that the ʔekwǫ̀ smell only burned bush rather than their food.

> *ʔekwǫ̀ used to come this way and travelled to Nǫdìi k'è. Now almost every year that land has been burning [forest fire]. The ʔekwǫ̀ used to travel out there for their food but this is what had happened. (Rosalie Drybones, age 82. CHP-98/02/05)*

The elders discuss at length the reason for the changes in herd size and distribution within the Tłı̨chǫ traditional territory.

> *… As a boy, the ʔekwǫ̀ always came around to our land (Whatì). … That was 1955, when my uncle died, and that was the last time ʔekwǫ̀ came this way for years. … Only four years ago the ʔekwǫ̀ came back to our land. (Joe Zoe Fish, age 70. CHP-97/08/22)*

Jimmy Martin (CHP-97/03/11) explains that when he was a young man the ʔekwǫ̀ twice migrated as far south as Old Fort Rae, but have not done so since. Adele Wedawin agrees.

> *…There used to be ʔekwǫ̀ [around Behchokǫ̀], said my late father. … Since they hit a ʔekwǫ̀, there's been no more ʔekwǫ̀ he said. Nothing, nothing, nothing. There was none and there continues to be none. (Adele Wedawin, age 84. CHP: 97/04/17)*

In addition to disrespect shown towards ʔekwǫ̀, the elders explain that smoke, fire, and lack of food can keep ʔekwǫ̀ from migrating to a particular area. All elders agreed that the ʔekwǫ̀ stay away from the smell of smoke. They reason that ʔekwǫ̀ will stay away from the mines that smell of exhaust from big machinery. They believe these smells, that are particularly strong during construction, create fear. The fear weakens the ʔekwǫ̀'s mind and the odor weakens the scent of the vegetation. This makes it difficult for the ʔekwǫ̀ to find lush vegetation on the opposite side of the mine.

> *The ʔekwǫ̀ used to migrate to our land. But now [1998] there is the ʔek'atì mine in the way for the ʔekwǫ̀, that's why the ʔekwǫ̀ mind is too weak to come toward our land now. To the ʔekwǫ̀ it feels like there is something in their way. The smell can blow far. The ʔekwǫ̀ can sense that. (Caroline Beaulieu, age 86. CHP-98/02/05)*

Summary of Research Results: Oral Narratives

Tłı̨chǫ oral narratives contain experiential knowledge based on practise that is gained only through a long and eventful life of hearing oral narratives that originated with their ancestors' knowledge, coupled with experiencing it. This is how the Tłı̨chǫ know ʔekwǫ̀ behaviour and needs. This knowledge is

important to understanding consistency and change within the dè that both the Tłı̨chǫ and ʔekwǫ̀ depend on.

Before information becomes knowledge in the oral narrative, harvesters collect information through observations and share it with others. They discuss their observations with other hunters and elders, who question and verify these observations by sharing their own oral experiences and observations. It is during these interactions that elders and harvesters think about change between seasons, years, and over decades, and why these changes have occurred.

Tłı̨chǫ understand that knowing what the ʔekwǫ̀ needs to survive is basic to respecting the continuing relationship between them. Tłı̨chǫ elders and harvesters know that the ʔekwǫ̀ require vegetation both on the tundra and in the boreal forest to build the strength of their calves and for the herds to survive during the winter. They also know that ʔekwǫ̀ require large habitat areas for migration, as the vegetation that they forage on needs to periodically recover.

ʔewkǫ̀ migrate towards lush vegetation; human behavior can cause unpredictable migration. For this and other reasons, migration patterns change over time. Tłı̨chǫ elders and harvesters know this. Hunters understand they cannot predict where the ʔekwǫ̀ will migrate. At the same time they watch and evaluate caribou habitats with the idea they will find where ʔewkǫ̀ may migrate during the winter; where the lead cow may take them. Through experience and listening to the knowledge of others, elders and harvesters know the annual cycle—if it varies due to weather conditions that result in particular types of snow cover and ice thickness, or an increase in forest fires.

Elders and harvesters are concerned that industry personnel do not realize the impacts of fumes and pollution on vegetation and therefore on ʔekwǫ̀ well-being, or the impact of these fumes directly on ʔekwǫ̀. These concerns are compounded by their knowledge that ʔekwǫ̀ have more than one type of behaviour. They stay away from the mines when grazing with their young in summer and early fall. But once they adapt to the smell and they are in migration mode, they are likely to put themselves in danger.

These concerns are further compounded by their knowledge that people cannot have knowledge of caribou and understand their winter behaviour by only watching and experiencing them in the summer. Caribou themselves carry knowledge of both their winter and their summer habitats.

Research Results: Oral Histories of Harvesting

This section describes specific individuals' experiences with harvesting ʔekwǫ̀. During harvesting activities hunters observe and come to understand the knowledge that is contained in the oral narratives. They share their experiences among groups of harvesters where their experiences are verified by others and then become part of Tłı̨chǫ oral narratives that are told and retold to pass on the knowledge of caribou.

Between 1998 and 2000 the research team documented elders' life histories associated with harvesting ʔekwǫ̀. They used oral histories to document patterns of harvesting ʔekwǫ̀. Again the CEC directed the researchers to interview the most qualified and knowledgeable elders—all hunters over 65, beginning with the following elders from Behchokǫ̀: Nick and Annie Black, Suzie J. Bruneau, Harry and Liza Koyina, Sammy Football, Joe Susie Mackenzie and Julie Mackenzie, Matto Mantla, Zimmy and Elizabeth Mantla, Joseph Rabesca, Moise and Madelaine Martin, Adele Wedawin, Paul and Elizabeth Rabesca.

It is relevant for non-Tłı̨chǫ to know the origin of the information that makes up the Tłı̨chǫ knowledge told through oral narratives. Tłı̨chǫ observations are systematically made through the act of harvesting. Such observations are associated with migration patterns of ʔekwǫ̀ in a given year or over a period of time. These include foraging behaviour on the tundra and in the boreal forest, weight of ʔekwǫ̀ harvested, and whether enough ʔekwǫ̀ were harvested for the camp or community.

Initially the research director suggested interviewing the elders on where they expected to find ʔekwǫ̀ and where the ʔekwǫ̀ had not migrated. This approach did not work. Tłı̨chǫ elders and hunters approach problems by thinking about positive results: areas where ʔekwǫ̀ are most likely to be

found given the state of their habitat the previous summer. The research team developed an interview guide.

After several meetings the research team agreed to map harvesting patterns (as far back as the elders could remember), mining activity, forest fire locations, and where ʔekwǫ̀ was hit with a stick. The team also agreed to document fitness of ʔekwǫ̀ as perceived by the hunting party, and whether the hunters harvested enough ʔekwǫ̀ for the camp.

Sally Anne Zoe enters information in GIS at Behchokǫ̀ office 1999 (Photo courtesy of Allice Legat)

They needed to develop a system to code the information on the topographical maps, to save time inputting data for the database attached to the GIS mapping system. They developed a coding system that made sense, including a way to determine the approximate year that harvesting took place. The GIS Administrator tested the system with Louis Zoe and Joe Mantla in Gamètì.

Researcher Bobby Gon got the registered birth dates[24] of the elders and made a table for each year that showed their age and associated year. As the elders made statements such as, "I was about the age of my nephew…", or "I was about the size of …" Bobby calculated their relative age and the approximate year of activity based on the person the elder referred to. Sometimes the elder knew the year or told the researchers their age. The times of harvests shown on the maps are probably correct within two to three years.

Importantly, the CEC and the elders being interviewed were comfortable with the system. And the research team found that calculations provided data consistent with the archival information available.

As Scott (1998:20) summarized: In 1955 wildlife officers reported a decrease of ʔekwǫ̀ between Sahtì (Great Bear Lake) and Tideè (Great Slave Lake) from 219,000 in 1949 to 44,952 in 1955. Scott (1998:10) also noted that J.P. Kelsall reported that ʔekwǫ̀ shifted calving areas in 1952-53 and again in 1955-56 when they wintered on the north shore of Great Slave Lake. Harvesters interviewed also stated that in 1955 and 1956 they harvested underweight ʔekwǫ̀ and there were not enough for the camp.

During the initial interviews, the elders stated the number of ʔekwǫ̀ seen in comparison to the number taken. The research team updated the coding system to include this information. The researchers asked the elders to talk about each year and each season that they remember harvesting. The elders were very firm that they will only talk about what they remember clearly. For example, other elders have stated that Suzie Bruneau has hunted a lot around the ʔek'atì area as well as further east. But he himself stated that although he remembers hunting he cannot at this time remember the approximate years or how old he was.

The research team found that as elders are interviewed about specifics, other memories return to them. Many elders will not talk about what they are not

24 These are often inaccurate, as many of the elders were born on the land and not baptized or registered for a few years. So we made guesstimates.

sure about or what they do not know. They fear they will be viewed as lying about stories and will be discredited and dishonored. It is a very noble and honorable thing to be ranked and respected as a hunter with a great wealth of knowledge and information gained from experience.

The validity of the elders' comments has been questioned on the assumption that their advanced age may influence their ability to accurately remember events from long ago. Most social scientists, particularly those historians and anthropologists interested in oral history, accept that many seniors have short-term memory problems, yet their long-term memories are remarkably clear and detailed. This was demonstrated in our research by the fact that the elders' information is often repeated in different interviews with other elders.

The elders were asked to remember as far back as they could and, based on their own harvesting histories, to explain:

- Where and when caribou were killed.
- What time of year caribou were killed.
- Number of caribou taken: few, many, was there enough.
- Whether there was enough meat for the camp.
- Contents of stomach, stools, and vegetation left in mouth.
- Condition of caribou: fat, skinny, average, healthy, or not.
- Condition of hide.

Between December 1998 and February 2000, we made 1269 database entries that reflect data gathered for a time period that spans from 1917 to 1998. Of the total entries, 1026 are on harvesting ʔekwǫ̀ and the rest are on harvesting tǫdzı (woodland caribou).

We explore the information from these oral histories under four headings:

- Distribution of harvested ʔekwǫ̀.
- Underweight ʔekwǫ̀ harvested between 1917 and 1998.
- Enough or not enough harvested ʔekwǫ̀ between 1917 and 1998.
- Vegetation found in the mouths of harvested ʔekwǫ̀.

Oral Histories: Distribution of Harvested ʔekwǫ̀

Tłı̨chǫ oral narratives often discuss distribution and migration in terms of where ʔekwǫ̀ wintered, the ʔekwǫ̀ relationship with people, how ʔekwǫ̀ react when people disrespect ʔekwǫ̀, when and where there were fires, and their concerns about industrial development including associated infrastructure.

Table: ʔekwǫ̀ harvested on lakes at Tsǫ̀tì, Behchokǫ̀, and Gamètì and at the community of Whatì

Year	Tsǫ̀tì	Whatì	Behchokǫ̀	Gamètì
1925	No	—	No	No
1926	No	—	No	No
1927	No	—	No	No
1928	No	—	No	No
1929	No	—	No	No
1930	No	—	No	No
1931	No	—	Yes	No
1932	No	—	No	No
1933	No	—	No	No
1934	No	—	No	No
1935	Yes	—	No	No
1936	No	—	Yes	No
1937	No	—	No	No
1938	No	—	Yes	No
1939	No	—	No	No
1940	No	—	No	No
1941	Yes	—	Yes	No
1942	No	—	No	No

Table: ʔekwǫ̀ harvested on lakes at Tsǫ̀tì, Behchokǫ̀, and Gamètì and at the community of Whatì

Year	Tsǫ̀tì	Whatì	Behchokǫ̀	Gamètì
1943	No	—	No	No
1944	No	—	Yes	No
1945	No	—	No	No
1946	No	—	Yes	No
1947	No	—	Yes	Yes
1948	No	—	Yes	Yes
1949	No	—	Yes	Yes
1950	No	—	Yes	Yes
1951	No	—	No	Yes
1952	No	—	No	Yes
1953	No	No	Yes	Yes
1954	No	No	No	Yes
1955	No	No	No	Yes
1956	No	No	No	No
1957	No	No	No	Yes
1958	No	No	Yes	No
1959	No	No	No	No
1960	No	No	Yes	No
1961	No	No	No	Yes
1962	No	No	No	Yes
1963	No	No	No	No
1964	No	No	No	Yes

Table: ʔekwǫ̀ harvested on lakes at Tsǫ̀tì, Behchokǫ̀, and Gamètì and at the community of Whatì

Year	Tsǫ̀tì	Whatì	Behchokǫ̀	Gamètì
1965	No	No	Yes	Yes
1966	No	No	Yes	Yes
1967	Yes	Yes	No	No
1978	Yes	No	No	No
1969	Yes	No	No	No
1970	Yes	No	Yes	Yes
1971	Yes	No	No	Yes
1972	No data	No data	No data	No data
1973	No	No	Yes	No
1974	No	No	Yes	No
1975	No	No	No	No
1976	No	No	No	Yes
1977	No	No	No	Yes
1978	No	No	No	No
1979	No	No	No	No
1980	No	No	No	No
1981	No	No	No	No
1982	No data	No data	No data	No data
1983	No data	No data	No data	No data
1984	No	No	No	No
1985	Yes	No	No	No
1986	No	No	No	Yes

Table: ʔekwǫ̀ harvested on lakes at Tsǫ̀tì, Behchokǫ̀, and Gamètì and at the community of Whatì

Year	Tsǫ̀tì	Whatì	Behchokǫ̀	Gamètì
1987	No	Yes	Yes	No
1988	No	No	No	Yes
1989	No	No	No	No
1990	No	No	No	No
1991	No	No	No	No
1992	No	No	Yes	No
1993	No	No	Yes	No
1994	No	No	No	No
1995	No	No	Yes	No
1996	No	No	No	No
1997	No	No	No	No
1998	No	No	Yes	No

Table: Distribution in Relation to Wekweètì

Year	Distribution in Relation to Wekweètì
1925	East of Wekweètì and north as far as Deèzàatì
1926	Northwest and southeast and east
1927	Around Wekweètì and east to ʔek'atì, Ts'iedaa, and Nǫdìikahtì
1928	Around Wekweètì, south and east to ʔek'atì, Ts'iedaa and Nǫdìikahtì
1929	Southwest toward Behchokǫ̀
1930	Northeast in a small area
1931	Southwest as far as Behchokǫ̀, northeast around ʔek'atì and to Kǫ̀k'èetì
1932	Around Wekweètì , south, east to ʔek'atì and Ts'iedaa, and west to Sahtì
1933	West and north-south and east to Ts'iedaa and ʔek'atì
1934	South, around Wekweètì and northwest past Yabàahtì
1935	West, south and east ('T' shape)
1936	West and southwest to northeast
1937	South and from southwest to east of Wekweètì
1938	Southwest to Behchokǫ̀, northeast and east
1939	Southwest, north and east to ʔek'atì
1940	Southwest, around Wekweètì and east to ʔek'atì
1941	Southwest to Tsǫ̀tì and northeast to Deèzàatì and east side of ʔek'atì
1942	South, west and east to ʔek'atì and Nǫdìikahtì
1943	South in an east-west formation and in a northwest to east formation as far as ʔek'atì and Nǫdìikahtì
1944	Southeast to Behchokǫ̀ and to south of Wekweètì
1945	East and as far east as ʔek'atì, Ts'iedaa and Nǫdìikahtì
1946	Southeast to Behchokǫ̀ and northwest

Table: Distribution in Relation to Wekweètì

Year	Distribution in Relation to Wekweètì
1947	South and east (to ʔek'atì) and west
1948	East to Gamètì, southeast, southeast of Whatì, and east to ʔek'atì
1949	East and north-south along Camsell River system
1950	Same, but also northeast to Yabàahtì
1951	In a 'V' shape south of Wekweètì , northwest to Sahtì and northeast to Deèzàatì
1952	West and north, east to ʔek'atì, Ts'iedaa and Nǫdìikahtì, and south and west to Simỵtì
1953	West and northwest to ʔɻts'èetì, south, south and east to ʔek'atì
1954	Southeast and northeast to ʔɻts'èetì along Camsell River system, east to ʔek'atì and Nǫdìikahtì
1955	South and east to ʔek'atì, north-south along Camsell River system
1956	A small area southeast of Wekweètì only
1957	Both north-south and east-west
1958	Same as 1955
1959	In a C shape from Wekweètì east to ʔek'atì, south from Wekweètì, and then east again to Tideè (Great Slave Lake)
1960	Same but not as far as Tideè
1961	Southeast to Simỵtì, west and north to ʔɻts'èetì, south, east to ʔek'atì
1962	West and somewhat north and south, and west and north
1963	West and southwest to Behchokǫ̀, west and north, west to Sahtì
1964	West and south, west and north, west
1965	West and southwest
1966	In a southwest block
1967	south, southwest to Tsǫ̀tì , east and north to Deèzàatì

Table: Distribution in Relation to Wekweètì

Year	Distribution in Relation to Wekweètì
1968	Northwest to Gots'ǫkàtì, southwest to Tsǫ̀tì , south
1969	In a block south, south and east and north of Tsǫ̀tì
1970	Southwest to Whatì, west and north to ʔɻts'èetì
1971	South and southwest, west and then south to south of Tsǫ̀tì, and west and north to Gots'ǫkàtì
1972	No data
1973	West and south, west and northeasterly almost to Yabàahtì
1974	Southwest near Behchokǫ̀ and north to Deèzàatì and east
1975	A small area west of Wekweètì
1976	South, west to Gamètì, east
1977	West, in a north-south formation
1978	In a circumference south, west, north and a bit east
1979	A small area south and east
1980	Same, but less south
1981	No data
1982	No data
1983	At Sombak'e and extending north and east from there
1984	An area east and south encompassing Ts'iedaa
1985	South and west to edge of map, east to Ts'iedaa
1986	South and west and north
1987	West and south to Behchokǫ̀, north to Gots'ǫkàtì, and west from there to ʔɻts'èetì
1988	South and west to SimɁtì and Gamètì and northeast from there to Gots'ǫkàtì , south and east to Ts'iedaa
1989	Southwest and east and north to north of Yabàahtì

Table: Distribution in Relation to Wekweètì

Year	Distribution in Relation to Wekweètì
1990	South in a southwest to northeast formation
1991	Small area to northwest
1992	An area south and east, almost to Behchokǫ̀
1993	An area just north of Behchokǫ̀
1994	No data
1995	A small area just to the east of Behchokǫ̀
1996	From southwest to northeast at ʔek'atì and Yabàahtì
1997	A small area just west of Wekweètì
1998	From southwest near Behchokǫ̀ northeast to ʔek'atì and Yabàahtì

The term distribution is used here to describe the extent of the reported areas used each year for harvesting. There is not enough data before 1925 to map harvesting distribution from 1917 to 1924. Although the actual harvesting information may be lost with the passing of elders, the knowledge of those periods is passed through oral narratives that contain statements such as, "The ɂekwǫ̀ were everywhere in 1924." (Adele Wedawin, age 84. CEC-97/11/19)

We examined the harvesting information in the following ways:

- In four-year, six-year, and seven-year groupings as shown on the maps in Appendix I: Barrenland Caribou Distribution Based on Harvesting Patterns in Winter and Spring.
- Yearly, in a table that shows where ɂekwǫ̀ were between 1925 and 1998 in relation to the lakes Gamètì and Tsǫ̀tì, and to the current communities of Whatì and Behchokǫ̀[25].

25 See maps in Appendix I for locations.

- Yearly, in a table that shows where ʔekwǫ̀ were in relation to Wekweètì between 1925 and 1998.

The maps (Appendix I and II) and tables show that over those 73 years the distribution of harvested ʔekwǫ̀ rotated around Wekweètì. The earliest pattern shows ʔekwǫ̀ being harvested to the east of Wekweètì, with most winter and spring harvesting in 1925 and 1928 taking place between Wekweètì and the tundra around Gots'ǫkàtì, ʔek'atì, Deèzàatì, and Nǫdìikahtì.

The harvesting trend then moves more to the southwest and east of Wekweètì between 1929 and 1946, often reaching Behchokǫ̀ and ʔek'atì (Lac de Gras). The trend from 1949 to 1961 is in a north-south distribution along the river system between Sahtì (Great Bear Lake) and Tıdeè (Great Slave Lake). It then changes around 1962, to a northerly trend west of Wekweètì, with some harvesting taking place as far east as ʔek'atì, Deèzàatì, and Gots'ǫkàtì. The trend changes again to distribution south of Wekweètì, with a general movement back to the east.

