A REVIEW AND DISCUSSION OF THE ARCTIC BORDERLANDS ECOLOGICAL KNOWLEDGE CO-OP'S COMMUNITY MONITORING PROGRAM DATABASE

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1.0 INTRODUCTION

The Wildlife Management Advisory Council (North Slope) WMAC(NS) has a mandate to conserve and protect wildlife, habitat and traditional Inuvialuit use within the Yukon North Slope. Since its inception in 1988, the WMAC(NS) has been a catalyst for cooperative management on the Yukon North Slope. WMAC works with many partners in support of this unique and important area.

One of these partners, the Arctic Borderlands Ecological Knowledge Co-op (ABEKC) has been collecting information from Aklavik Inuvialuit land users since 1996-97. This Community Monitoring Program (the Program) collects data concerning gathering, hunting, fishing, trapping, weather, and several other environmental parameters via a questionnaire/interview process. The interview results have been entered into a database utilizing Access software. This software allows for manipulation of the interview results to produce a range of output that should have potential uses for wildlife and environmental management.

WMAC(NS) is interested in determining the capabilities of the database regarding data manipulation, output generation, the complexity and efficiency of output analysis and the applicability of the output for supporting the management decisions of the WMAC Council.

2.0 OBJECTIVES

The broad purpose of the research is to assist WMAC in deciding how the data collected by the Program can assist WMAC in carrying out its mandate. Specific objectives are as follows:

- To describe the scope and depth of data that has been acquired by the Program;
- To describe how the responses to the questions have been stored in the Access software;
- To determine the capabilities and complexities of the Access software/database regarding extraction of responses to the questions (the data);
- To illustrate how responses to the questions (the data) may be summarized, analyzed and interpreted and how such interpretation may contribute to the WMAC mandate.

3.0 APPROACH

A three phased approach was used to address the objectives.

Phase 1: Program, Questionnaire/Interview and Database Familiarization

In this phase, relevant background and context information concerning the Program's purpose, goals, objectives and relationship to ABEKC's other environmental monitoring initiatives were acquired, reviewed and summarized. The interview process and the questionnaires used to conduct interviews also were reviewed and summarized with respect to the type of data acquired and the questions posed to acquire data. The Access database also was reviewed and summarily described to understand how data acquired during the interview process has been stored in the software and how the software can be used to query the data.

Phase 2: Database Query and Output Extraction

This phase identified a list of questions that appeared to be possible to extract responses to using the Access software. Based upon the list of questions, specific queries were designed and run using the Access software to retrieve responses to the questions. During this phase, consultation occurred with WMAC(NS) to determine which questions/queries were of the most interest to WMAC(NS). The number of possible queries was prioritized to reflect WMAC(NS) interests and priorities.

Phase 3: Output Review and Analysis

During this phase, a summary and preliminary analysis of some of responses that are relative to the WMAC(NS) research and management priorities was undertaken.

Phase 4: Discussion and Recommendations.

This Phase discusses the results of the previous three with emphasis on the retrieval of responses from the database, interpretation of responses to questions, and future direction regarding how the Program can contribute to the WMAC(NS) mandate.

4.0 SCOPE

This work addressed only the non-spatial data provided by Aklavik Inuvialuit interviewees from 1996-97 to the 2006-07.

5.0 THE COMMUNITY MONITORING PROGRAM

The Community Monitoring Program is one component of the Arctic Borderlands Ecological Knowledge Co-op's (ABEKC) ecological monitoring program, with the other being indicators of basic environmental measurements.

The ABEKC is an alliance of First Nations communities, Inupiat and Inuvialuit organizations, co-management boards (e.g., Wildlife Management Advisory Council of the Yukon North Slope and the Canadian Porcupine Caribou Management Agreement), government agencies and university researchers (Kofinas, 2002 in Folliott, 2004). The geographic focus is the U.S.-Canada Arctic Borderlands, defined by the range of the Porcupine Caribou Herd (PCH) and nearby coastal environments, an area encompassing approximately 250,000 km².