Pierre Beaverho carrying a Deghǫ̀ɬeh (caribou meat in caribou hair bundle) back to camp on Deèzàatì August 1999 (Photo courtesy of Allice Legat)

Some long-term trends are noticeable between 1931 and 1946, 1949 and 1961, and 1964 and 1978. Minor alterations in the distribution of the harvested ʔekwǫ̀ change every three to five years, with two-year groupings in 1925-26, 1929-30, 1944-45, and 1947-48 that are completely different, followed again by a long-term pattern. After 1979 the distribution of harvesting patterns seems to change even two to three years.

Harvesting ʔekwǫ̀ in relation to water crossings and locations for caribou fences

The maps in Appendix I and Appendix II clearly show that harvesters harvested ʔekwǫ̀ on trails leading to (or at) 32 of the 42 water crossings and locations for traditional fences.

Harvesting ʔekwǫ̀ in relation to fire activity

Maps in Appendix I show fire activities between 1965 and 1995[26]. The maps show that winter and spring harvesting continues in apparent fire areas in 1968, 1969, 1971, and 1973. In this context we assume one of three things:

- ʔekwǫ̀ were travelling quickly through the areas.
- The fire was a top fire and did not destroy vegetation growing closer to the ground.
- RWED misinterpreted the satellite information[27].

The research team made several attempts to fly over these areas with RWED staff and elders to verify the size of areas destroyed by fire and to document vegetation. Several things prevented this from happening: new fires, sickness among elders, and the Tłı̨chǫ annual trip to Lac St. Anne, Alberta.

As already noted, ʔekwǫ̀ did not go to Whatì for about 30 years after a young boy hit a ʔekwǫ̀. This occurred sometime between 1956 and 1958. In the table that shows harvesting activity at Whatì, Tsǫ̀tì, Gamètì, and Behchokǫ̀ we note that only once in the 30-year period following the 1950s—in 1967—did any of those elders harvest ʔekwǫ̀ near Whatì. During six of those years, people harvested ʔekwǫ̀ north of Whatì and on or near Tsǫ̀tì. But only in 1967 did they harvest ʔekwǫ̀ near the community of Whatì.

26 Data comes from the RWED.

27 RWED has some concerns about their early fire data.

ʔekwǫ̀ harvesting distribution in relation to mining activity

Tłı̨chǫ elders attributed loud noise and the smell of fumes and smoke during the construction phase of Ekati mine site as the reason the ʔekwǫ̀ travelled southeast of Lutselk'e in 1998. So the research team decided to compare past mining activity in relation to the distribution of harvested ʔekwǫ̀.

Maps in Appendix I suggest that during past exploration and operation the mines did not interrupt harvesting of ʔekwǫ̀ in adjacent areas. The elders suggest the 1998 migration pattern is due to activities associated with the construction at the BHP Ekati mine site. They are fearful that the ʔekwǫ̀ will be determined to travel in a particular direction that will lead them to migrate through mine sites. They are worried that in doing so the ʔekwǫ̀ will be adversely affected by pollutants such as noise and ash, and may potentially eat vegetation where pollutants have settled.

These two seemingly conflicting observations and concerns regarding avoidance and adaptability on the part of the ʔekwǫ̀ can be explained. First, elders have stated that ʔekwǫ̀ avoid places that are loud and smell like smoke or fire. Second, elders have also stated that they have observed ʔekwǫ̀ growing accustomed to loud noise such as planes, causing the elders to be concerned—even fearful—that the ʔekwǫ̀ will become accustomed to the noise, and smell of fumes and smoke associated with mines.

A third factor is that although the ʔekwǫ̀ may avoid areas when they are not migrating, they will move directly through areas when they are migrating, regardless of the mining activities taking place. Biologists working for BHP also observed this when they worked on a study of the response of caribou to fencing and plastic deflectors[28]. They put up a yellow plastic rope hoping to deter caribou from the mine site. The rope was effective in deterring ʔekwǫ̀ when they were grazing, but once in migration mode they simply jumped over or walked through the rope.

28 Gunn 1998

For this reason the Tłı̨chǫ elders stress the importance of limiting pollution and protecting the caribou from the tailings and contaminants created by industrial development. Tłı̨chǫ elders and harvesters have observed and mentally documented the effects of mining on ʔekwǫ̀.

> *There was a yellow substance all over the snow around the Diavik site. What was that? The ʔekwǫ̀ will be affected by that and we all eat the ʔekwǫ̀. (Louis Whane, age 80. DREC-00/05/10)*

Oral Histories: Underweight harvested ʔekwǫ̀ between 1917 and 1998

Harvesters judge ʔekwǫ̀ by looking at them and then decide whether they weigh enough to harvest. Therefore, the years they harvested ʔekwǫ̀ without fat are significant.

> *… the men who hunt often know which ʔekwǫ̀ are really fat." (Elizabeth Charlo, age 91. CHP-98/02/05)*

The table shows that in 33 of the 1026 cases, hunters mentioned harvesting at least some underweight ʔekwǫ̀. We have not collected enough data to make conclusive statements about why ʔekwǫ̀ are underweight. But it appears that the majority of ʔekwǫ̀ may not have been healthy because they did not have enough food in the fall.

In seven cases, all the harvested ʔekwǫ̀ were underweight: winter 1917, 1918, and 1937; fall 1921, 1931, and 1956; and spring 1957. Hunters took an average of three and a half ʔekwǫ̀ in each case; one was the least amount they took and eight the most. In seven cases the elders remember the ʔekwǫ̀ foraging on ʔadzìì (lichen) and in one case ʔadzìì and Labrador tea leaves.

Elders remembered 26 cases where at least some of the ʔekwǫ̀ were underweight: winter 1947, 1949, 1951, 1952, 1954, 1956, 1959, 1961, 1965, 1967, 1968, 1969, 1970, 1971, 1983, 1984, 1986, 1987, 1988, 1989, 1990, 1993, 1994, 1995, 1996, and 1997. There were no cases in the fall or spring. For the 26 cases, hunters took an average of 37 in each case; eight was the least they took and about 300 the most. In all of these cases ʔekwǫ̀ had ʔadzìì (lichen) in their months.

Tłı̨chǫ harvesters and the individuals who work with preparing the meat and hides continually observe and discuss the fitness and health of the ʔekwǫ̀ through statements about hides and meat. Hunters and women who continue to work with ʔekwǫ̀ skin, state that during 1996 and 1997 the ʔekwǫ̀ were fat and the hides were in good shape.

> *But then, this ʔekwǫ̀ has been really good for the last two years, it's probably because it eats good food. That's how our parents used to talk about it, wherever there is good food for ʔekwǫ̀ to eat is where they go to. That's how my late father used to tell us a story about it. Back in those days, the people had to struggle hard to make ends meet, that's where the people came from, so they know all about it. …*
>
> *But then, that ʔekwǫ̀ we say, the ʔekwǫ̀ is really good for the last two years, if we do that to the hide, [cleaning the ʔekwǫ̀ hide] there is not even one maggot in the ʔekwǫ̀ hide. … But then, before it wasn't like that, our mother when they are working on ʔekwǫ̀ hide, there was lots of maggots in ʔekwǫ̀ hide, the hides looked useless, but she used to make string out of it. But now, for the last two years, there is not even one maggot in the ʔekwǫ̀ hides, nothing. Before in the past, it wasn't like that, even though we shouldn't struggle with it, or work on it. (Adele Wedawin, age 86. Personal communication-99/05)*

At a meeting on November 30, 2000 Robert Mackenzie (personal communication) stated that there is now a strong odor coming from the ʔekwǫ̀ when removing the hide. This odor was not there before.

Oral Histories: Not Enough Harvested ʔekwǫ̀ between 1917 and 1998

Ferguson, Williamson, and Messier (1998:205) mention in their work with the Inuit on arctic tundra caribou, that the number of caribou harvested is not as important as whether the number taken were enough for the camp. Tłı̨chǫ elders consistently explain that hunters should only take what they need and can carry.

The following table shows that 41 of 1026 harvesting cases were situations where elders remembered not harvesting enough ʔekwǫ̀ for the camp or the community. This is relative. With few people in a camp, four or five ʔekwǫ̀

are enough for their needs. At other times harvesting 100 ʔekwǫ̀ is not enough for the number of people in a community.

The table shows that during most years only one or two harvesters told of not getting enough ʔekwǫ̀ for the camp. But during the following years there were at least three situations where hunters did not harvest enough ʔekwǫ̀: winter 1926, 1966-67, 1974, 1978; fall and winter 1934-35, 1947-48, 1957-58; fall, spring, and winter 1956-57.

Table: Harvesting incidents where ʔekwǫ̀ lacked weight or there were not enough

Year	Time of year	State of hide(s)	Number underweight	Not enough for camp	Vegetation in mouth
1916-17	Winter	Good	2 in 1 case	—	ʔadzı̨̀ı̨ (lichen)
1917-18	Winter	Good	3 in 1 case	—	ʔadzı̨̀ı̨
1918-19	—	—	—	—	—
1919-20	—	—	—	—	—
1920-21	—	—	—	—	—
1921-22	Fall migration	Bad	1 in 1 case	same case	ʔadzı̨̀ı̨
1922-23	—	—	—	—	—
1923-24	Winter	Good	—	1 case	ʔadzı̨̀ı̨
1924-25	—	—	—	—	—
1925-26	Winter	Good	-	4 cases	ʔadzı̨̀ı̨
1926-27	—	—	—	—	—
1927-28	—	—	—	—	—
1928-29	—	—	—	—	—
1929-30	Fall migration — —	Good — —	— — —	1 case 1 case —	ʔadzı̨̀ı̨ ʔadzı̨̀ı̨, ɔɻtɬ'ǫ̀, dłòogo, tsödzeè —
1930-31	Fall migration	Good	—	1 case	ʔadzı̨̀ı̨, ɔɻtɬ’ǫ̀,

Table: Harvesting incidents where ɔekwǫ̀ lacked weight or there were not enough

Year	Time of year	State of hide(s)	Number underweight	Not enough for camp	Vegetation in mouth
	—	—	—	—	dlǫogo, tsǫ̀dzeè —
1931-32	Fall migration	Good	5 in 1 case	—	ʔadzı̨ı̨
1932-33	Fall migration	Good	—	1 case	ʔadzı̨ı̨
1933-34	Fall migration	Good	—	1 case	ʔadzı̨ı̨
	Spring migration	Good	—	1 case	ʔadzı̨ı̨
1934-35	Fall migration	Good	—	2 cases	ʔadzı̨ı̨
	Winter	Good	—	1 case	ʔadzı̨ı̨
1935-36	—	—	—	—	—
1936-37	Winter —	Good Good	5 in 1 case —	— 1 case	ʔadzı̨ı̨ ʔadzı̨ı̨
	Spring migration	Good	—	1 case	ʔadzı̨ı̨
1937-38	Spring migration	Bad	—	1 case	ʔadzı̨ı̨, tɬ’odzìì
1938-39	—	—	—	—	—
1939-40	Winter	Good	—	1 case	ʔadzı̨ı̨
1940-41	—	—	—	—	—
1941-42	Fall Migration	Good	-	1 case	ʔadzı̨ı̨
1942-43	—	—	—	—	—
1943-44	Fall migration	Good	-	1 case	ʔadzı̨ı̨
1944-45	—	—	—	—	—
1945-46	—	—	—	—	—
1946-47	Winter	Good	< 10 in 2 cases	—	ʔadzı̨ı̨
1947-48	Fall migration	Good	—	2 cases	ʔadzı̨ı̨

Table: Harvesting incidents where ɔekwǫ̀ lacked weight or there were not enough

Year	Time of year	State of hide(s)	Number underweight	Not enough for camp	Vegetation in mouth
	Winter	Good	—	3 cases	ʔadzı̨̀
1948-49	Winter	Good	< 36 in 2 cases	—	ʔadzı̨̀
1949-50	Winter	Good	—	1 case	ʔadzı̨̀, ɔı̨tł’ǫ̀, tłoghoò
1950-51	Winter	Good	< 17 in 1 case	—	ʔadzı̨̀
1951-52	Fall migration	Good	—	1 case	ʔadzı̨̀, ɔı̨tł’ǫ̀, tłoghoò
	Winter	Good	< 34	—	ʔadzı̨̀
1952-53	—	—	—	—	—
1953-54	Winter —	Good Good	< 30 in 4 cases —	— 1 case	ʔadzı̨̀ ʔadzı̨̀
1954-55	—	—	—	—	—
1955-56	Winter	Good	< 94 in 5 cases	—	ʔadzı̨̀
1956-57	Fall migration — Winter — Spring migration	Good Bad Good Good Good	— 1 in 1 case — 8 —	1 case same case 2 cases — 1 case	ʔadzı̨̀ ʔadzı̨̀ ʔadzı̨̀ ʔadzı̨̀ Gots'agoo
1957-58	Fall migration	Good	—	1 case	ʔadzı̨̀
	Winter	Good	—	3 cases	ʔadzı̨̀
1958-59	Fall migration	Good	—	1 case	ʔadzı̨̀, ɔı̨tł’ǫ̀, tłoghoò
	Winter	Good	< 16 in 4 cases	—	ʔadzı̨̀
1959-60	Winter		0	1 case	ʔadzı̨̀
1960-61	Winter	Good	< 10 in 2 cases	—	ʔadzı̨̀
1961-62	—	—	—	—	—

Table: Harvesting incidents where ɔekwǫ̀ lacked weight or there were not enough

Year	Time of year	State of hide(s)	Number underweight	Not enough for camp	Vegetation in mouth
1962-63	Winter	Good	—	2 cases	ʔadzı̨̀
1963-64	—	—	—	—	—
1964-65	Winter — —	Good — Good	0 — < 10 in 2 cases	1 case 1 case —	ʔadzı̨̀, tɬ’odzìì ʔadzı̨̀
1965-66	Winter	Good	—	1 case	ʔadzı̨̀, tɬ’odzìì, tɬ'odài
1966-67	Winter —	Good Good	— < 10 in 1 case	3 cases —	ʔadzı̨̀ ʔadzı̨̀
1967-68	Fall migration	Good	—	2 cases	ʔadzı̨̀
	Winter	Good	< 50 in 2 cases	—	ʔadzı̨̀
1968-69	Winter	Good	<10 in 1 case	—	ʔadzı̨̀
1969-70	Winter	Good	<50 in 2 cases	—	ʔadzı̨̀
1970-71	Winter	Good	< 300 in 3 cases	—	ʔadzı̨̀
1971-72	—	—	—	—	—
1972-73	—	—	—	—	—
1973-74	Winter	Good	—	4 cases	ʔadzı̨̀
1974-75	Fall Migration	Good	—	1 cases	ʔadzı̨̀
1975-76	—	—	—	—	—
1976-77	Winter	Good	—	1 case	ʔadzı̨̀, tɬ’odzìì
1977-78	Winter	Good	—	3 cases	ʔadzı̨̀
1978-79	—	—	—	—	—
1979-80	—	—	—	—	—
1980-81	—	—	—	—	—

Table: Harvesting incidents where ɔekwǫ̀ lacked weight or there were not enough

Year	Time of year	State of hide(s)	Number underweight	Not enough for camp	Vegetation in mouth
1981-82	—	—	—	—	—
1982-83	Winter	Good	< 60 in 1 case	—	ʔadzı̨̀
1983-84	Winter	Good	< 60 in 2 cases	—	ʔadzı̨̀
1084-85	—	—	—	—	—
1985-86	Winter	Good	< 20 in 1 case	—	ʔadzı̨̀
1986-87	Fall migration	Good	—	1 case	ʔadzı̨̀degoo, k'òò
	Winter	Good	< 12 in 1 case	—	ʔadzı̨̀
1987-88	Winter	Good	< 8 in 1 case	—	ʔadzı̨̀
1988-89	Winter	Good	< 9 in 1 case	—	ʔadzı̨̀
1989-90	Winter	Good	< 8 in 1 case	—	ʔadzı̨̀
1990-91	—	—	—	—	—
1991-92	—	—	—	—	—
1992-93	Winter	Good	< 60 in 1 case	—	ʔadzı̨̀
1993-94	Winter	Good	< 20 in 1 case	—	ʔadzı̨̀
1994-95	Winter	Good	< 10 in 1 case	—	ʔadzı̨̀
1995-96	Winter	Good	< 16 in 1 case	—	ʔadzı̨̀
1996-97	Winter	Good	< 9 in 1 case	—	ʔadzı̨̀
1997-98	Spring migration	Good	—	1 case	ɔìtɬ'ògokò, ʔadzı̨̀

Based on the 1026 records, we can make the following statements about the vegetation associated with ʔekwǫ̀ from 1917 to 1998.

- ʔadzı̀ı̀degoo (white lichen) was mentioned the most often. People were more specific than in 1999 about the colour of the lichen the ʔekwǫ̀ were eating.
- Consistent with the 1999 data, kwetsı̀ was mentioned 22 times.
- ʔekwǫ̀ eat a greater variety of plants in the fall, on the tundra, than in the winter or spring when they travel through snow in the boreal forest.
- In the winter and spring it seems tł'o (grasses and sedges) and ʔadzı̀ı̀ (lichen) are the most important food for the ʔekwǫ̀.

Other reports and articles[29] discuss the variety of food that ʔekwǫ̀ eat and how the food sources they depend on differ between the boreal forest and the tundra. These reports do not contain the detail on vegetation that we find in this report.

Oral Histories: Harvesting Distribution Patterns in Relation to Routes that Collared Cows Travel

The information discussed here comes from the Tłı̨chǫ elders and the radio-collared caribou data collected by RWED (Anne Gunn). The map in Appendix II clearly shows that Tłı̨chǫ hunters harvested most ʔekwǫ̀ along river systems. But the maps in Appendix III[30] do not show ʔekwǫ̀ travelling the same river routes as Tłı̨chǫ hunters. Although we cannot feasibly compare the data from these two approaches, there are some interesting similarities.

- ʔekwǫ̀ harvested in Tłı̨chǫ territory in 1998 did not provide enough meat for the hunters. During the same year all radio-collared caribou travelled east of Łutselk'e, away from Tłı̨chǫ territory.
- There are similarities in distribution when comparing data from:
  - 1949-50 (elders) with spring 2000 (RWED).
  - 1953-55 (elders) with spring 2000 (RWED).

29 Thorpe 1999; Case et al. 1996; Johnson and Ruttan 1993; Griffith et al. 1998, 1999

30 Appendix III: Routes of Collared Caribou Cows (various maps)

- 1971 and 1977 (elders) with winter 2000 (RWED).
- 1961 and 1965 (elders) with spring 1999 (RWED).

- The one radio-collared cow used water crossings—known by the Tłı̨chǫ—and locations for fences 12 times in four years.

Summary of Research Results: Oral Histories of Harvesting

The map in Appendix II shows that people harvested ʔekwǫ̀ in various locations on Tłı̨chǫ traditional territory. The data in the table shows that in many years there were either not enough ʔekwǫ̀ for the camp or people harvested underweight ʔekwǫ̀. Only in the fall of 1921 (1922) and 1956 were the harvested ʔekwǫ̀ underweight and the number taken not enough for the camp. Interestingly, in these two cases the hides were reported as in bad shape.

Throughout the period between fall 1956 and winter 1957 the harvested ʔekwǫ̀ were not enough and were underweight. This occurs at the same time as the Rae Rock mine was in full operation and when it is known that a boy hit a ʔekwǫ̀ with a stick in Whatì. The information in oral narratives reveals that the data on the maps corresponds with the elders' observations.

The oral histories of harvesting revealed that the recorded vegetation found in the mouths, stools, and stomachs of ʔekwǫ̀ was similar to the recorded vegetation in the oral narratives, for each season and environment.

Field Research Results

The research team, elders, and harvesters studied ʔekwǫ̀ habitat at locations on the tundra and in the boreal forest. They concentrated on habitat and vegetation that ʔekwǫ̀ is known to prefer.