The ABEKC was created from a meeting between researchers, scientists, aboriginal leaders, government managers, and community representatives in Dawson City, Yukon in the fall of 1994 (Eamer, 2004 in Folliott, 2004). The focus of the meeting was to create a plan to improve ecological monitoring in the PCH range due to measurably warming temperatures and changes in snow conditions in the region, as well as the observed decline of the PCH population.(Eamer, 2004; Griffith et al., 1999 in Folliott, 2004). From this meeting, came the idea to put into action a community monitoring program that would use local observations, TEK, science-based research and monitoring, and government records. The original vision of the ABEKC was to monitor climate change, regional development and contaminants (Eamer, 2004 in Folliott, 2004).

The goals of the ABEKC are as follows:

- To monitor and assess ecosystem changes in the range of the Porcupine Caribou Herd and adjacent coastal and marine areas;
- To encourage use of both science-based studies and studies based on local and traditional knowledge in ecological monitoring and ecosystem management;
- To improve communications and understanding among governments, aboriginal and non-aboriginal communities and scientists with regard to ecosystem knowledge and management and;
- To foster capacity-building and training opportunities in northern communities in the context of the above-listed goals.

Two programs have been developed regarding the first goal. The indicators of ecosystem change program collects data about the physical environment (temperature, precipitation, permafrost, ice, water levels, forest fires, storms, UVC index), plants, animals, and people (air traffic, populations, development permits, CO_2 emissions, fuel spills, fur prices, marine dredging,

oil and gas development, park visitation and road use). The number of indicators totals 75 and data sets are in place for approximately 65 indicators.

The concept of a Community Monitoring Program was developed initially in response to Environment Canada's 1994 Ecological Monitoring and Assessment Network (EMAN) program initiative. The EMAN program was established as a national response to global warming. Regional offices were provided funding to establish "EMAN sites" to monitor ecosystem changes (Kofinas, 2002). Environment Canada Yukon reviewed the directive and recognized the need to think beyond study sites and view the region as a system with human communities (Kofinas, 2002). The proposed area of focus was the PCH range and the communities for whom caribou are a vital subsistence species. At the first workshop held in 1994 to introduce the EMAN concept, a university-trained biologist suggested that local people would require a formal education in order to be involved in the program (Kofinas, 2002). Local representatives contested that community experts are more knowledgeable about their area than scientists and from this discussion the idea of community monitoring emerged (Kofinas, 2002 in Folliott, 2004).

Since 1996, the community monitoring program has used a community-based interview process to record observations from First Nations, Inupiat and Inuvialuit persons based upon local knowledge of the weather, land, plants, animals, and community life. The following communities participate in the community monitoring program;

- Aklavik Gwich'in (NWT)
- Aklavik Inuvialuit (NWT)
- Arctic Village (Alaska)
- Fort McPherson (NWT)
- Old Crow (Yukon)
- Kaktovik (Alaska)
- Tsiigehtchic (NWT)
- Tuktoyaktuk (NWT)
- Inuvik Gwich'in (NWT)
- Inuvik Inuvialuit (NWT)

6.0 THE INTERVIEW PROCESS AND QUESTIONNAIRES

Interviewers in each community are hired by the ABEKC based upon recommendations and advice from community Renewable Resource Councils (RRC) and Hunters and Trappers Committees (HTC). All interviewers (new and experienced) attend a three-day training session and are provided with a training booklet that includes the proper way to ask for an interview, what to bring, how to conduct an interview, and tips for better mapping (Folliott, 2004).

Interviewees are selected based upon their experience on the land. Current hunters, fishers and trappers are perceived as being the best monitors. Interviewers are encouraged to review a list of prospective interviewees with the RRC, HTC as well as one or two well-respected individuals in the community to confirm that the prospective interviewees were active on the land during the past year. Efforts also are made to select interviewees that represent the full spectrum of community family groups (Folliott, 2004) .

The questionnaire is organized into twelve subject areas. The scope and depth of questions associated with each subject area has generally increased over time and consequently the time required to complete an interview has increased from approximately 30 minutes in 1996-97 to two hours in 2007-08. Both qualitative and spatial data are acquired. An overview of the type of qualitative and spatial data that has been acquired for each subject area is presented below. A detailed description of the types of data acquired is provided in Appendix A.