Elders consider there to be two sets of knowledge associated with ʔekwǫ̀, one for the tundra and one for the boreal forest.

> *... It's like it [the ʔekwǫ̀] has two separate nàowo [knowledge] and that's how they [Johnny's elders] use to talk about it. So whatever land the ʔekwǫ̀ are headed to ... They [his elders] knew all of its*

[ʔekwǫ̀] knowledge! That is how they use to talk about the animal and its knowledge. …

Sometimes, the animal when it moves on with its young, when they first start to move, they are not fast, is what they said I had said. And that, because they are teaching them, they don't move fast is what they are saying. They teach them and teach them and do that and do that as they move in this direction and when they are close to the bush, and because they have been taught well by their parents, whatever their parents will do, they do also. That's what they say as they talk about them.

So then, once they find out, once they find out, how the animal is taught of its parent on how to eat, how their parents work, they see all of this. So then, whatever its parent does and even if it's not told, "Do this!" whatever it wants to eat it would begin to kick away the snow like this and look for its own food. It will not do for it! Because it's already been taught, it will not do that for it again.

That is how the animals teach one another and it becomes an animal. This was said as they talked about it. So then, that which you asked about, you are right. They are big animals and however its parent teaches it and it grows thereby is how it learns like you said—even with how we teach our own children, they teach their own even better and that's how the animals wander about. Even we don't do that! (Johnny Eyakfwo, age 73. CHP-97/04/17)

Field Research on the Tundra

The research team visited two locations on the tundra.

ʔekʼatìʔetsìɻlɻ̨ (headwaters of Coppermine River)

During July of 1997, the research team spent 10 days at ʔekʼatìʔetsìɻlɻ̨. The research team took photos of vegetation; we sighted and observed ʔekwǫ̀. More training took place than research.

Deèzàatì (Point Lake)

During the last week of August and the first week of September, 1999 we observed ʔekwǫ̀ at Deèzàatì. Most often researchers saw small groups or

single ʔekwǫ̀ travelling along the ʔekwǫ̀ trails in the ts'oo (muskeg). The elders stated that ʔekwǫ̀ prefer ts'oo habitat in the fall so they can find a greater variety and abundance of food.

During spring and early summer, when mosquitoes and flies are a nuisance, ʔekwǫ̀ prefer what'à (eskers) and whagweè (open sandy areas covered with lichen). This habitat is breezy and has ʔela, a type of mud that ʔekwǫ̀ roll in to coat their hides and protect them from the insects. (Louis Whane, Pierre Zoe, and Jimmy Martin. Personal communication-99/08)

The following table lists the vegetation associated with ʔekwǫ̀ that elders mentioned during discussions at Deèzàatì.

Table: Vegetation at Deèzàatì associated with ʔekwǫ̀

Tłı̨chǫ	**English translation**
ʔadzı̨̀	Lichen-general
ʔadzı̨̀degoo	White lichen
Kwetsı̨̀	Rock tripe
ʔadzìidetł'e	Type of lichen
ʔadzìidezo	Type of lichen
Dààghò	Lichen-like vegetation on trees
Dègogaet’ıì	Red vine-like plant
Dlòodiì	Type of mushroom
Hozìiı̨t’ǫ̀a	Translates as ‘barrenland leaves’
K’òòʔı̨t'ǫ̀	Willow leaves
Tł'odzìì	Type of sedge or dog berries
Tł'odzìiʔı̨t'ǫ̀	Type sedge or dogberries leaves
Tł’ogha	Type of short sedge

Predators and pests are acknowledged as part of the ʔekwǫ̀ dè, especially on the tundra. But elders rarely discuss them in relation to where ʔekwǫ̀ will

migrate. Rather they discuss how most predators move with the herd and how ʔekwǫ̀ behave in relation to predators; and what type of habitat ʔekwǫ̀ use to escape or protect themselves from pests. For example, how they go in the water or seek breezy habitat to escape from flies and mosquitoes.

While at Deèzàatì, the elders observed that there is less lichen and other vegetation important to ʔekwǫ̀, than even 10 years ago[31]. They also stated that ʔekwǫ̀ had an odor that was not there before. Further research could concentrate on narrowing down the time that these changes began and their extent, as a way to determine the possible causes: acid rain, global climate change, increased industrial development, etc.

Field Research Boreal Forest

The research team visited two boreal forest locations.

Ice Road between Whatì and Gamètì

In February 2000 we observed ʔekwǫ̀ along the ice road between Whatì and Gamètì. The elders commented that ʔekwǫ̀ observed along the side of the ice road to Gamètì seemed to be very nervous. They appeared to want to travel in the open but were being forced into the bush to hide from the hunters.

Twice the research team observed a small herd of about 15 ʔekwǫ̀ cross the road. They did not seem bothered by the snow banks. Although at times the ʔekwǫ̀ stopped and observed our vehicle, they only ran into the bush when there was the slightest noise. They appeared tired, probably because they had been hunted by several hunters.

Four non-Tłı̨chǫ hunters and the vehicles of two Tłı̨chǫ hunters were observed. The non-Tłı̨chǫ hunters butchered along the road; Tłı̨chǫ hunters used their skidoos to hunt away from the road. The elders were extremely upset that the ʔekwǫ̀ were butchered on the road. In three cases ʔekwǫ̀ blood

31 This observation was also made in the ʔek'atì (Lac de Gras) area.

was spread across the road, forcing the elders to be in a vehicle that drove over the blood.

This is considered extremely disrespectful to the animal and the elders were upset at being put in this situation. We did stop and explain that spreading blood showed extreme disrespect; and the hunters assured us that they would clean up. In the fourth case, no blood was observed although several ɂekwǫ̀ had been shot and were in the truck.

We made the trip to observe ɂekwǫ̀ in a boreal forest habitat that included snow and an ice road, and where people were a part of ɂekwǫ̀ dè. We discussed the disrespect shown to the ɂekwǫ̀ in this situation and the potential for ɂekwǫ̀ to become extinct if they were continually disrespected in a way that would cause them stress.

ʔɻhdaatì (Stagg River area)

In May 1999 the research team travelled to ʔɻhdaatì (Stagg River) with 15 elders from Behchokǫ̀ to document vegetation that ɂekwǫ̀ forage on in the boreal forest. As it was summer we did not observe any ɂekwǫ̀ there. We discussed their preferred vegetation. The following table lists the sources of ɂekwǫ̀ food at ʔɻhdaatì that the elders mentioned.

Table: Vegetation associated with ɂekwǫ̀ at ʔɻhdaatì

Tłı̨chǫ	**English translation**
ʔadzı̨̀degoo	White lichen
Kwetsı̨	Rock tripe
ʔadzı̨̀dezo	Type of lichen
Dààghoo	Lichen-like vegetation on trees
Dègogaet'ıì	Red vine-like plant
Gots'ǫkàɔı̨t'ǫ̀	Cloudberry leaves
K'òòɔit'ǫ̀	Willow leaves
Tł'odzìì	Type of sedge or dog berries

Table: Vegetation associated with ɔekwǫ̀ at ʔɻhdaatì	
Tɬ'ogha	Type of sedge
Tɬ'ot'àa	Type of sedge

Summary of Fieldwork Results

The fieldwork served two main purposes. First, it is an excellent environment for training staff, particularly with the elders. The elders wanted the research team to see ɔekwǫ̀ habitat. This experience helps them more clearly understand the terms, concepts, and descriptions that the elders used. This experience also helps them understand the two sets of knowledge (tundra and boreal forest) associated with ɔekwǫ̀.

Second, the fieldwork enabled the research team to collect and document data on habitat and vegetation. This data helps to ensure they can properly identify and translate the terms in Tłı̨chǫ, English, and Latin.

Elizabeth Chocolate at Deèzàatì August 1999
(Photo courtesy of Allice Legat)

Discussion and Conclusions

In the circumpolar north, industrial development is seen as important to the economic wellbeing of northern communities. But the Tłı̨chǫ are extremely concerned for the caribou and the habitat that they need to survive. Current wildlife management is based on approaches that are grounded in scientific studies. There is a concern among the Tłı̨chǫ that these management techniques are not sufficient on their own to protect and conserve the caribou and their habitat, as they are based on short-term observations and statistical analysis.

Tłı̨chǫ knowledge has its basis in long-term observations and the experience of living on the land. It is important to document this knowledge and incorporate it into monitoring and management techniques. This may provide the Tłı̨chǫ with more assurance that the caribou will be protected in an appropriate manner.

Other people share the same concerns as the Tłı̨chǫ. These concerns have resulted in various conferences and workshops, such as:

- Human Role in Reindeer/Caribou Systems Workshop held in Rovaniemi, Finland February 1999
- North American Caribou Workshop held in Kuujjuq, Quebec April 2001

At the workshop in Finland, people discussed traditional and biological knowledge, and developed and a research plan from their discussions (Goldman 2000). Particularly important is the baseline data contained in the traditional knowledge as discussed by Dr. Piers Vitebsky, Head of Social Science and Russian Studies, Scott Polar Research Institute, Cambridge University.

Vitebsky presented a poster at the Rovaniemi workshop. He is involved in a project on vegetation change and indigenous knowledge. This project is seen as a new approach to climate change through the interdisciplinary study of reindeer herding. The research uses two contrasting case studies of intensive reindeer herding to look at the relationships between climate change and changes in vegetation, reindeer population and behaviour, human employment and culture, and local control of resources. Vitebsky considers

traditional knowledge as the most reliable form of baseline data and the most reliable source of information on changes relating to important variables.

In thinking about future monitoring and management of ʔekwǫ̀, the Tłı̨chǫ agree that baseline data is important when looking at environmental and social change through time. The research team established a working premise based on elders' comments from previous research projects (Legat and Zoe 2000; 1995): that caribou move and stay in places where vegetation is abundant and accessible. That caribou distribution and migration patterns are related to the state of their habitat.

The research team came to understand that there are at least nine general truths about ʔekwǫ̀ known to Tłı̨chǫ elders. These are:

- ʔekwǫ̀ have unpredictable migration patterns, but when they migrate to particular areas they are more likely to use certain trails and water crossings[32].
- ʔekwǫ̀ return to the same birthing grounds.
- ʔekwǫ̀ follow the same general annual cycle each year.
- ʔekwǫ̀ leaders, who are middle-aged cows with experience, have good memories.
- ʔekwǫ̀ migrate to where the vegetation is lush and will remain in an area if the vegetation is easily accessible and plentiful.
- ʔekwǫ̀ have a very strong sense of smell.
- ʔekwǫ̀ are fairly adaptable to changing environments making them susceptible to pollutants.
- ʔekwǫ̀'s survival and continued annual migration is dependent on the respect shown to them by humans.
- Only a few people have a spirit connection with the caribou, and therefore the knowledge and intelligence that comes from this. These people know where the caribou are at any given time, but cannot predict where the caribou will migrate to in the boreal forest.

32 Areas harvesters often went to and where they put up caribou fences before the late 1930s.

These general truths contribute to a universal understanding of caribou. They suggest that we all need to pay more attention to the manner in which the Tłı̨chǫ collected information on caribou and habitat, and on the oral narratives that contain the agreed on and verified Tłı̨chǫ knowledge.

People collect and remember information through observations and experiences while hunting and harvesting caribou. They discuss the information with others who have also observed and experienced caribou behaviours. During these discussions, knowledge is verified, processed, and taught to younger people. Most importantly, it becomes part of the knowledge that is shared through the oral narrative. Observed changes to caribou behaviour and the habitat are remembered, shared, and discussed. This enables other harvesters to watch and verify possible changes, or not. Once verified they regularly share information through oral narratives.

General Truths about ʔekwǫ̀

This section discusses eight of the general truths in relation to the data collected over the last several years and information from other studies. We do not discuss the ninth general truth in this context. The research team and the elders agreed that this report is not the place to discuss the spirit relationship between some individuals and caribou.

Unpredictable migration patterns

Both Tłı̨chǫ elders and caribou biologists accept there is no known pattern or consistent cause for shifting migration routes and distribution with which to predict future movements. Biologists[33] focus on finding reasons why the caribou change their migration routes. For example, Geist (1998:316) suggests a cycle of increases in population and dispersal followed by collapse and withdrawal of the herd and decreases in the caribou's body size.

Tłı̨chǫ elders accept that ɂekwǫ̀ has unpredictable behaviour. They concentrate on what is predictable, to help them locate, observe, and harvest

[33] Gunn (1999), Geist (1998), Case (1996), and Banfield (1980)

ʔekwǫ̀ within what biologist and elders consider to be a very extensive territory.

At the 1999 conference in Rovaniemi, Finland[34], biologists, reindeer herders, and caribou hunters all stressed that both caribou and reindeer need a substantial range in which to forage. They stressed the importance of the caribou relationship with humans.

Tłı̨chǫ elders accept that ʔekwǫ̀ do not always travel to the same place and that it is impossible to predict where the caribou will migrate and winter. But they also acknowledge that it is highly probable that there always seem to be at least a few ʔekwǫ̀ in most places. For example: although the main herd moved south and west of Łutselk'e in 1998, our data show that harvesters took at least a few ʔekwǫ̀ between ʔek'atì, Wekweètì, and Behchokǫ̀.

Hunters reported that in at least one case they could not locate enough for their own use. Similar information was reported in the early 1950s when few caribou were west of Wekweètì and in several cases they were underweight and/or there were not enough for the camp. Urquhart (1980:40) found similar patterns among the Porcupine caribou herd. He states that caribou from that herd will often use the some ranges for many years in succession, but not every year without fail. And that there are no known areas that are unoccupied every year.

Results from the life histories of harvesting show distribution of harvested ʔekwǫ̀ from 1917 to 1998. Although we can identify no clear patterns, the data suggests a slight shift every three to four years. These shifts do not seem to be as extreme as among other caribou herds, such as those in the Arviat area, where one elder (name unknown) stated,

> *In three to four years they will move again. In Arviat now there's a lot of caribou in the winter, but in a few years there won't be. (Kruse et al. 1998:453-54).*

34 Goldman 2000. The conference was called The Human Role in Caribou and Reindeer Systems

The harvesting data shows that the distribution of the harvested ʔekwǫ̀ moved constantly. Slightly more visible shifts occurred every four to five years, and more extreme shifts seemed to occur every decade or two.

Kruse et al. (1998) have noted that environmental conditions like snow cover and rain affect the number of caribou. They are also affected by mining, airplanes, and jet planes (interview with someone from Rankin Inlet, p.453) that can cause a decline in herds. Like the Tłı̨chǫ elders, elders from the Kitikmeot region (Thorpe, 1998:10) state that migration routes have changed because of the mining operations in the ʔek'atì area.

ʔekwǫ̀ always return to the birthing grounds

Although most Tłı̨chǫ elders did not travel to the birthing grounds, they are well aware that ʔekwǫ̀ always return to their birthing grounds. Like the Inuit, who have a stronger dependency on ʔekwǫ̀ in the summer than the Tłı̨chǫ, they did not disturb the cows and calves when they are at their most vulnerable (Thorpe 1999). Rather, the Tłı̨chǫ traveled north in the fall where they met the ʔekwǫ̀ as they migrate south.

Because ʔekwǫ̀ always return to the same area, both the Tłı̨chǫ and the Inuit are concerned about development in association with the birthing grounds.

ʔekwǫ̀ have an annual cycle that starts and ends at the birthing grounds

Tłı̨chǫ consider the tundra as the home of ʔekwǫ̀ for two reasons: first, ʔekwǫ̀ didn't always come to the boreal forest; and second: ʔekwǫ̀ always return to their birthing grounds.

Elders consider knowledge of the annual cycle to be important. The ʔekwǫ̀'s annual cycles starts and ends at the birthing grounds. They move in a general pattern, first in a southern or south-western direction, and slowly turning to the north. But often continuing westward, and then turning to the north and east again; and finally returning to the birthing ground at Bathurst Inlet.

Tłı̨chǫ elders will not predict when ʔekwǫ̀ will come into an area. But they acknowledge that types of movement within the annual cycle can be related to physiological changes in ʔekwǫ̀, as well as traveling conditions. These are:

- When calves are about two feet tall they start to follow their mothers around the tundra in summer to fatten up on lush vegetation.
- When calves are about three feet tall the ʔekwǫ̀ start traveling long distances towards the boreal forest. Cows teach the calves but the hozìiʔekwo stay in the tundra.
- ʔekwǫ̀ start migrating at the start of fall freeze-up.
- When bulls are fat the ʔekwǫ̀ start moving to the boreal forest.
- When ʔekwǫ̀ are ready to rub velvet off their antlers they move to boreal forest.
- In the spring when it is warm and the snow is slushy the small cows start migrating back to the tundra.
- In the spring when the larger cows are big with the fetus they start migrating to the tundra.
- When the snow is gone and the lakes are slushy from melting the large bulls start migrating to the tundra.

Johnson and Ruttan (1993:117-119) noted that Sahtu Dene hunters also watch for traveling conditions and physiological indicators to determine aspects of the annual cycle.

Lead ʔekwǫ̀—middle-aged cows with experience—have good memories

Tłı̨chǫ oral narratives tell how ʔekwǫ̀ have excellent memories and start training their young as soon as they are strong enough to walk. These stories also tell of lead cows that teach the calves and lead the main herd. They remember where vegetation was in abundance and where it was. Baskin (1970 in Geist 1998:322) found that "calves born to tundra reindeer held in taiga not only learned to live in the taiga but also assumed the larger body frame of taiga reindeer." It is interesting to note that Baskin also states that reindeer do not learn once they are adults (Geist 1998:322). Whereas Tłı̨chǫ elders claim that middle-aged cows continually learn and know what areas have been grazed. Lead cows cause ʔekwǫ̀ to travel to areas with better grazing possibilities. For this reason Tłı̨chǫ hunters do not kill lead cows.

When ʔekwǫ̀ are in an area they use particular trails and water crossings

The elders know of clearly defined caribou routes that include water crossings and excellent locations for caribou fences[35]. Tłı̨chǫ expect ʔekwǫ̀ to travel these routes if they are in the area. But they also acknowledged that these routes may not be used for various reasons: deep snow, weather conditions creating crusting snow cover, and lack of available food[36].

In association with the trails, particular habitat offers more varied vegetation, escape from pests, and easy access to water. ʔekwǫ̀ find varied habitat that provides favoured food in both the tundra and the boreal forest: ts'oo (muskeg), whagweè (dry sandy area with lichen), and tł'otìa (type of moist grass land). They seek open and breezy areas: what'à (eskers) and whagweè (dry sandy areas with lichen). They like to coat themselves with ʔela (a type of mud) to escape flies and mosquitoes. During spring, the slushy snow on lakes provides relief to ʔekwǫ̀ legs and hooves; lakes improve the ability to see predators. Other indigenous knowledge studies have noted a variety of factors such as the need to find a good food source (Johnson & Ruttan 1993:119), the season, and weather conditions (Johnson & Ruttan 1993:120-21).

It is clear that ʔekwǫ̀ avoid areas with the most development and the greatest amount of activity and traffic[37]. Cameron (1995:6) states that the caribou can tolerate a certain amount of surface development, especially if they can pass under or over it. But if their movements are restricted they change their migration patterns, although the point at which they start to move away cannot be predicted.

ʔekwǫ̀ have a very strong sense of smell

Tłı̨chǫ elders say that ʔekwǫ̀ have a strong sense of smell. This leads them to abundance and lush vegetation, and keeps them away from what they have

35 See maps in Appendix I and Appendix II.
36 This is also discussed by Case et al. (1996: 2), Ferguson et al. (1998: 213), Case et al. (1996: 2-13), Banfield (1980: 123-35), and the International Porcupine Caribou Board (1993: 8-24)
37 Cameron, 1995; Wolfe, 1999; Kruse, 1998; Klein, 1999; Nelleman, 2000

learned is dangerous, such as burned areas. The elders expressed two concerns relating to the increase in industrial pollutants that often smell like smoke (such as exhaust from vehicles and buildings).

The elders feel that ʔekwǫ̀ first become confused as they are unable to smell vegetation and are unsure where to travel. Then they learn that these smells will not immediately kill them and that there is still vegetation in these areas. They adapt to the area and digest contaminated plants and water, such as those plants with a yellow ash type substance on them around Diavik claim block in May 2000.

ʔekwǫ̀ migrate to where the vegetation is lush and will remain in that area if the vegetation is easily accessible and plentiful

Indigenous people and caribou biologists agree that caribou have a tendency to find lush and varied vegetation. They agree caribou travel to where they can most easily access food (Geist 1998:316, 318; Johnson and Ruttan 1993:119-121). Hard snow and changing weather conditions make foraging difficult. Northern Yukon Ecological Knowledge Coop report (1996) explained that weather has influenced migration due to difficult feeding conditions, for example hard snow that is tiring to dig through.

Throughout the project, Tłı̨chǫ elders explained that caribou's highly developed sense of smell leads them to the lushest vegetation. This is consistent with Anne Gunn's statement that ʔekwǫ̀ seem to always return to the location within their birthing ground where the vegetation is the richest and when it is the most lush (WKSS presentation. 98/04).

Although George Kuptana in Thorpe (1999:10) does not refer to ʔekwǫ̀'s ability to smell, he did state that over a period of years the vegetation that caribou eat will be trampled and disappear, and cause the caribou to migrate in search of new food.

ʔadzı̨̀ı̨ is the most important food for ɂekwǫ̀, but their varied diet is important to their overall fitness

Tłı̨chǫ elders continually stated that ʔadzı̨̀ı̨ (lichen) is the most important food for ɂekwǫ̀. They also stated that ɂekwǫ̀ eat more varied vegetation on the tundra than in the boreal forest. They also emphasize the importance of kwetsì (rock tripe) as vegetation that fattens ɂekwǫ̀.

According to many biologists, dietary needs change throughout the migration cycle, depending on pregnancy or post-calving nutrition needs of the cows. During calving, Labrador tea and lichen are the primary vegetation.

Geist (1998:318) states that accessibility to vascular plants and lichen biomass affect caribou herd size. Tłı̨chǫ oral narratives discuss this as well as the time it takes for ʔadzı̨̀ı̨ (lichen) to re-grow.

Tłı̨chǫ elders discussed seasonal vegetation important to the ɂekwǫ̀ and the differences and similarities between the boreal forest and tundra. These food sources are also documented in the Dene Cultural Institute Traditional Ecological Knowledge report (1993) and in Thorpe (1999:11). It states there that cottongrass is the first food that calves eat after they tire of suckling and that caribou like mushrooms because they contain a lot of water.

Case et al. (1996:4-5) documented winter and summer food preferences. They found that in winter lichen species and green parts of sedge, horsetails, alder, birch, and willow are preferred. Lichens are the food of choice because they have high protein content and are easier to digest. In the spring on the calving grounds, winter lichens are replaced with fruticose lichens, willows, dwarf birch, green alder, and cottongrass. Preferred summer vegetation includes a variety of grasses, sedges, forbs, select new sprouts and buds, and flowers. In the late summer caribou eat willows, dwarf birch, and bearberry.

Although ɂekwǫ̀ are adaptable, adaptability has it limits and therefore ɂekwǫ̀ are susceptible to pollutants

Tłı̨chǫ elders have observed how adaptable ɂekwǫ̀ have been over a half century of ever increasing industrial development and infrastructure. When discussing their concerns, they often tell how caribou were once afraid of

planes and ran away. And now they often stand on runways and watch as planes land.

They also point out that in 1998 ʔekwǫ̀ moved south rather than southwest, and now they are traveling through the areas again. The elders are very concerned ʔekwǫ̀ will become more and more comfortable with mining sites and that they and their meat will become contaminated.

The caribou and reindeer's ability to adapt has been reported in other circumpolar regions. For example: Reimer et al. (2000) did work on the effects of high voltage transmission lines in Norway. They found that caribou avoid the transmission line areas during construction and that construction results in loss of habitat for caribou. And if transmission lines are not accompanied by roads, tourist tracks, and settlements, caribou eventually become accustomed to their presence. They did conclude that there is not enough data on the effects of the noise from the lines on caribou and that this needs to further study.

Elders have observed caribou for many years in most months of the year, including recent observations of caribou migration in relation to industrial development. They have witnessed some effects of mining development on caribou migration. They expressed concern over many things such as: dust affecting the vegetation the caribou eat, noises from mining activity deterring them from migrating through the area, the possibility that if they do migrate through they may be harmed by contaminants from tailings ponds. Elders are worried the caribou may become confused by a combination of any of these occurrences.

The elders' predictions have been noted by Wolfe et al. (2000). They studied the effects of roads and traffic on caribou and reindeer. They found that roads serve as barriers, cause deaths from collisions, and may increase vigilance behaviour, taking away from foraging. Caribou have also been deflected by pipeline beams. In some provinces they have continued their migration across constructed railways or roads. Aircraft also have some effect. Helicopters are known to cause a stronger response than small planes.

Caribou are not always affected, but often are. Calves are more sensitive. The response of the caribou is to run away, although cows do not abandon calves. Caribou have used gravel pads and shade provided by elevated production facilities, regardless of sex and age composition of group.

Tłı̨chǫ elders continually state that all human behaviour is related to caribou migration and movements. A study by Nellemann et al. (2000) researched the density of caribou in differing radii from the central point of a lodge located near a national park in Norway. They found that there were lower densities of caribou near the lodge. And they increased in number as the measurements moved away from the lodge. They also noted that lichen was overgrazed in the areas farther from the lodge where the caribou had moved to get food. The researchers stated that this could prove problematic in the long term as eventually the caribou would run out of food to support their numbers (Nelleman:12-14).

ʔekwǫ̀ will migrate to people with whom they have a respectful relationship

Maintaining a respectful relationship is the most important aspect relating to caribou migration and survival for most circumpolar indigenous people. The Dene Cultural Institute lists Sahtu Dene principles and specific rules regulating human behaviour towards nature (Johnson and Ruttan 1993:189-193). Most of these are similar to those listed above.

Like the Tłı̨chǫ and the Sahtu Dene, the Cree of Chisaslie know that caribou population fluctuates; that population declines are related to the ethical transgression of the people who use caribou and caribou dè. Two Cree elders explained how the caribou disappeared around the turn of the century due to over-slaughtering of caribou as a result of newly acquired repeating rifles. The caribou did not come back to the area until 1982. At that time hunters again did not respect the rules; they let wounded animals get away, they killed more than they could carry, they did not properly care for the meat, and did not dispose of the bones properly. Cree leaders worried that this signaled a lack of respect for the caribou and was a serious transgression of the traditional code where ritual respect ensures that animals will continue to make themselves available. (Berkes 1999:101-108*)*

Human behaviour is key to the success of ʔekwǫ̀

Tłı̨chǫ elders insist that ʔekwǫ̀ and ʔekwǫ̀ dè must be respected. Some may feel that the idea of respecting caribou may be outdated. But the Tłı̨chǫ elders know once the ʔekwǫ̀ and ʔekwǫ̀ dè are no longer respected, social and economic problems will follow.

The research was intended to document the elders' knowledge on caribou distribution and the state of their habitat. Based on the elders' wisdom and understanding of dè as including humans and caribou, we suggest that the most important changing factor in the caribou dè is human behaviour and human respect for the caribou.

Although it was only in Whatì that a caribou was hit, there are other ways that a caribou can be offended. Traditionally, a sign of disrespect was shooting the leaders because the leaders are vital to the wellbeing of the herd. The Dogrib Regional Elders' Committee is concerned for the herd. They wonder what will happen if the leaders become confused due to the smell of pollutants. They feel it will be as problematic as shooting the leader.

Tłı̨chǫ elders are concerned about the lack of knowledge that young Tłı̨chǫ have of caribou behaviour and habitat, and the lack of knowledge of those that oversee industrial development. They consider the pollutants that are falling on caribou habitat and the infrastructure to be signs that many individuals, of all cultural backgrounds, lack knowledge of how much territory caribou require to survive.

The elders' fear of the extent of the lack of respect through a lack of knowledge was confirmed when:

- Diavik's biologists did not know or observe the important water crossing associated with ʔek'adiì (Legat et al. 1995).
- BHP Diamonds Inc. built a road leading to the new BHP Misery Pit over another important caribou water crossing (Legat et al. 2000).

The human role is key to the success or failure of reindeer and caribou.

For example:

- In Norway hydroelectric projects have resulted in reduced grazing area for domestic reindeer, flooded grazing lands, and in some cases obstructed traditional movement routes of the reindeer (Reimers:75-82).
- Farnell (1999), Gunn (1996), Cameron et al. (1995), and Reinmer et al. (2000) conducted studies that looked at the effects of human activity, such as mine sites, power lines, and construction. They found a reduction of caribou populations and dynamics in relation to habitat loss.
- Klein (1999) summarized the impact of various developments in the circumpolar arctic on caribou and reindeer. In the Norilsk metallurgical complex in Siberia, pipelines deflected movement, stopped caribou in their movement, and caused them to overgraze lichens and other vegetation. Techniques were used to deflect them to new feeding grounds. Pollutants from the mine spread over a large distance and caused the widespread death of lichens or decrease in their growth rates, as well as many vascular plants. The area has reduced ability to support reindeer. No impact analysis was done and no mitigation features incorporated into building and design. Hence the serious later environmental problems. (Klein: 93-94)
- At Alaska's Red Dog mine a road was constructed to the mine. It transects the migration route of the Western Arctic Caribou Herd (WACH) during their twice-annual movement. A system has been developed where the mine reduces road traffic during the two migration periods, through a notification process. This reduces the impact of road traffic during migration. An EIA occurred before development and steps were taken to minimize impacts. Local people were highly involved in this whole process (Klein: 94-95).

Conclusion

The elders state that the most important factors that affect caribou distribution and migration are human activity and food availability. This is corroborated by many others (Klein 1999; Cronin 1998; Wolfe 1997; Cameron 1995; Reimers unknown).

Documenting these changes, as observed by Tłı̨chǫ hunters and elders, contributes to a base of knowledge that can serve as baseline data for future assessment and monitoring. This is especially pertinent given that Tłı̨chǫ knowledge covers a long period of time. Scientific studies often correspond to the elders' observations. But they have existed for only a short period of time and are sometimes unreliable due to gaps in information or for other reasons.

The elders are concerned about the speed and amount of change that continues to occur in the Tłı̨chǫ traditional territory, as a result of industrial development. Elders want to continue to document their knowledge of the past; they want to use harvesters to monitor the land through cumulative effects assessment and other means as a way to mitigate harmful effects. Mining development in recent years places an imperative on documenting Tłı̨chǫ knowledge of the effects of industrial development on the habitat and the caribou that migrate throughout it.

The Tłı̨chǫ Treaty 11 Council is concerned that unless Tłı̨chǫ traditional knowledge of the caribou within their habitat is recognized and used, the caribou will be harmed by existing and potential new industrial development.

Recommendations

Based on the information in this report, we make the following recommendations. The overall purpose is to know and understand caribou and their relation to human activity, and to manage that activity, to properly respect and protect caribou and their habitat.

- Continue to collect baseline data on habitat within which the caribou travel in the boreal forest and the tundra.
- Protect known ʔekwǫ̀ water crossings from highway development.
- Continue to document all caribou water crossings.
- Establish baseline data for woodland caribou.
- Continue to collect Tłı̨chǫ harvesting data, on the state of the caribou taken AND the state of the habitat on which it depends.

- Protect caribou habitat.
- Develop strict guidelines to limit pollution
- Put up fences around all tailings ponds to protect caribou from using the tailings rather than ʔelà (mud) to coat themselves.
- Document additional Tłı̨chǫ knowledge on the use of stars to understand migration.
- Document additional Tłı̨chǫ knowledge to further understand the adaptability of ʔekwǫ̀ and associated problems.
- Manage/put out wildfires in the boreal forest so they do not seriously deplete caribou winter forage. Fires also destroy harvesters' trap lines.

Georgina Chocolate at Chacmool Conference, University of Calgary, 1999 (Photo courtesy of Madelaine Chocolate)

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www.rangifer.net

- Located at Dartmouth College, USA and contains information on the human role in reindeer/caribou systems.

www.polarnet.ca.tuktu

- For the Tuktu and Nogak Project in the Bathurst Inlet area of the Kitikmeot region, Nunavut.

www.reindeer.salrm.alaska.edu

- Location of the University of Alaska Reindeer Research Program.

www.deer.rr.ualberta.ca/caribou/newsletter.htm

- Boreal Caribou Research Program, based out of the University of Alberta, studies woodland caribou in northern Alberta.

www.rangifer.no/eng/aboutrangifer.html

- Home page of the Nordic Council for Reindeer Research. It lists publications available and links to other reindeer/caribou sites.

Appendix I Maps: Caribou Distribution Based on Harvesting Patterns in Winter and Spring 1925 to 1998

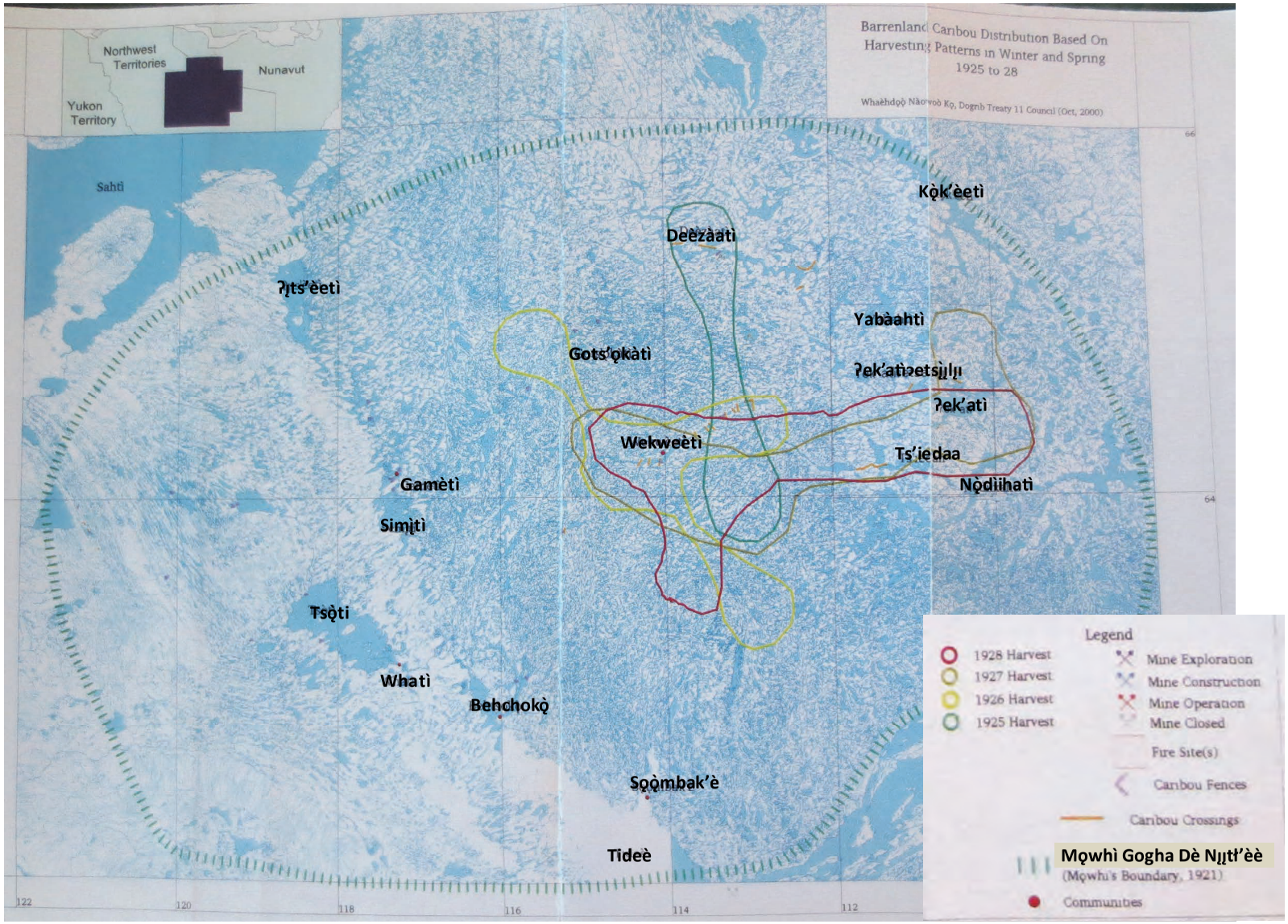
This appendix has 12 maps that show place names and other data for barrenland caribou distribution based on harvesting patterns in winter and spring for the following years:

- 1925 to 1928
- 1929 to 1934
- 1935 to 1940
- 1941 to 1946
- 1947 to 1952
- 1953 to 1958
- 1959 to 1964
- 1965 to 1971
- 1972 to 1977
- 1978 to 1985
- 1986 to 1991
- 1992 to 1998

The maps in this report are produced from photographs of the maps in the original report, with updated spelling for Tłı̨chǫ place names. Some of the data is difficult to see because of this.

The other data includes the following items:

- Locations for mining exploration, construction, operation, and closure.
- Caribou fences and crossing.
- Four Tłı̨chǫ communities and Sǫ̀ǫ̀mbak'è (Yellowknife).
- The boundary for Mǫwhì Gogha Dè Nı̨ıtł'èè.
- Fire sites.


Barrenland Caribou Distribution Based On Harvesting Patterns in Winter and Spring 1925 to 28
Whaèhdǫǫ̀ Nàowoò Kǫ, Dogrib Treaty 11 Council (Oct, 2000)
Northwest Territories
Nunavut
Yukon Territory
Sahtì
Kǫ̀k'èetì
Deèzàatì
ʔɻtsʼèetì
Yabàahtì
Gotsʼǫkàtì
ʔekʼatìɔetsɻ̨lɻ
ʔekʼatì
Wekweètì
Tsʼiedaa
Nǫ̀dìihatì
Gamètì
Simɻ̀tì
Tsǫ̀tì
Whatì
Behchokǫ̀
Sǫǫ̀mbakʼè
Tideè
Legend
1928 Harvest
1927 Harvest
1926 Harvest
1925 Harvest
Mine Exploration
Mine Construction
Mine Operation
Mine Closed
Fire Site(s)
Caribou Fences
Caribou Crossings
Mǫwhì Gogha Dè Nɻ̨tłʼèè
(Mǫwhì's Boundary, 1921)
Communities
122
120
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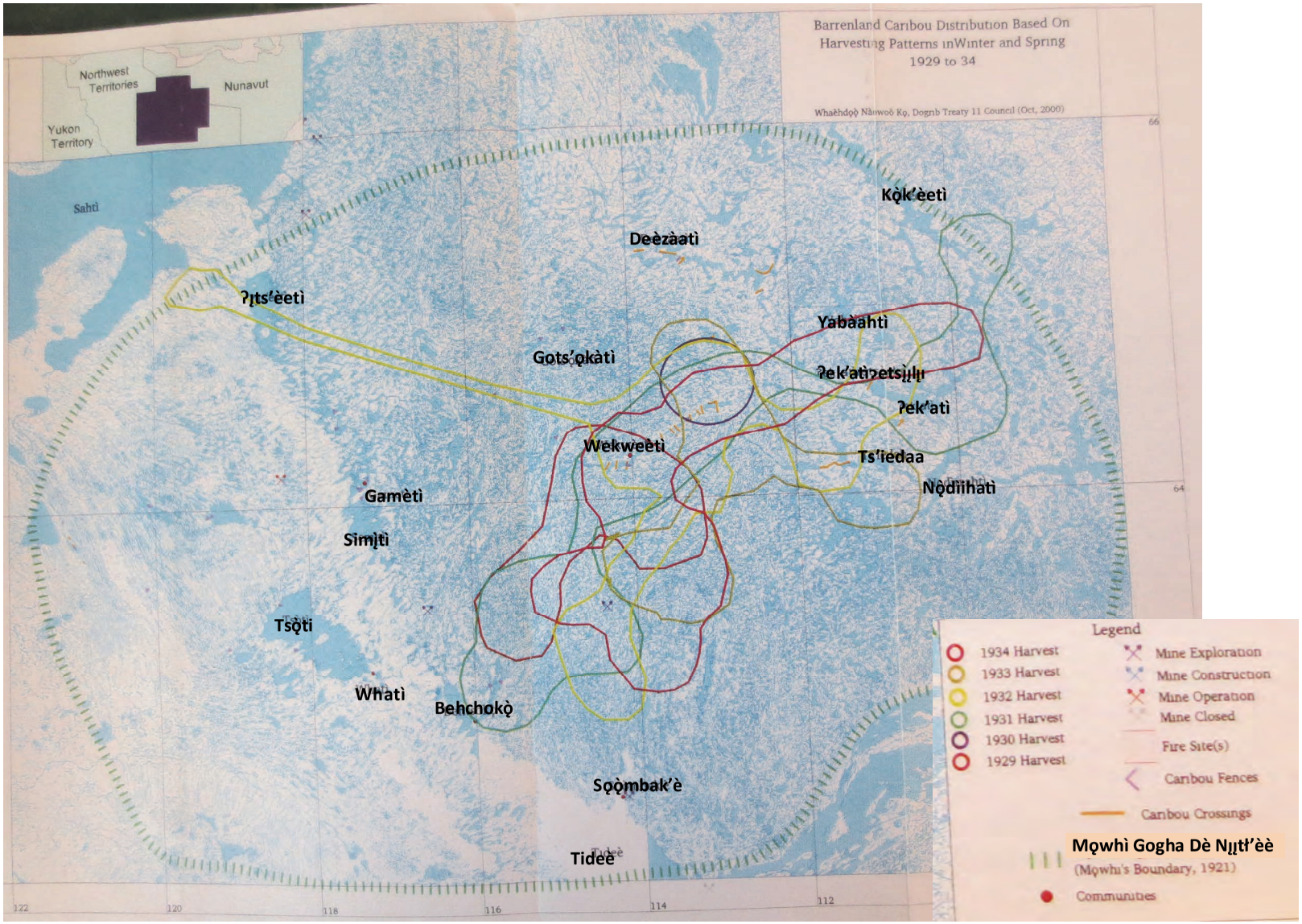
116
114
112
66
64