6.1 INTERVIEWEE CHARACTERISTICS

Time on the Land

Since 1998-99, the amount of time that respondents spend out on the land has been recorded. Interviewees' comments about being out on the land also are recorded.

Age of Interviewees

Age data or age group data has been recorded since 1999-00.

Individual or Couple

Since 2001-02 , a record of whether the interviewee(s) is an individual or if it is a couple who is being interviewed. This extra information has been recorded since 2001-02.

Sex of Interviewee

Since 2000-01 a record of whether individual interviewees were male or female has been recorded.

Spatial Data – Area and Routes Travelled, Lifetime Travel Area

Since 2001-02, the area and routes where respondents traveled for subsistence activities

from April until the end of the year have been recorded. Respondents also record where they traveled for subsistence in their lifetime.

6.2 WEATHER

Weather along with the caribou and fish sections has been and continues to be one of the largest sections of the interview.

General Seasonal Weather Descriptions

Respondents are asked open and close ended questions regarding a range of seasonal (summer, fall and winter) weather characteristics.

Freeze-up and Overflow

Respondents are asked where they were during freeze-up, when freeze-up occurred and the overflow conditions that resulted from freeze-up.

Other Weather Questions

Interviewees are also asked questions about spring break-up, unusual storms and snow conditions.

6.3 GENERAL OBSERVATION OF CHANGE

This section consists of an open-ended question(s) that provides interviewees with a chance to talk more generally about the most important things they observed on the land and in the community. Interviewers are equipped with a tape recorder and if the interviewee feels comfortable, the answers are recorded on the tape. This question has been included in the monitoring program since 2001-02.

6.4 HUMAN ACTIVITY

Since 2001, interviewees have been asked to describe the status of nine categories of human activity and the effects (including cumulative) of these activities on land, animals, fishing, hunting, trapping and the environment overall. Respondents can also identify specific locations on maps where they observed the various categories of human activity.

6.5 BERRIES

Participation

Interviewees are asked if they picked berries and if they did not why.

Berry Types, Needs, General Crop Conditions, Weather Impacts

Interviewees are asked the type of berries they picked, the relative abundance of the berry crop(s), whether they gathered enough berries to meet their needs and how weather affected the berry crop(s).

Berry Quantities

Interviewees comment in relative terms regarding the quantity of berries they harvested.

Berry Quality

Interviewees describe berry quality based upon a pre-determined set of characteristics.

Spatial Data

Berry harvesting locations are recorded on maps.

6.6 VEGETATION CHANGE AND WATER LEVELS

Vegetation

In 1999-00, respondents were asked if there was anything they had noticed about plants and changes in plants.

Water Levels

In 2000-01, respondents were asked to describe changes in the water levels based upon the three options; higher water levels; lower water levels; or no recent changes. If interviewees noticed higher water levels, they were asked to describe them and tell how they were affecting the plants and animals in their area.

Spatial Data – Vegetation Change, Permafrost and Water Levels

In 2001-02, interviewees were asked to identify locations on maps where they had observed unusual observations regarding vegetation changes, water levels and permafrost.

6.7 FISH

Participation and Harvesters' Needs

Interviewees are asked if they fished, if they caught enough fish to meet their needs and if they did not meet their needs what the reasons were that prevented them from meeting their needs.

Species Harvested

Interviewees indicate which species they harvested and the two most important species.

Spatial Data – Fishing Locations

Interviewees identify on a map where they do most of their fishing (for each species harvested).

Harvest Numbers and Fish Quality

Interviewees describe harvest "numbers" and size in relative terms and comment on fish quality based upon a pre-determined set of characteristics. Observations concerning the relative abundance of parasites are recorded as is a description of the parasites observed. In addition, interviewees are asked to comment generally on fish health, condition, and numbers. They are also asked if there is anything unusual about the year's fishing for any type of fish.

6.8 CARIBOU

Caribou Availability

Interviewees are asked to describe the relative availability of caribou during the spring, fall and winter hunts. Interviewees who did not hunt caribou are asked to explain why they did not hunt.