Barrenland Caribou Distribution Based On Harvesting Patterns in Winter and Spring 1929 to 34
Whaèhdǫǫ̀ Nàowoò Kǫ, Dogrib Treaty 11 Council (Oct, 2000)
Northwest Territories
Nunavut
Yukon Territory
Sahtì
Kǫ̀k'èetì
Deèzàatì
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Yabàahtì
Gots'ǫkàtì
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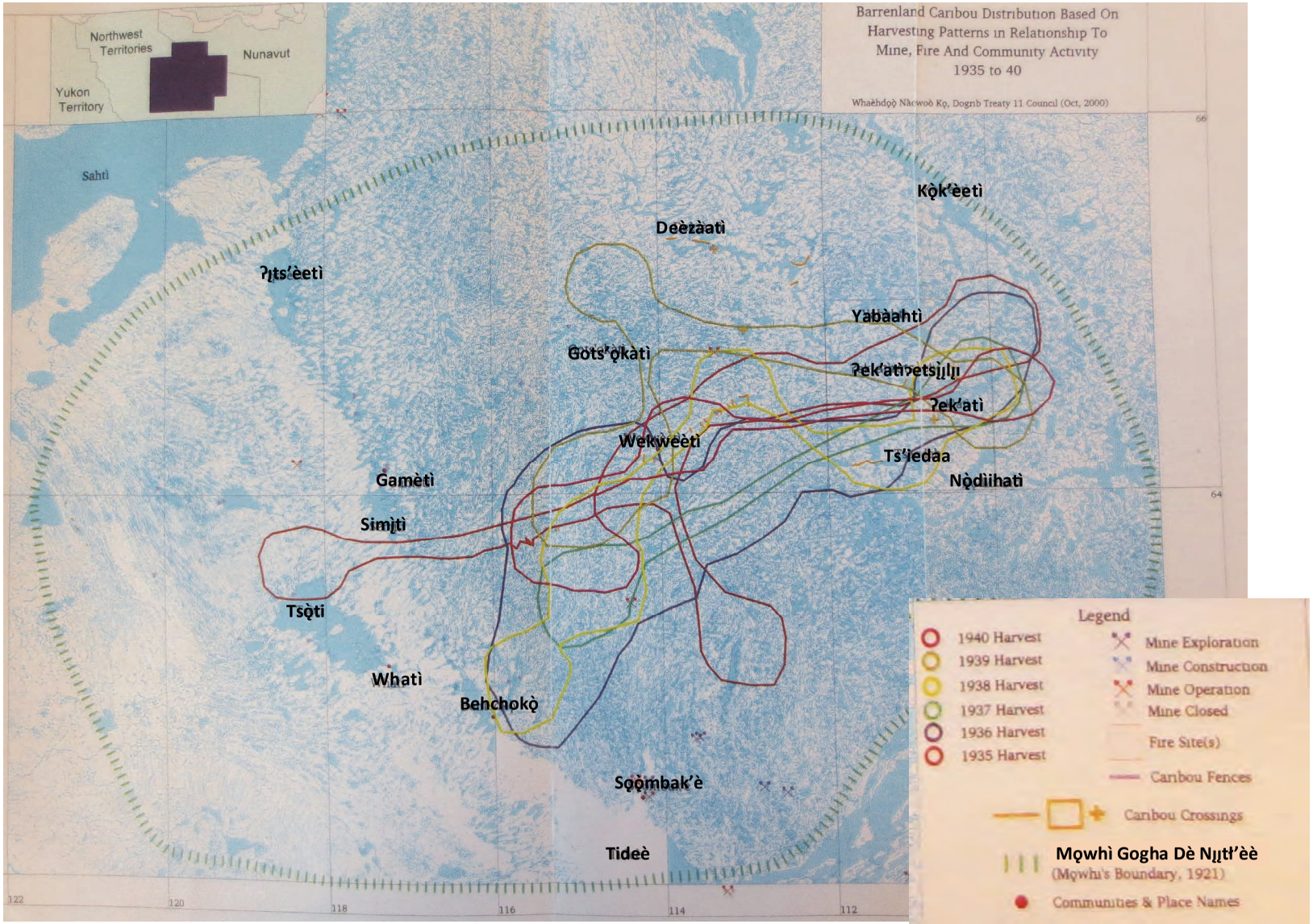
Wekweètì
Ts'iedaa
Nǫdìihatì
Gamètì
Sìmı̨tì
Tsǫ̀tì
Whatì
Behchokǫ̀
Sǫǫ̀mbak'è
Tideè
Legend
1934 Harvest
1933 Harvest
1932 Harvest
1931 Harvest
1930 Harvest
1929 Harvest
Mine Exploration
Mine Construction
Mine Operation
Mine Closed
Fire Site(s)
Caribou Fences
Caribou Crossings
Mǫwhì Gogha Dè Nı̨tł'èè
(Mǫwhì's Boundary, 1921)
Communities


Barrenland Caribou Distribution Based On
Harvesting Patterns in Relationship To
Mine, Fire And Community Activity
1935 to 40
Whaèhdǫǫ̀ Nàowoò Kǫ, Dogrib Treaty 11 Council (Oct, 2000)
Northwest Territories
Nunavut
Yukon Territory
Sahtì
Kǫ̀kʼèetì
Deèzàatì
ʔɹtsʼèetì
Yabàahtì
Gotsʼǫ̀kàtì
ʔekʼatìɔetsɹ̨ɹ̨ɹ
ʔekʼatì
Wekwèètì
Tsʼìedaa
Nǫ̀dìihatì
Gamètì
Simɹ̨tì
Tsǫ̀tì
Whatì
Behchokǫ̀
Sǫǫ̀mbakʼè
Tideè
Legend
1940 Harvest
1939 Harvest
1938 Harvest
1937 Harvest
1936 Harvest
1935 Harvest
Mine Exploration
Mine Construction
Mine Operation
Mine Closed
Fire Site(s)
Caribou Fences
Caribou Crossings
Mǫwhì Gogha Dè Nɹ̨tłʼèè
(Mǫwhì's Boundary, 1921)
Communities & Place Names
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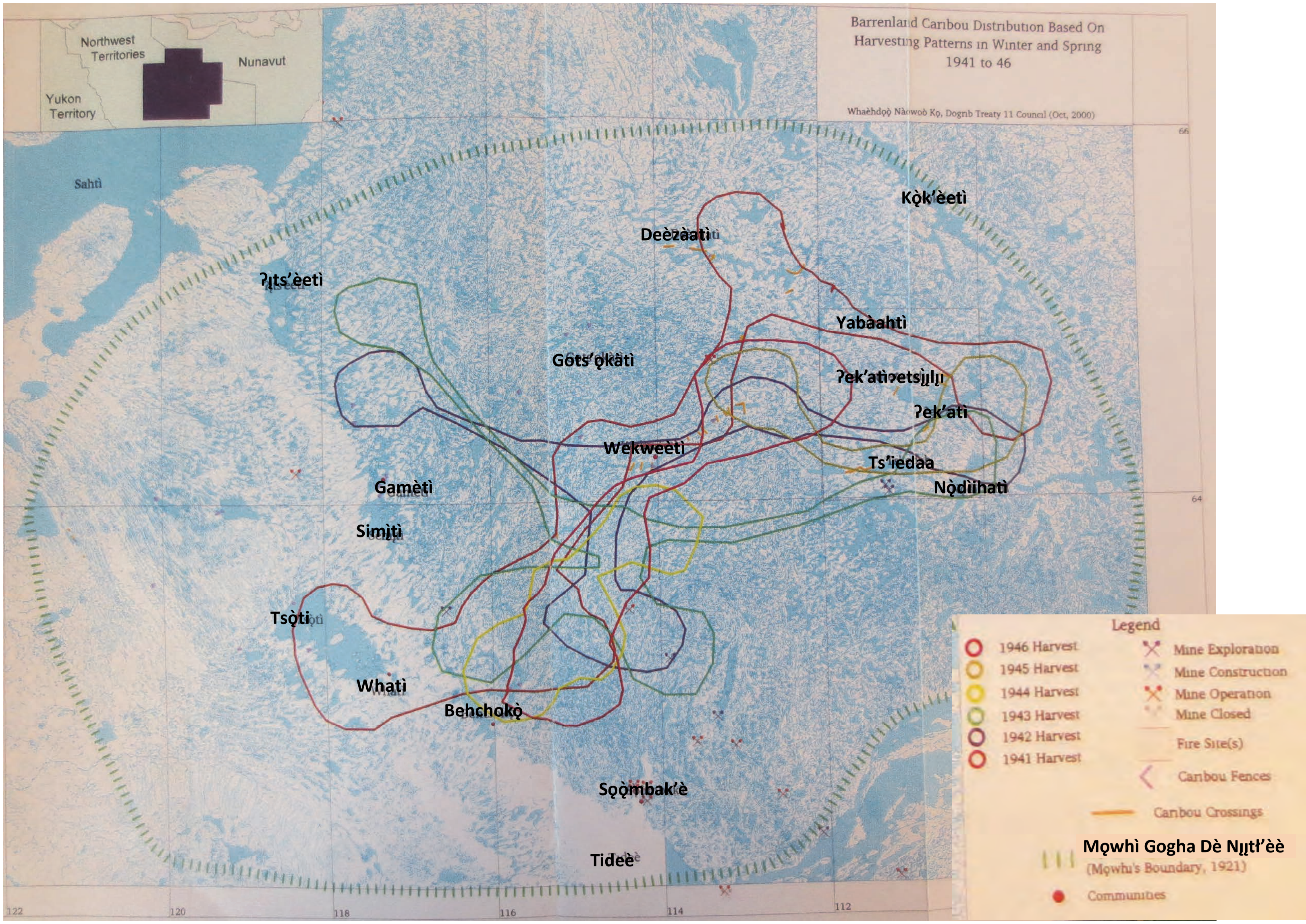
112


Barrenland Caribou Distribution Based On Harvesting Patterns in Winter and Spring 1941 to 46
Whaèhdǫǫ̀ Nàowoò Kǫ, Dogrib Treaty 11 Council (Oct, 2000)
Northwest Territories
Nunavut
Yukon Territory
Sahtì
Kǫ̀k'èetì
Deèzàatì
ʔı̨ts'èetì
Yabàahtì
Gots'ǫkàtì
ʔek'atıɂetsı̨ı̨lı̨
ʔek'atì
Wekweètì
Ts'iedaa
Nǫ̀dìihatì
Gamètì
Simìtì
Tsǫ̀tì
Whatì
Behchokǫ̀
Sǫǫ̀mbak'è
Tideè
Legend
1946 Harvest
1945 Harvest
1944 Harvest
1943 Harvest
1942 Harvest
1941 Harvest
Mine Exploration
Mine Construction
Mine Operation
Mine Closed
Fire Site(s)
Caribou Fences
Caribou Crossings
Mǫwhì Gogha Dè Nı̨ı̨tł'èè
(Mǫwhì's Boundary, 1921)
Communities
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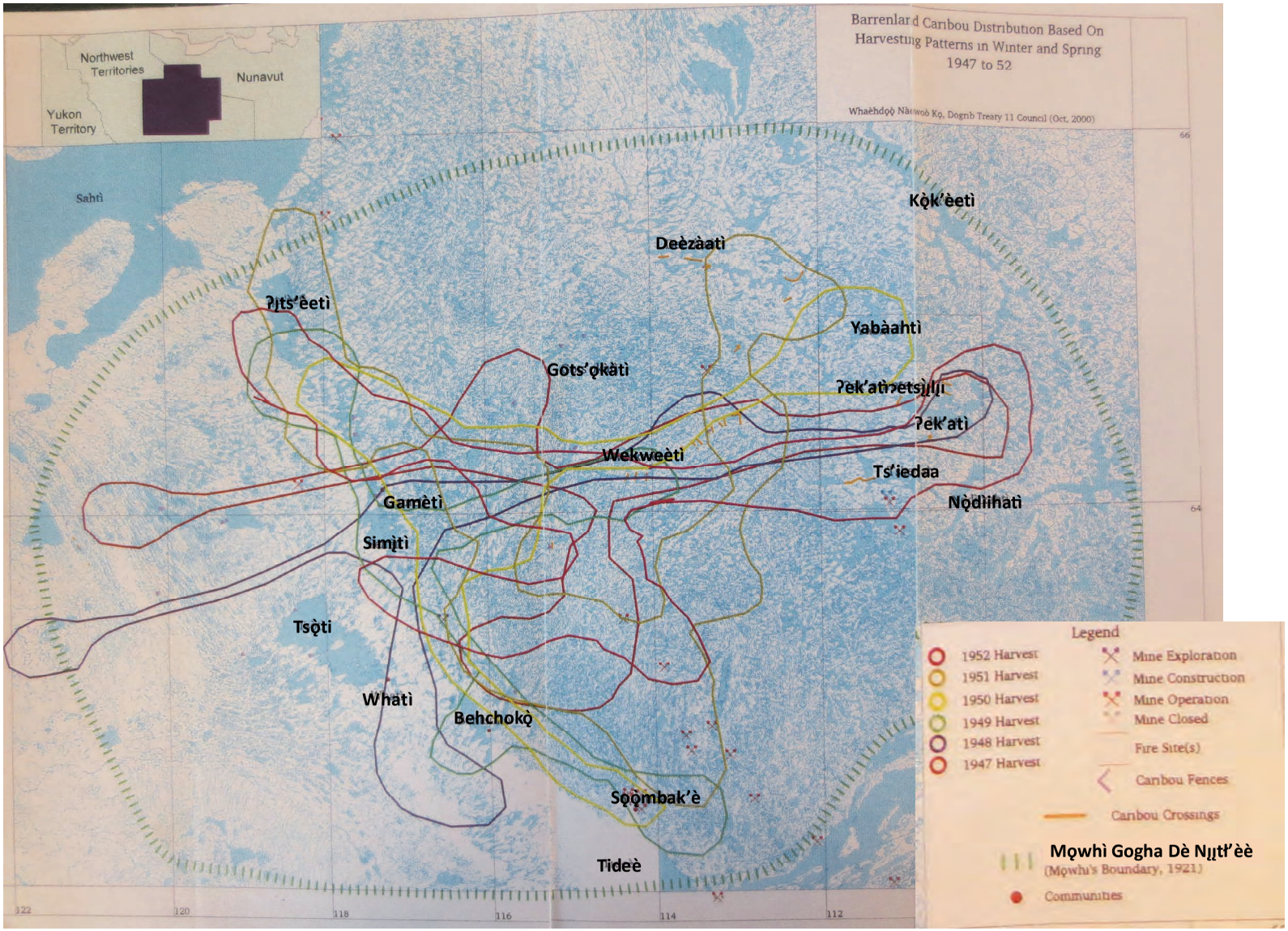
118
116
114
112
66
64


Barrenland Caribou Distribution Based On Harvesting Patterns in Winter and Spring 1947 to 52
Whaèhdǫǫ̀ Nàowoò Kǫ, Dogrib Treaty 11 Council (Oct, 2000)
Northwest Territories
Nunavut
Yukon Territory
Sahtì
Kǫ̀k'èetì
Deèzàatì
ʔɹtsʼèetì
Yabàahtì
Gotsʼǫkàtì
ʔekʼatìɔetsɹ̀ɹɹì
ʔekʼatì
Wekweètì
Tsʼiedaa
Gamètì
Nǫ̀dlìhatì
Simɹ̀tì
Tsǫ̀tì
Whatì
Behchokǫ̀
Sǫǫ̀mbakʼè
Tideè
Legend
1952 Harvest
1951 Harvest
1950 Harvest
1949 Harvest
1948 Harvest
1947 Harvest
Mine Exploration
Mine Construction
Mine Operation
Mine Closed
Fire Site(s)
Caribou Fences
Caribou Crossings
Mǫwhì Gogha Dè Nɹɹtłʼèè
(Mǫwhì's Boundary, 1921)
Communities
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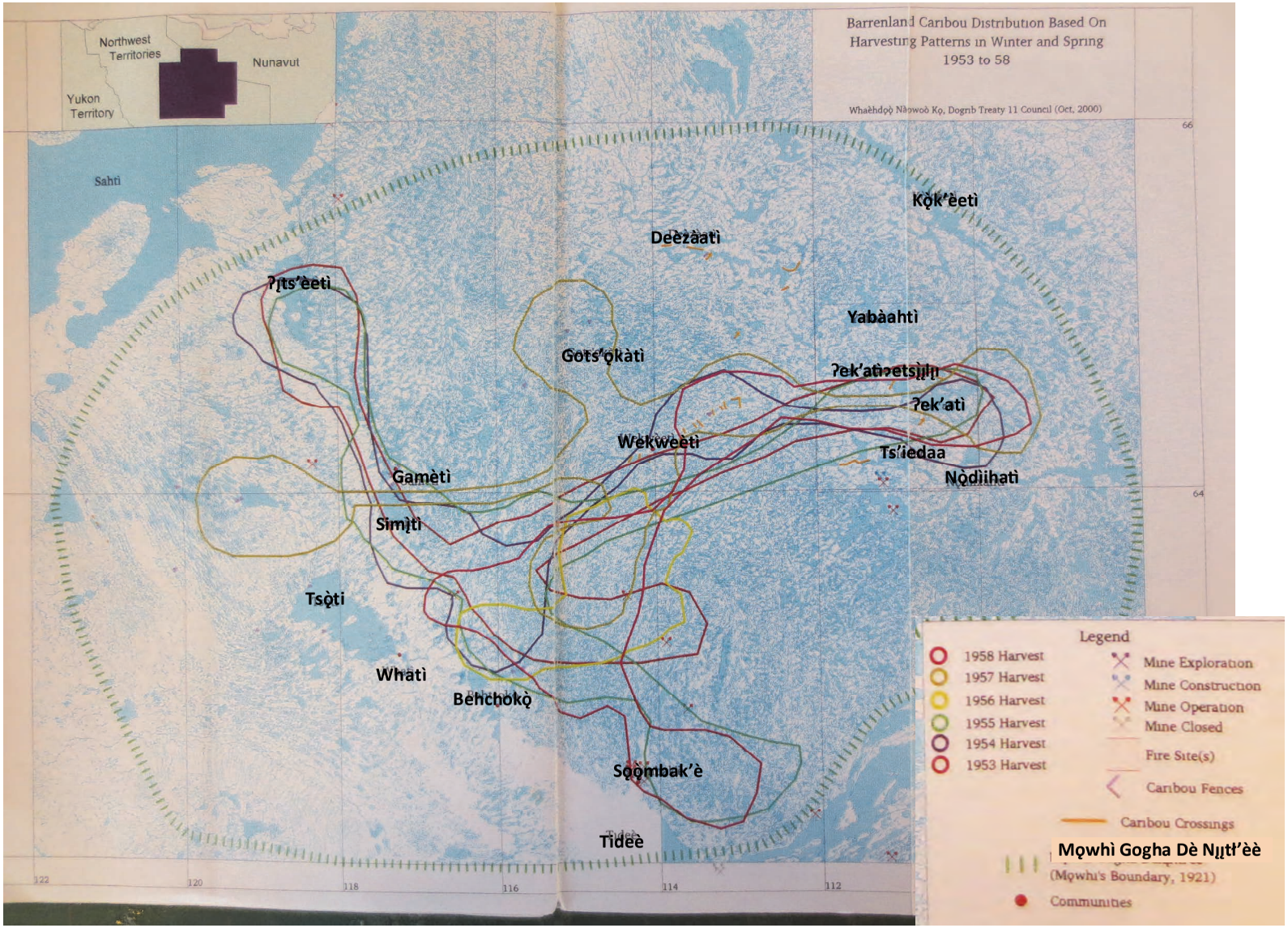
112
66
64