Caribou Migration

Respondents are asked to describe the migration of caribou during the spring and fall and the caribou's movements during the winter.

Harvesters' Needs

Interviewees are asked whether they got enough caribou in the spring, fall and winter to meet their seasonal caribou needs.

Reasons for Not Hunting

Interviewees are asked if they harvested caribou during either the Fall, Winter or Spring and if they did not they are asked to provide the main reason for not hunting from a pre-determined set of possibilities.

Weather and Other Factors Affecting Caribou Location, Feeding and Travel

Based upon a pre-determined set of characteristics, interviewees are asked to describe which of these characteristics affected caribou location, travel and feeding during the winter and spring.

Caribou Body Condition

Interviewees are asked to comment on caribou body condition (winter, spring and fal) using several categories of body fat as a relative indicator of condition. Interviewees also are asked to comment on anything unusual they observed regarding body condition in the spring, fall or winter.

Porcupine Caribou Herd Health

Since 1998-99, interviewees have been asked if they think the Porcupine caribou herd is healthy. If they answer "no", then they are asked to explain why they do not think the herd is healthy.

Predator Kills

Since 2000-01, interviewees have been asked to indicate on a map where they observed kills by predators, the number of kills observed and the type of predator responsible for the kill.

Location of Unhealthy or Sick Caribou

Interviewees are asked to identify on a map the location of unhealthy or sick caribou that were either harvested or observed and to indicate the sex, age and nature of the sickness.

Calves

Interviewees are asked to identify on a map the location of any caribou with new calves observed since June and to indicate the date of the observation, the number of cows with calves, and the type of land where they were seen. Interviewees also are asked to comment on factors that may have affected calving locations.

Caribou Harvest Numbers

Since 2000-01, respondents have been asked how many caribou they harvested from last April until now.

Number of Caribou Seen and Direction of Travel

For fall, spring, and winter observations interviewees are asked to indicate the date the caribou were seen, the direction they were moving, the relative number seen, the composition of the group and provide general comments about the conditions observed.

6.9 OTHER ANIMALS

Unusual Animals, Unusual Locations

Interviewees are asked if they saw any unusual animals during the past year (including birds, fish, and insects) and if they saw animals in places where they do not usually see them.

Other Animals, Pertinent Information, Spatial Data

Based upon a fairly extensive list of animals, interviewees are asked to provide any information they may think is important about these animals. Spatial data concerning this information also is recorded.

6.10 FURBEARERS AND TRAPPING

Fur Quality

From 1996-97 to 1998-99, interviewees were asked to comment on the relative quality of furs. This was the only question asked about furbearers and trapping from 1996-97 to 1998-99.

Trapping Productivity, Factors Affecting Productivity, Number of Furbearers, Fur Quality

In 2000-01, interviewees were asked how successful their trapping season was, factors affecting their trapping efforts, the relative number of furbearers and furbearer quality.

Fur Quality, Target Species, Number of Furbearers, Spatial Data

Since 2001-02, interviewees have been asked to describe fur quality based upon a pre-determined set of criteria. Species trapped and the relative quantity trapped also are recorded. References to trapping locations are recorded on maps.

6.11 MARINE MAMMALS (WHALES AND SEALS)

Since 1996-97, the number of communities responding to marine mammal questions has increased as has the scope and depth of questions. Initially, only interviewees from Aklavik were asked questions about whales. Unusual sightings, interesting observations, changes in populations, diseases, strange habitat-use patterns, locations (recorded on maps), and dates (where possible) are examples of the types of observations that have been recorded. In 1998-99, seals were added to the marine mammal portion of the questionnaire. In 2001-02, interviewees from Inuvik began providing marine mammal information and in 2003-04, interviewees from Kaktovik and Tuktoyaktuk started providing this information.

6.12 EVALUATION

Since 1998-99, interviewees have been asked if questions should be added to the interview, how to improve the interview process, if they were getting the information they needed about environmental issues and natural resources, and to evaluate the Arctic Borderlands Knowledge Co-op community monitoring program.

7.0 THE DATABASE

Responses from the 1996-97 to 2006-07 questionnaires have been entered into a Microsoft Access database called ABEKC_Community. Access was the database chosen because it is based upon relational concepts and permits responses stored in various tables to be linked together by common fields.

The database is organized into two types of tables; those beginning with ***"mt"***or ***"t"*** and those beginning with ***"list"***. Responses to the questions are stored in tables beginning with ***"mt"***or***"t"***. These tables correspond to the various subject areas addressed by the questionnaires. For example, Table 1: ***mtCaribouLocationEffects*** contains responses to questions about how a variety of factors have impacted the location of caribou. The first three columns in these tables identify the specific interview, the community and the year to which the responses correspond. The remaining columns represent a field where a response or a component of a response to a specific question has been entered. Each row in the ***"mt"***or***"t"*** tables, contains a specific interviewee's responses to one or more questions about a particular subject area in the questionnaires. Blank columns or cells with no entries are the result of changes to the questionnaire. When questions are deleted from the questionnaire, the column where responses to the question were entered persists, but data are no longer entered.

Several columns in the ***"mt"***or***"t"*** tables contain either a numeric or alpha entry only. These entries represent codes for responses and/or identify what the response is referring to. The meaning of these codes is stored in the second category of tables that begin with ***"list"***. For example, Table 2: ***listCaribouLocationEffects*** identifies 12 factors that can influence caribou location and the code associated to each factor. These codes assist not only in understanding specific responses stored in the ***"mt"***or***"t"*** tables, but are used when constructing queries to extract responses to specific questions.

The ***"mt"***or***"t"*** tables also contain columns that provide reference to spatial data[1] collected during the interview process. Polygon IDs assigned during polygon digitizing have been entered into the Access database. The Polygon ID field is a unique code that is a combination of the Interview ID number and the number assigned to each sequentially digitized polygon. A unique Interview ID number is assigned to each interview and each digitized polygon associated with that interview is recorded as a decimal component of the interview number. For example, if ten polygons were drawn during Interview ID 356, each polygon is numbered 1 through 10 as it is digitized and the first digitized polygon is assigned the number 356.01. The polygon ID field is the same for both the shapefiles and the Access files and allows for these databases to be linked and viewed simultaneously in ArcMap/ArcView.

[1]Digital spatial information is available only for 1999-00 to 2003-04 as map observations prior to 1999-00 and after 2003-04 have not been digitized.

Table 1: mtCaribouLocationEffects

AutoInterviewID	Community	InterviewYear	CaribouSeason	CaribouSeasonID	CaribouLocationEffect	CaribouLocation EffectID
332	Fort McPherson	2000-01	Winter	3	Caribou snow	2
332	Fort McPherson	2000-01	Winter	3	Caribou not much snow	4
332	Fort McPherson	2000-01	Winter	3	Caribou wind	8
332	Fort McPherson	2000-01	Winter	3	Caribou weather and snow	1
334	Fort McPherson	2000-01	Winter	3	Caribou poor feed areas	5

Table 2: listCaribouLocationEffects

CaribouLocationEffect	CaribouLocationEffectID
Caribou weather and snow	1
Caribou snow	2
Caribou too much snow	3
Caribou not much snow	4
Caribou poor feed areas	5
Caribou good feed areas	6
Caribou wolves	7
Caribou wind	8
Caribou ice	9
Caribou human activity	10
Caribou other weather	11
Caribou other	12

8.0 DATA RETRIEVAL

Based upon discussions with WMAC(NS) representatives, a decision was made to retrieve data that would provide a profile of interviewees, provide the responses to questions concerning caribou and responses to the questions concerning interviewees' general observations of change. A description of the characteristics of the interviewee profile, the caribou questions and the general observations of change for which queries were designed to retrieve responses from the database follows.

8.1 INTERVIEWEE PROFILE

The database was queried to provide an interviewee profile that consisted of;

- the number of interviewees;
- age of the interviewees;
- sex of the interviewee;
- whether the interview took place with an individual or a couple;
- the time the interviewee spent on the land;
- the number of interviewees who responded to questions concerning caribou and;
- the number of interviewees who were interviewed multiple times during the Community Monitoring Program

8.2 CARIBOU

The database was queried to extract responses to the following questions concerning caribou.