Barrenland Caribou Distribution Based On
Harvesting Patterns in Winter and Spring
1953 to 58
Whaèhdǫǫ̀ Nàowoò Kǫ, Dogrib Treaty 11 Council (Oct, 2000)
Northwest Territories
Nunavut
Yukon Territory
Sahtì
Kǫ̀k'èetì
Deèzàatì
?ɻts'èetì
Yabàahtì
Gots'ǫkàtì
?ek'atı̀?etsɻɻɻ
?ek'atì
Wekweètì
Ts'ìedaa
Nǫ̀dìihatì
Gamètì
Simɻ̀tì
Tsǫ̀tì
Whatì
Behchokǫ̀
Sǫǫmbak'è
Tìdeè
Legend
1958 Harvest
1957 Harvest
1956 Harvest
1955 Harvest
1954 Harvest
1953 Harvest
Mine Exploration
Mine Construction
Mine Operation
Mine Closed
Fire Site(s)
Caribou Fences
Caribou Crossings
Mǫwhì Gogha Dè Nɻɻtł'èè
(Mǫwhì's Boundary, 1921)
Communities
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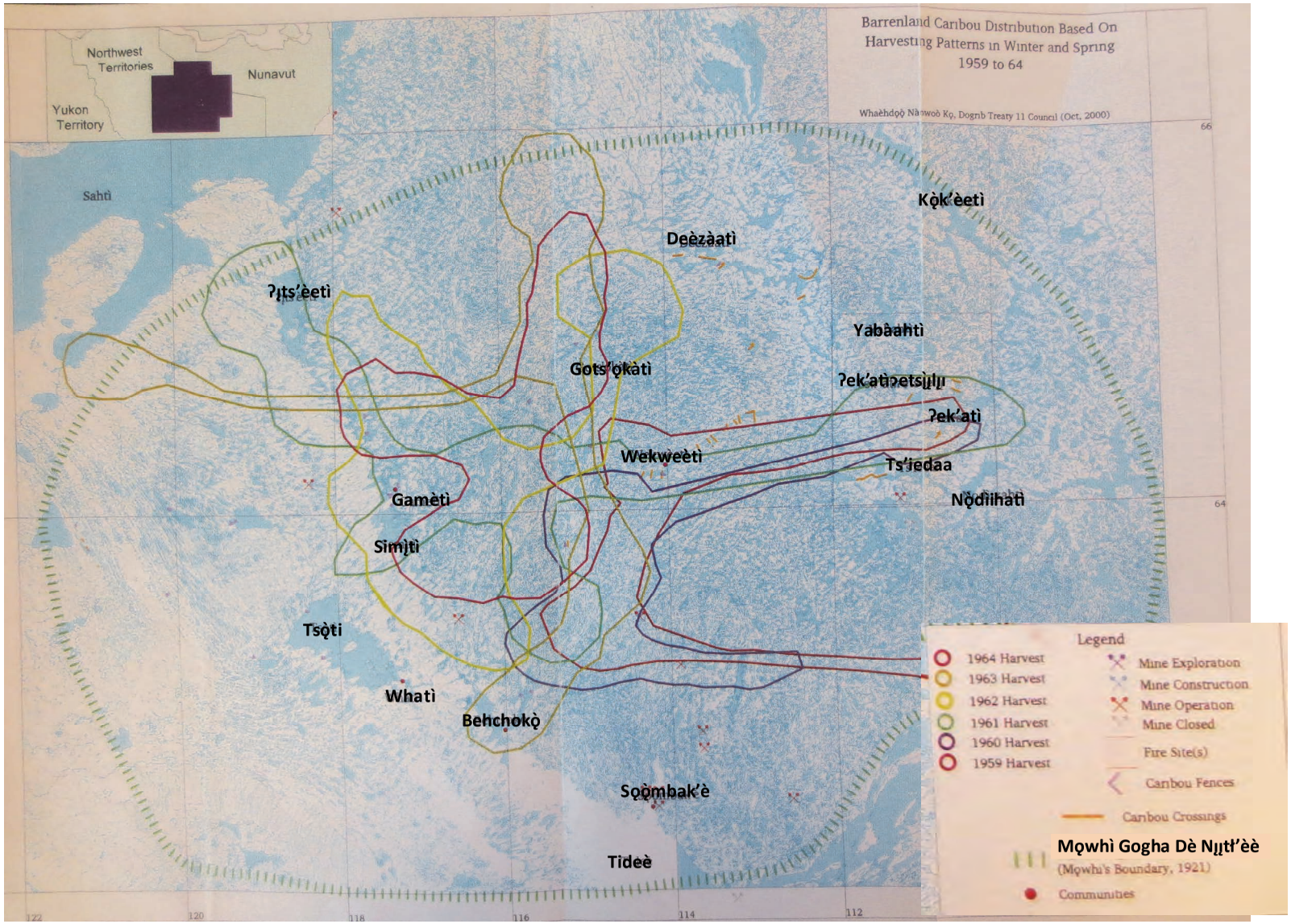
Barrenland Caribou Distribution Based On Harvesting Patterns in Winter and Spring 1959 to 64
Whaèhdǫǫ Nàwoò Kǫ, Dogrib Treaty 11 Council (Oct, 2000)
Northwest Territories
Nunavut
Yukon Territory
Sahtì
Kǫǩ'èetì
Deèzàatì
ʔɻts'èetì
Yabàahtì
Gots'ǫkàtì
ʔek'atìɔetsɻɻɻ
ʔek'atì
Wekweètì
Ts'ìedaa
Nǫdìhatì
Gamètì
Simɻtì
Tsǫ̀tì
Whatì
Behchokǫ̀
Soǫ̀mbak'è
Tideè
Legend
1964 Harvest
1963 Harvest
1962 Harvest
1961 Harvest
1960 Harvest
1959 Harvest
Mine Exploration
Mine Construction
Mine Operation
Mine Closed
Fire Site(s)
Caribou Fences
Caribou Crossings
Mǫwhì Gogha Dè Nɻtł'èè
(Mǫwhì's Boundary, 1921)
Communities
66
64
122
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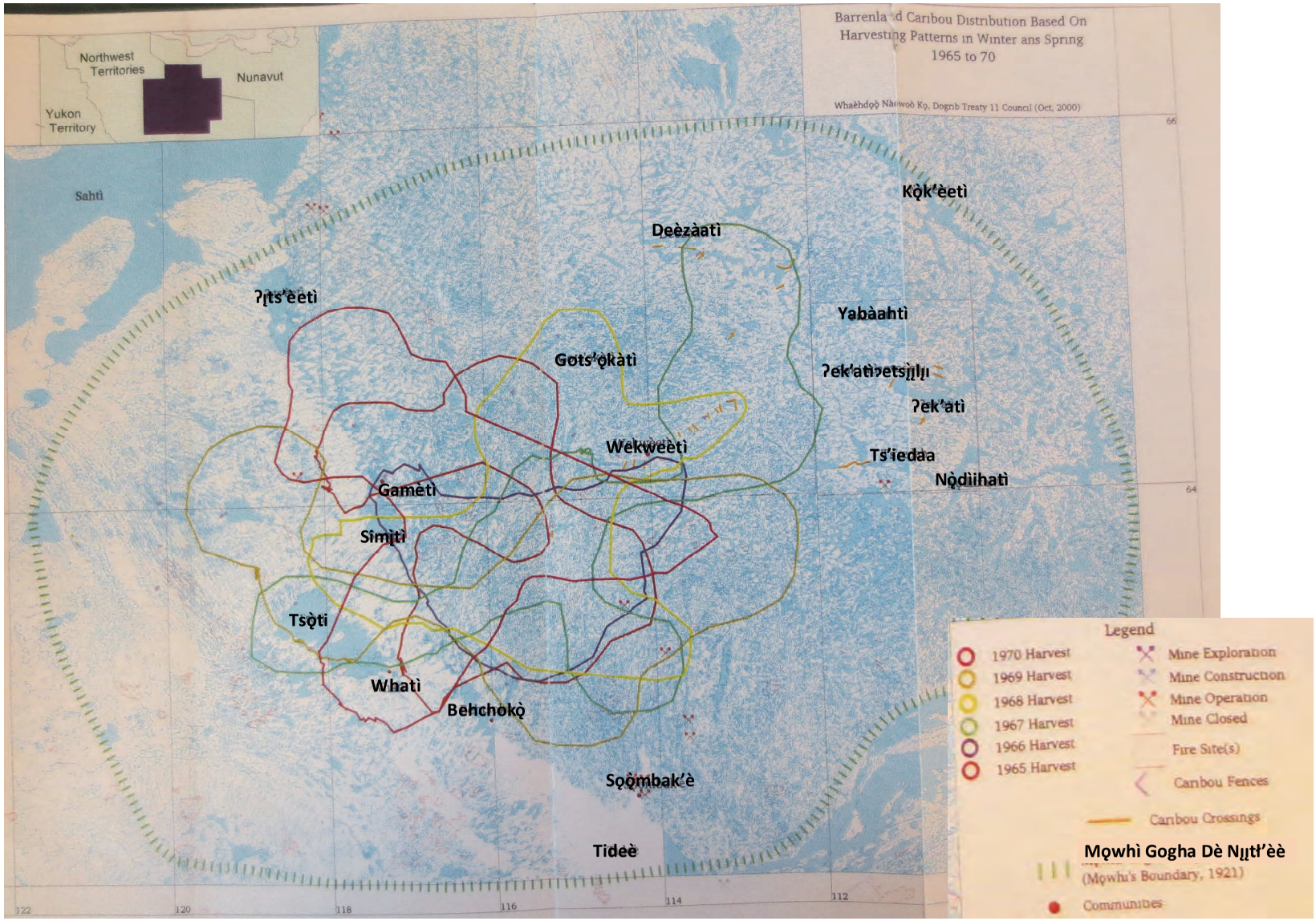
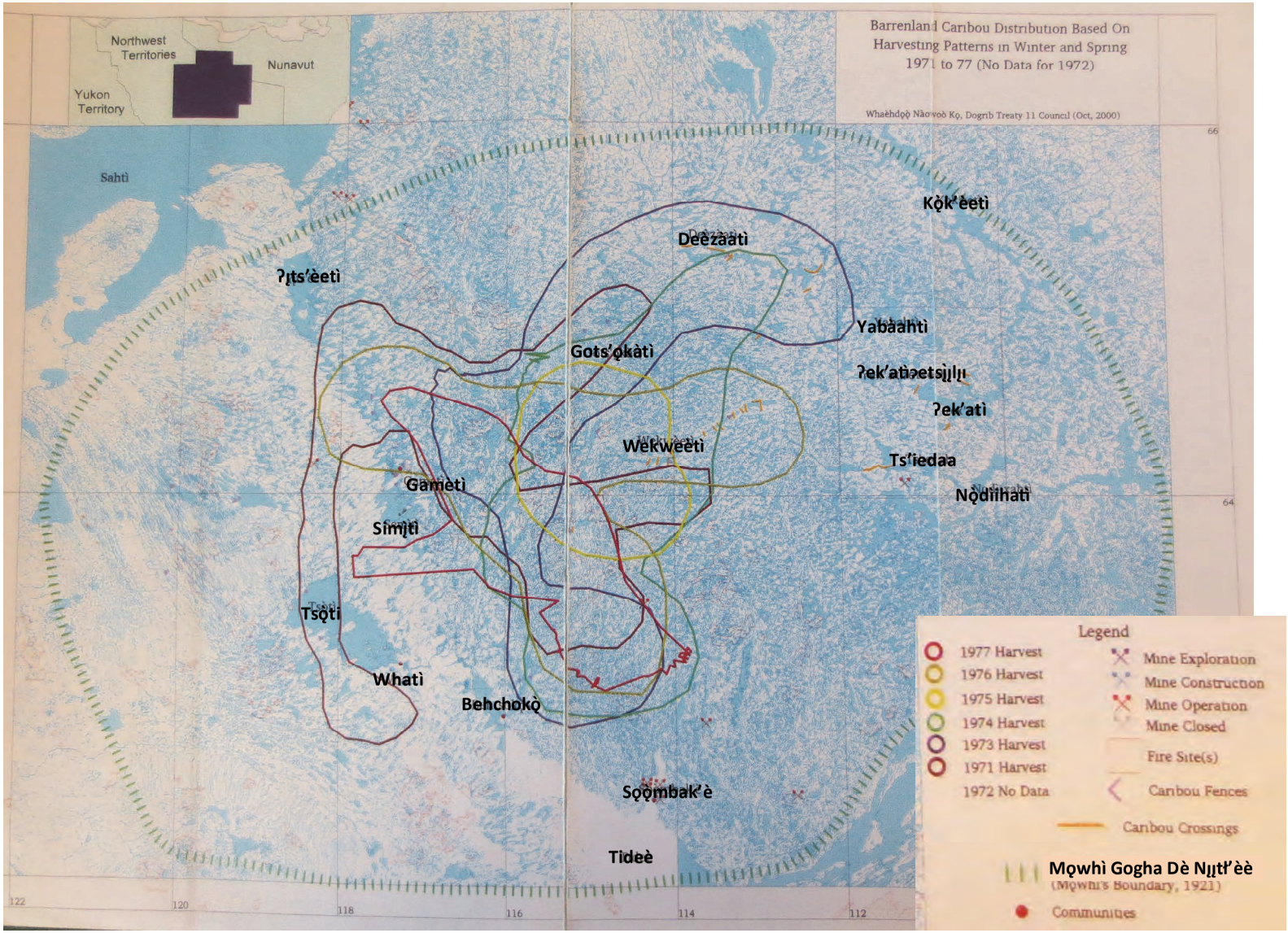
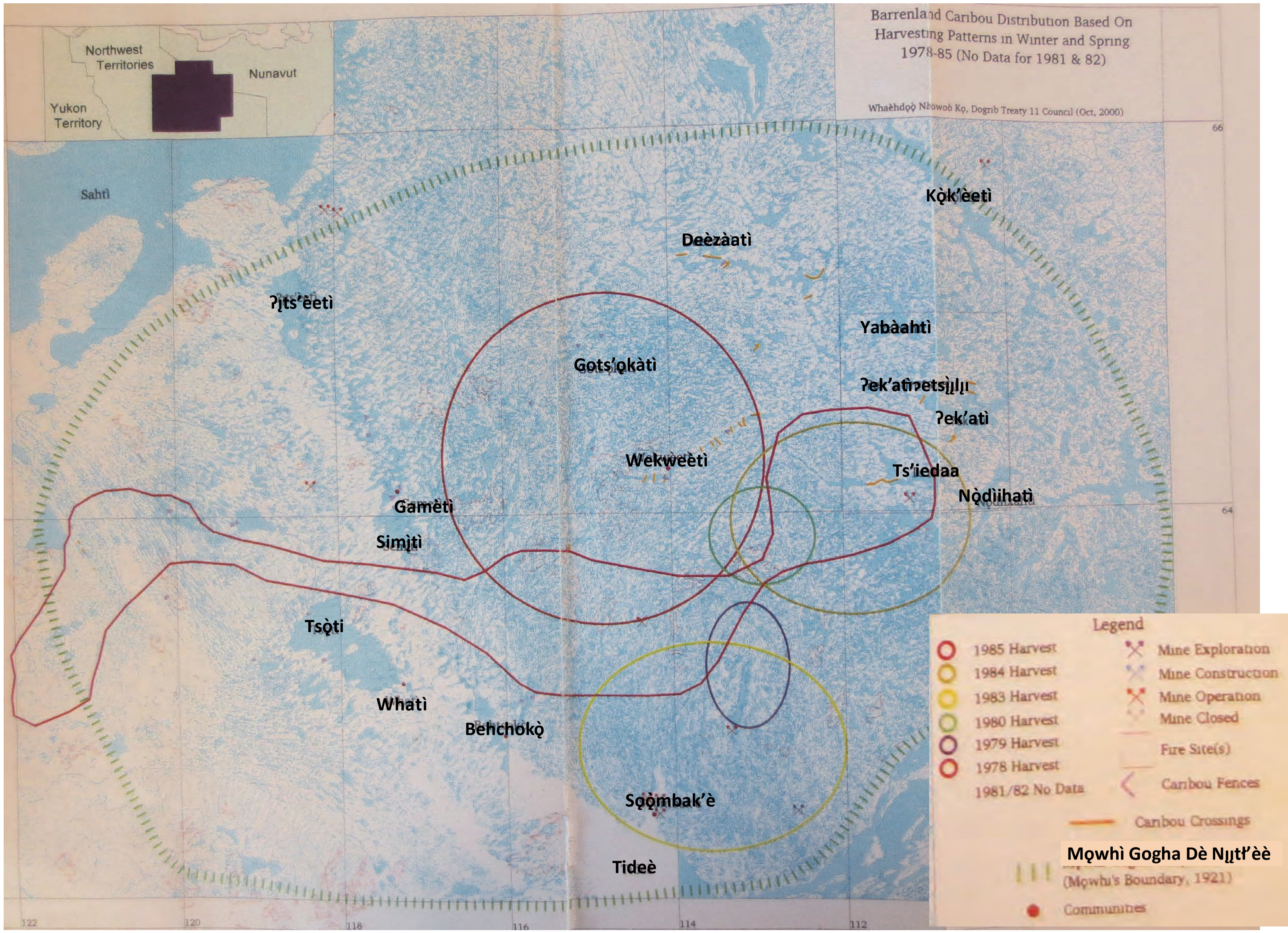
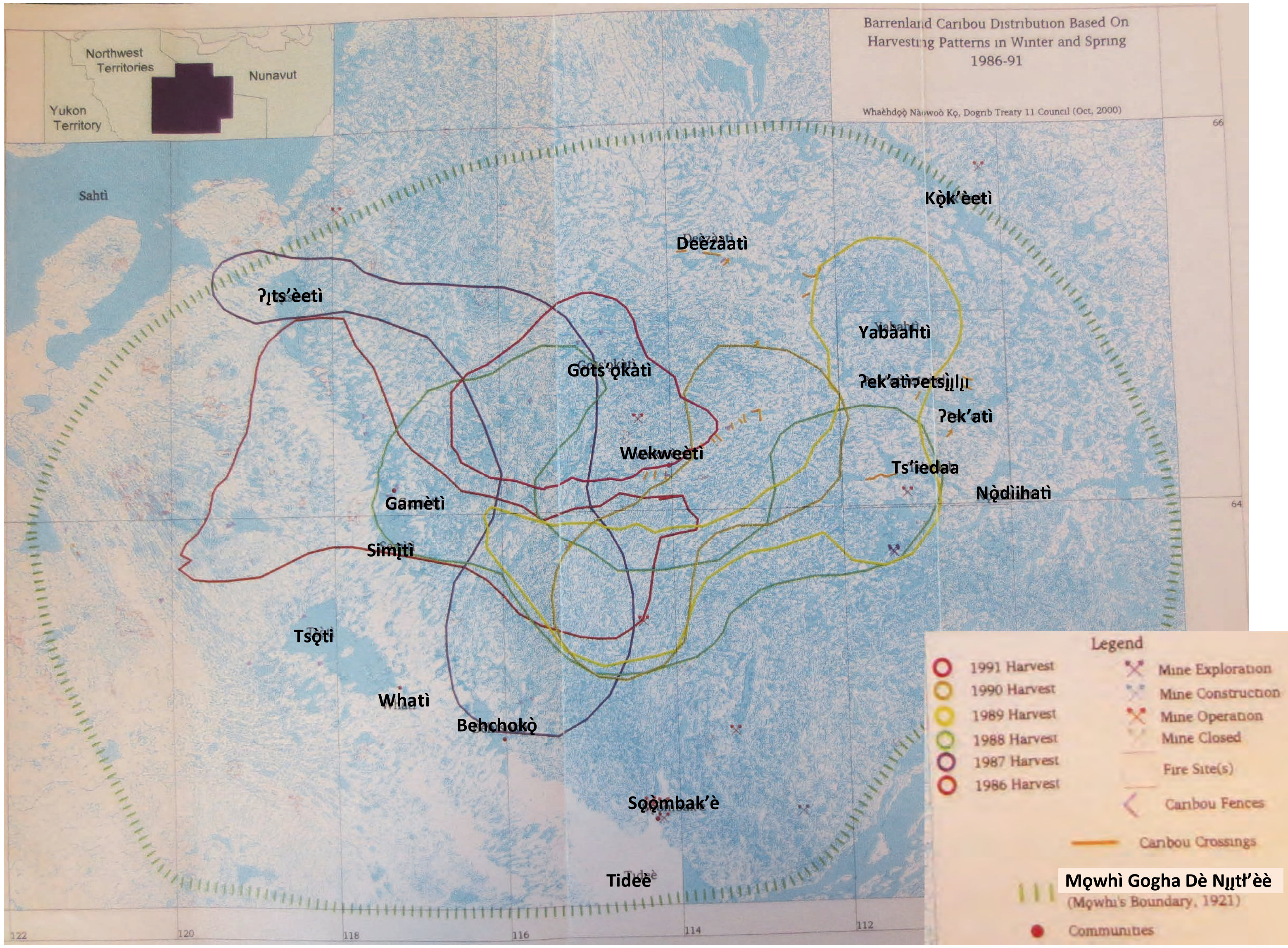
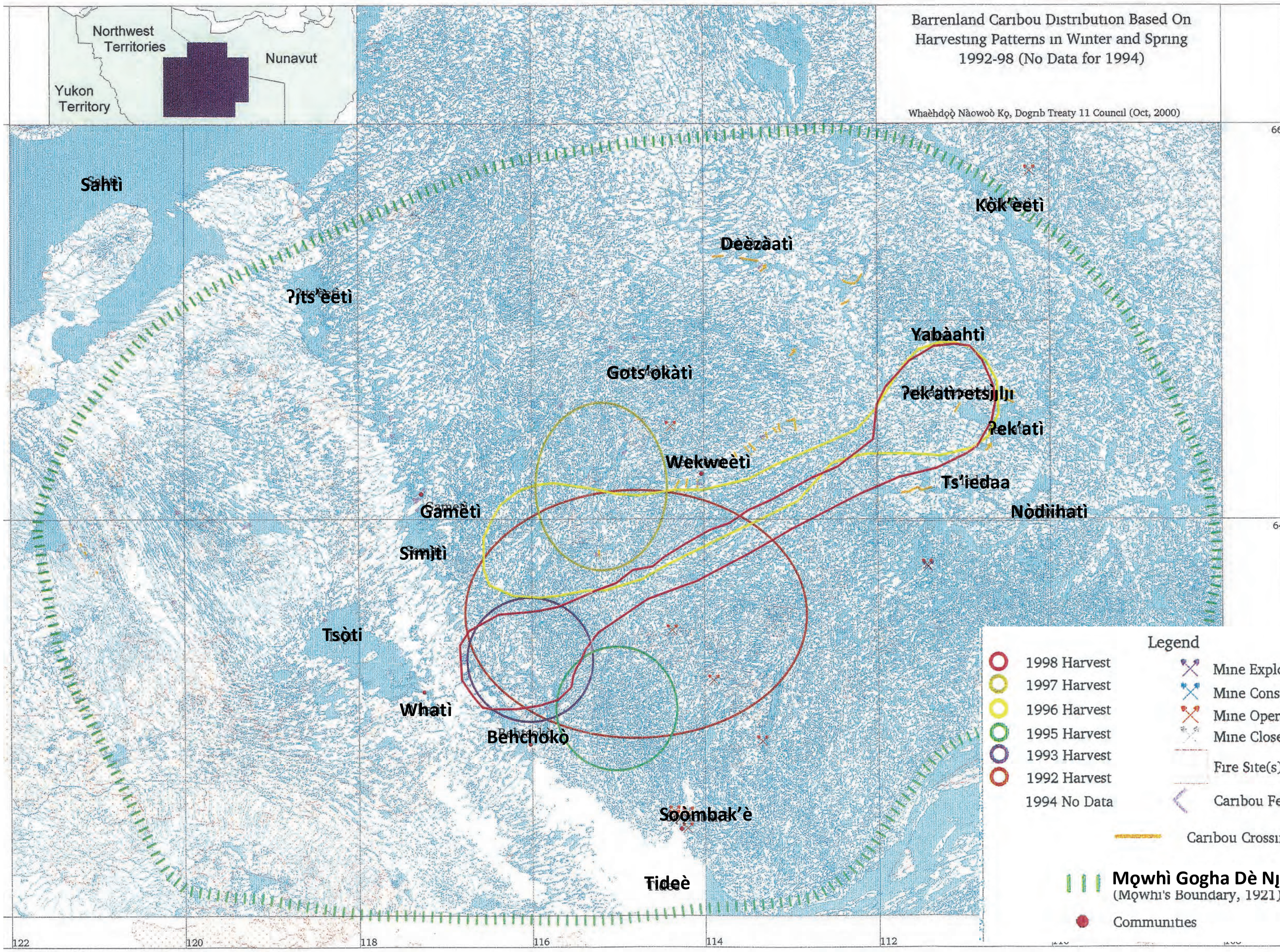
114
112


Barrenland Caribou Distribution Based On Harvesting Patterns in Winter ans Spring 1965 to 70
Whaèhdǫǫ Nàowoò Kǫ. Dogrib Treaty 11 Council (Oct, 2000)
Northwest Territories
Nunavut
Yukon Territory
Sahtì
Kǫ̀k'èetì
Deèzàatì
?ı̨ts'èetì
Yabàahtì
Gots'ǫ̀kàtì
?ek'atı̀?etsı̨ı̨lı̨
?ek'atì
Wekweètì
Ts'ıedaa
Nǫ̀dıihatì
Gamètì
Simìtì
Tsǫ̀tì
Whatì
Behchokǫ̀
Sǫǫ̀mbak'è
Tideè
Legend
1970 Harvest
1969 Harvest
1968 Harvest
1967 Harvest
1966 Harvest
1965 Harvest
Mine Exploration
Mine Construction
Mine Operation
Mine Closed
Fire Site(s)
Caribou Fences
Caribou Crossings
Mǫwhì Gogha Dè Nı̨ı̨tl'èè
(Mǫwhì's Boundary, 1921)
Communities


Barrenland Caribou Distribution Based On
Harvesting Patterns in Winter and Spring
1971 to 77 (No Data for 1972)
Whaèhdǫǫ Nàowoò Kǫ, Dogrib Treaty 11 Council (Oct, 2000)
Northwest Territories
Nunavut
Yukon Territory
Sahtì
Kǫ̀k'èetì
Deèzaatì
ʔɹɬs'èetì
Yabaahtì
Gots'ǫkàtì
ʔek'atìɔetsɻɻlɹ
ʔek'atì
Wekweètì
Ts'iedaa
Nǫdiihatì
Gametì
Simɻtì
Tsǫ̀tì
Whatì
Behchokǫ̀
Sǫǫmbak'è
Tideè
Legend
1977 Harvest
1976 Harvest
1975 Harvest
1974 Harvest
1973 Harvest
1971 Harvest
1972 No Data
Mine Exploration
Mine Construction
Mine Operation
Mine Closed
Fire Site(s)
Caribou Fences
Caribou Crossings
Mǫwhì Gogha Dè Nɻɻtl'èè
(Mǫwhì's Boundary, 1921)
Communities


Barrenland Caribou Distribution Based On Harvesting Patterns in Winter and Spring 1978-85 (No Data for 1981 & 82)
Whaèhdǫǫ Nàowoò Kǫ, Dogrib Treaty 11 Council (Oct, 2000)
Northwest Territories
Nunavut
Yukon Territory
Sahtì
Kǫ̀k'èetì
Deèzàatì
ʔįts'èetì
Yabàahtì
Gots'ǫkàtì
ʔek'atìıtsįįlįı
ʔek'atì
Wekweètì
Ts'iedaa
Nǫ̀dìihatì
Gamètì
Simįtì
Tsǫ̀tì
Whatì
Behchokǫ̀
Sǫǫ̀mbak'è
Tideè
Legend
1985 Harvest
1984 Harvest
1983 Harvest
1980 Harvest
1979 Harvest
1978 Harvest
1981/82 No Data
Mine Exploration
Mine Construction
Mine Operation
Mine Closed
Fire Site(s)
Caribou Fences
Caribou Crossings
Mǫwhì Gogha Dè Nįįtł'èè
(Mǫwhì's Boundary, 1921)
Communities


Barrenland Caribou Distribution Based On Harvesting Patterns in Winter and Spring
1986-91
Whaèhdǫǫ Nàowoò Kǫ, Dogrib Treaty 11 Council (Oct. 2000)
Northwest Territories
Nunavut
Yukon Territory
Sahtì
Kǫ̀k'èetì
Deezàatì
ʔįts'èetì
Yabàahtì
Gots'ǫ̀katì
ʔek'atìʔetsįįlįı
ʔek'atì
Wekweètì
Ts'ieda̜a
Nǫ̀dìihatì
Gamètì
Simįtì
Tsǫ̀tì
Whatì
Behchokǫ̀
Sǫǫ̀mbak'è
Tideè
Legend
1991 Harvest
1990 Harvest
1989 Harvest
1988 Harvest
1987 Harvest
1986 Harvest
Mine Exploration
Mine Construction
Mine Operation
Mine Closed
Fire Site(s)
Caribou Fences
Caribou Crossings
Mǫwhì Gogha Dè Nįįtł'èè
(Mǫwhì's Boundary, 1921)
Communities
122
120
118
116
114
112
66
64

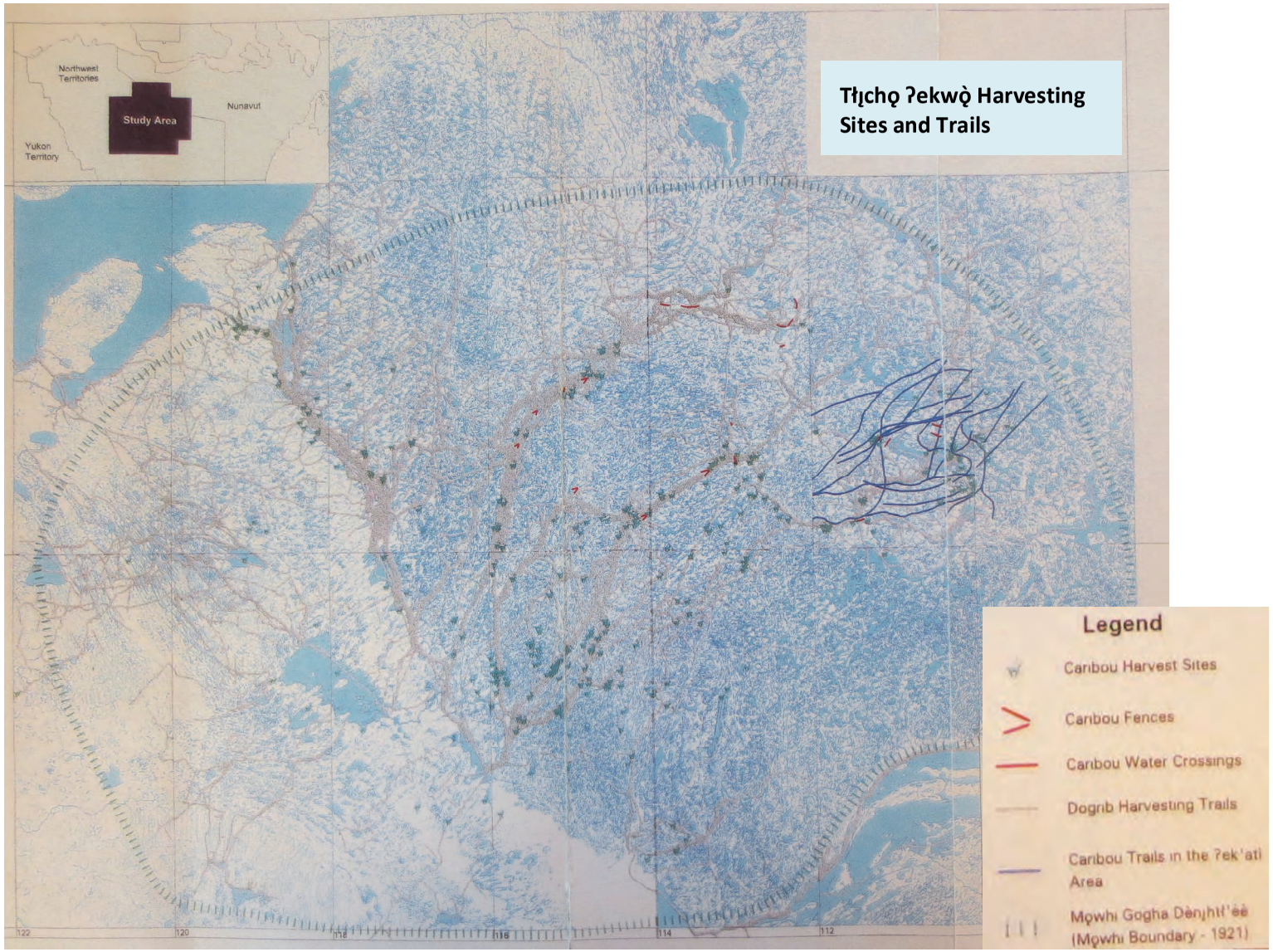

Barrenland Caribou Distribution Based On Harvesting Patterns in Winter and Spring 1992-98 (No Data for 1994)
Whaèhdǫǫ̀ Nàowoò Kǫ, Dogrib Treaty 11 Council (Oct, 2000)
Northwest Territories
Nunavut
Yukon Territory
Sahtì
Kòk'èetì
Deèzàatì
ʔıts'èetì
Yabàahtì
Gots'okàtì
ʔek'atì
Wekweètì
Ts'iedaa
Gamètì
Nodìihatì
Simìtì
Tsòtì
Whatì
Behchokǫ̀
Sǫǫ̀mbak'è
Tideè
Legend
1998 Harvest
1997 Harvest
1996 Harvest
1995 Harvest
1993 Harvest
1992 Harvest
1994 No Data
Mine Exploration
Mine Construction
Mine Operation
Mine Closed
Fire Site(s)
Caribou Fences
Caribou Crossings
Mǫwhì Gogha Dè Nı̨ıtł'èè
(Mǫwhì's Boundary, 1921)
Communities
66
64
122
120
118
116
114
112

Appendix II Map: Tłı̨chǫ ʔekwǫ̀ Harvesting Sites and Trails

This map shows:

- Caribou harvest sites.
- Caribou fences and water crossings.
- Tłı̨chǫ harvesting trails.
- Caribou trails within the ʔek'atì area.

It is a photograph of the map from the original report.


Northwest Territories
Nunavut
Study Area
Yukon Territory
Tłı̨chǫ ʔekwǫ̀ Harvesting Sites and Trails
Legend
Caribou Harvest Sites
Caribou Fences
Caribou Water Crossings
Dogrib Harvesting Trails
Caribou Trails in the ʔek'ati Area
Mǫwhı Gogha Dènı̨hı̀'éé (Mǫwhı Boundary - 1921)
122
120
118
116
114
112

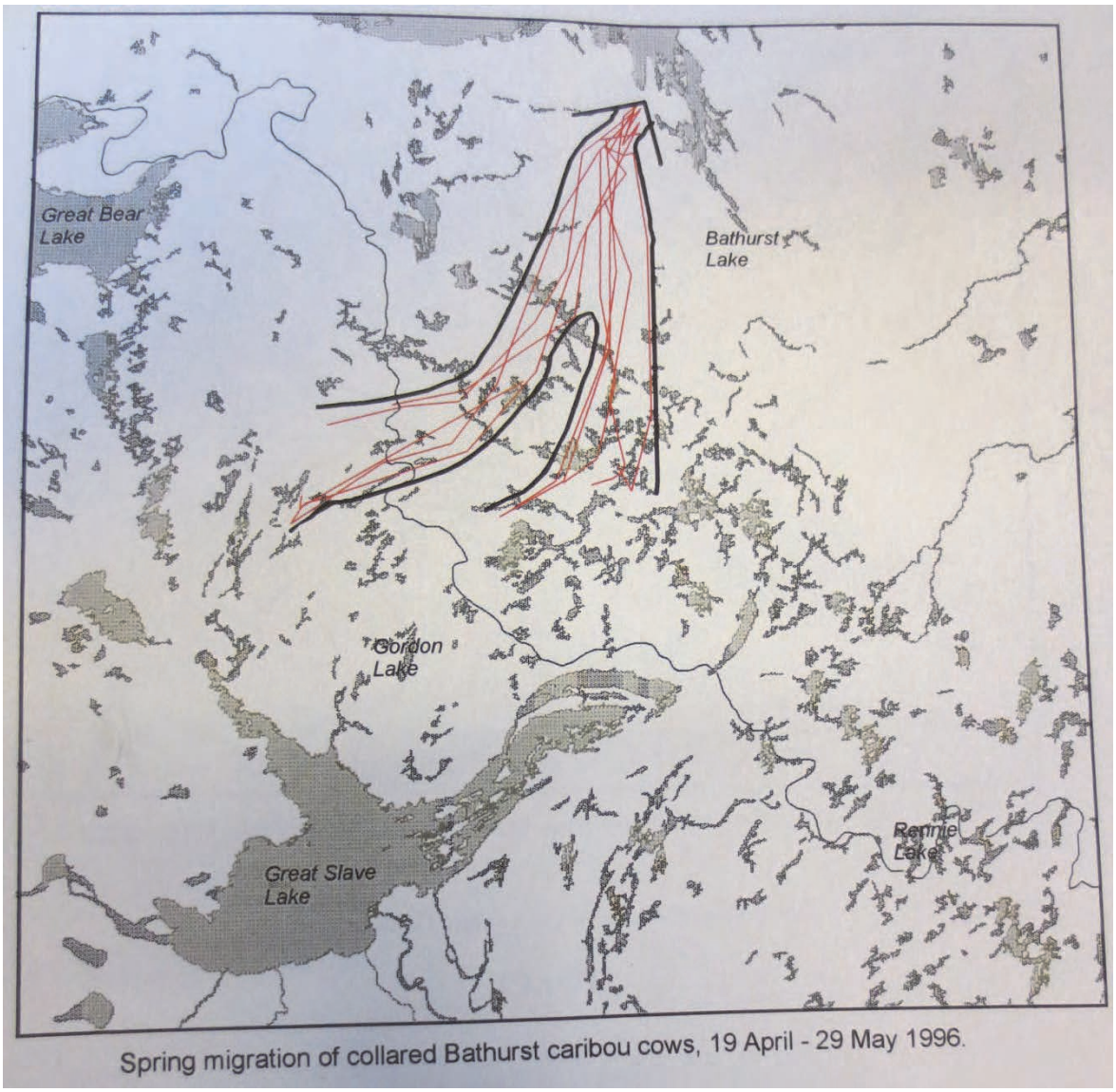
Appendix III Maps: Movements of Collared Caribou Cows

This appendix has six maps that show the movements of collared caribou, for different years and different times of year.

- Spring migration of collared Bathurst caribou cows April 19 to May 29 1996
- Spring migration of collared Bathurst caribou cows April 27 to May 29 1997
- Spring migration of collared Bathurst caribou cows April 29 to May 30 1999
- Spring migration of collared Bathurst caribou cows April 3 to May 28 2000
- Areas used by collared Bathurst caribou cows during winter (Nov. to Feb.) 1996 to 2000
- Movements of one collared Bathurst caribou cow (#60) April 1996 to December 2000.

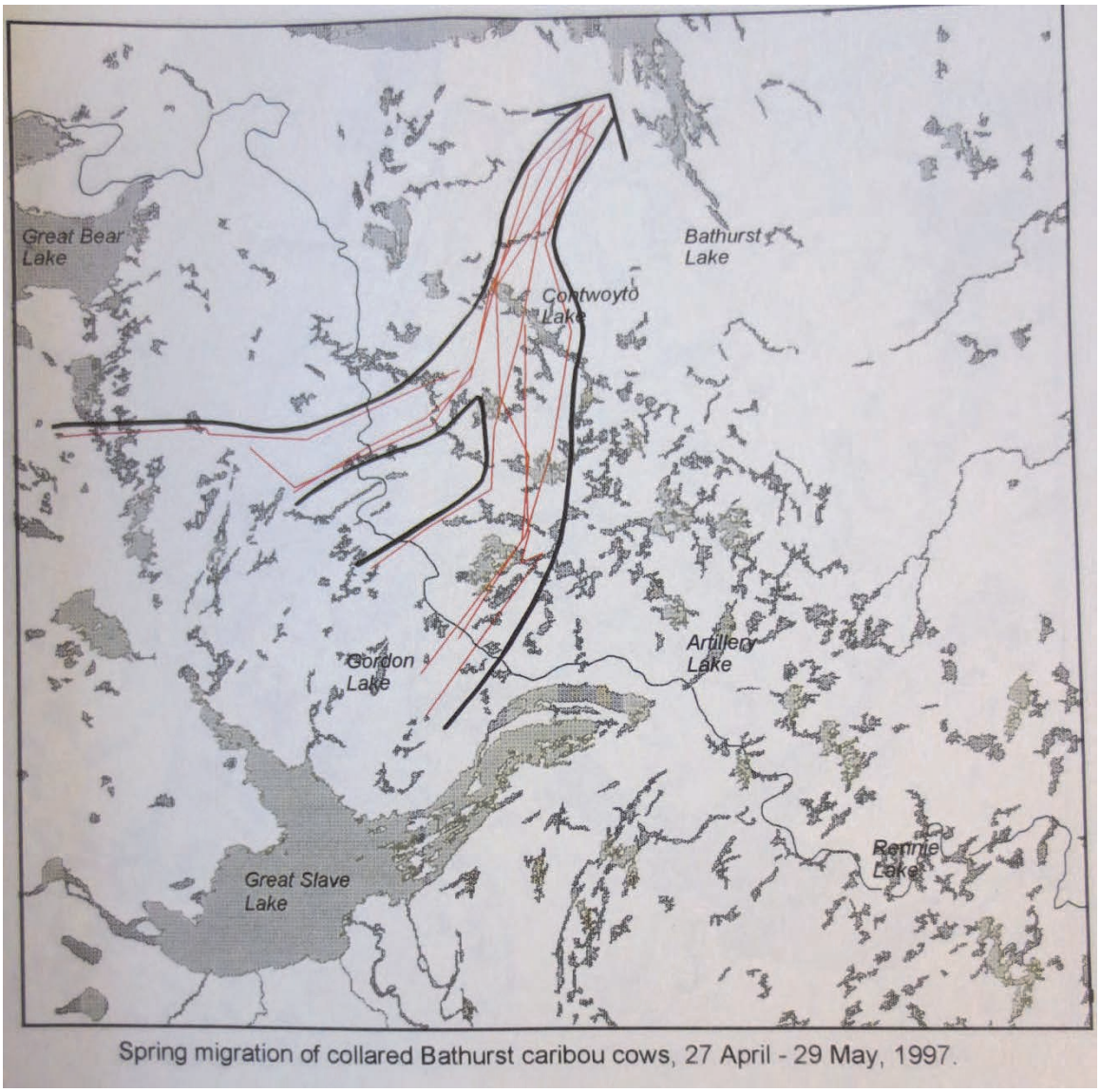
The maps in this report are produced from photographs of the maps in the original report.

Spring migration of collared Bathurst caribou cows April 19 to May 29 1996



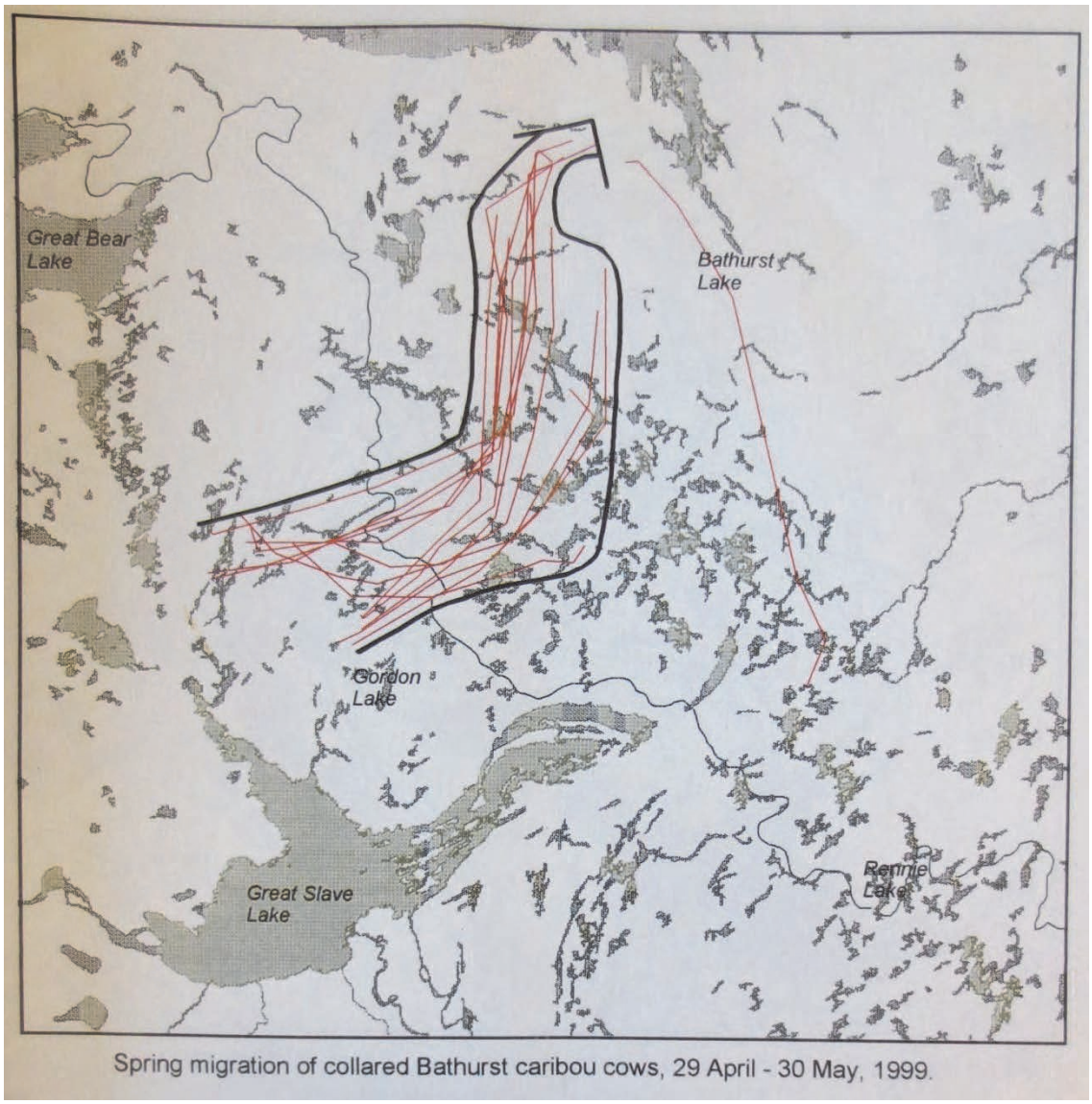
Spring migration of collared Bathurst caribou cows, 19 April - 29 May 1996.

Spring migration of collared Bathurst caribou cows April 27 to May 29 1997



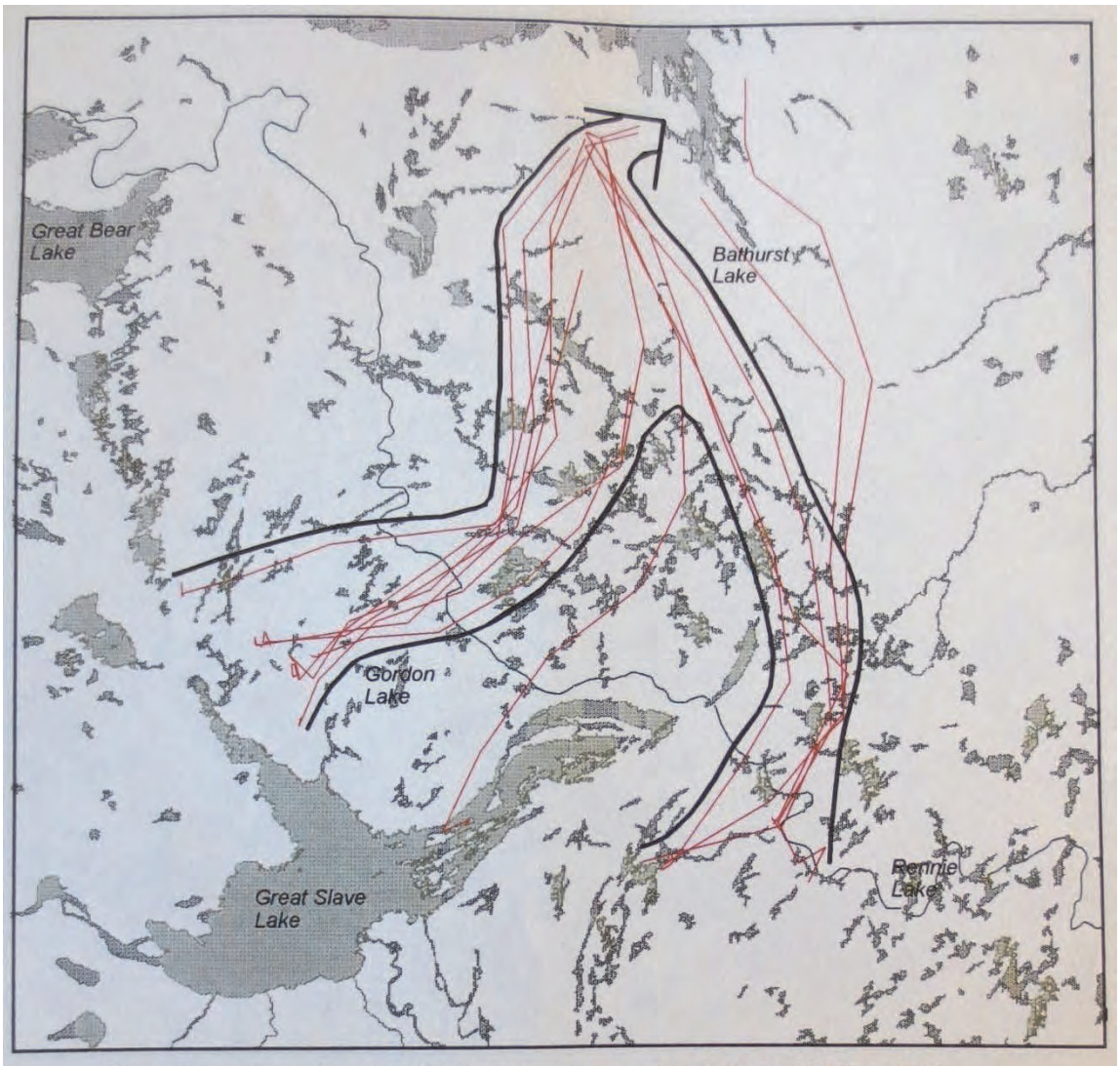
Spring migration of collared Bathurst caribou cows, 27 April - 29 May, 1997.

Spring migration of collared Bathurst caribou cows April 29 to May 30 1999



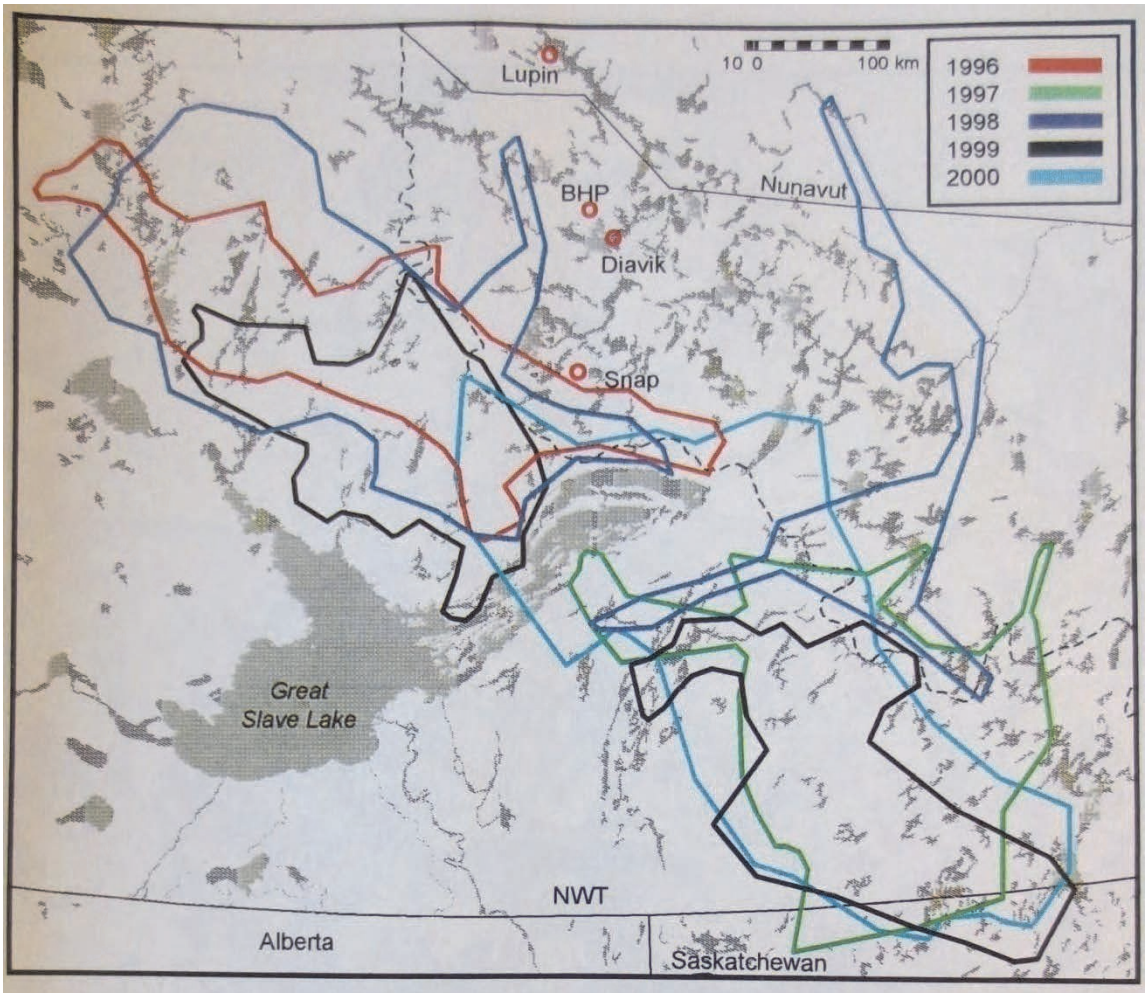
Spring migration of collared Bathurst caribou cows, 29 April - 30 May, 1999.

Spring migration of collared Bathurst caribou cows April 3 to May 28 2000



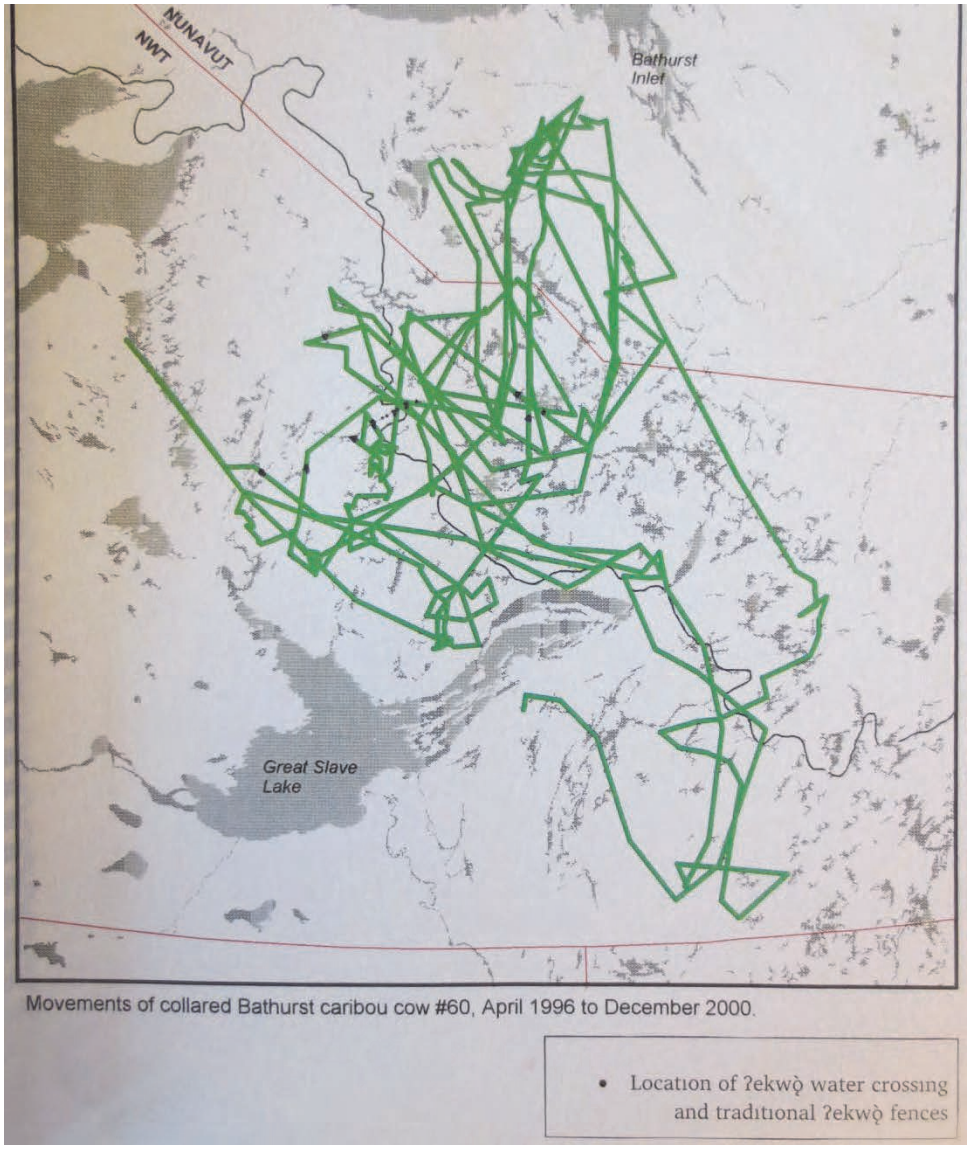
Spring migration of collared Bathurst caribou cows, 3 April - 28 May, 2000.

Areas used by collared Bathurst caribou cows during winter (Nov. to Feb.) 1996 to 2000



Areas used by collared Bathurst cows during winter (Nov to Feb), 1996 - 2000.

Movements of one collared Bathurst caribou cow (#60) April 1996 to December 2000



Tłı̨chǫ Government
Culture and Lands Protection

Sustaining Our Lands, Language, Culture and Way of Life

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