Calving Numbers

Did you see any caribou with new calves this year? If yes, show me on the map where you saw calves.

Then interviewees fill in a table - two columns in the table are "number of cows with calves" and "type of land where caribou were seen (were they on ridge tops, valley bottoms, boulder fields, shorelines, frozen lakes, water crossings, other?)". The interviewee indicates how many cows with calves were seen.

Caribou Availability - Fall, Spring, Winter

How available were caribou to this community during hunting last fall? (close by and easily found, not close, not at all available)

How available were caribou to this community during hunting last spring? (close by and easily found, not close, not at all available)

How available were caribou to this community during hunting this winter? (close by and easily found, not close, not at all available)

Caribou Body Condition - Fall, Spring, Winter

Last fall, were the caribou in good shape (lots of rump fat),in fair condition (some back fat, but less than one inch, in poor/skinny shape (little or no rump fat or gut fat), was there a mix of some skinny and some poor, or don't know?

Last spring, were the caribou in good shape (lots of rump fat),in fair condition (some back fat, but less than one inch, in poor/skinny shape (little or no rump fat or gut fat), was there a mix of some skinny and some poor, or don't know?

This winter, were the caribou in good shape (lots of rump fat),in fair condition (some back fat, but less than one inch, in poor/skinny shape (little or no rump fat or gut fat), was there a mix of some skinny and some poor, or don't know?

Caribou Harvest Numbers

How many caribou did you harvest from last April until now? This question was discontinued in 2007-08.

Caribou Herd Health

Do you think the Porcupine Caribou Herd is healthy? (yes, no). If no, why not?

Caribou Needs - Fall, Spring, Winter

Did you get enough caribou this fall to meet your needs? (yes, no)

Did you get enough caribou this spring to meet your needs? (yes, no)

Did you get enough caribou this winter to meet your needs? (yes, no)

Caribou Numbers Seen - Fall, Spring, Winter

Fall

1999-00 to 2006-07: Number of caribou seen last fall (question in chart format): just a few; lots (50 to 100); LOTS (100 to 500); and REALLY LOTS (more than 500)

1998-99 to 1999-00: Use map to document fall migration, number - how many were in the groups? (open ended)

1997-98: Did you see: unusually high number of caribou; average number of caribou; unusually low number of caribou for fall?

1996-97: How many caribou? (lots, some, only a few)

Spring

1999-00 to 2006-07: Number of caribou seen last spring (question in chart format): just a few; lots (50 to 100); LOTS (100 to 500); and REALLY LOTS (more than 500)

1998-99 to 1999-00: Use map to document spring migration, number - how many were in the groups? (open ended)

1997-98: Did you see: unusually high number of caribou; average number of caribou; unusually low number of caribou for spring?

1996-97: How many caribou? (lots, some, only a few)

Winter

1999-00 to 2006-07: Number of caribou seen this winter (question in chart format): just a few; lots (50 to 100); LOTS (100 to 500); and REALLY LOTS (more than 500)

1998-99 to 1999-00: Use map for questions about wintering caribou, number - how many were in the groups? (open ended)

1997-98: Did you see: unusually high number of caribou; average number of caribou; unusually low number of caribou for winter?

1996-97: How many caribou? (lots, some, only a few)

Reasons for Not Hunting - Fall, Spring, Winter

What was the main reason you didn't go hunting last fall?(caribou were too far away to try hunting them, weather or snow conditions were too bad for hunting, other reasons)

What was the main reason you didn't go hunting last spring?(caribou were too far away to try hunting them, weather or snow conditions were too bad for hunting, other reasons)

What was the main reason you didn't go hunting this winter?(caribou were too far away to try hunting them, weather or snow conditions were too bad for hunting, other reasons)

Spring Snow Caribou - Dig

a) Did the snow last spring make it hard or easy for caribou to dig for food and feed? (easy, hard)

b) Would you describe the snow last spring as: sugar snow; hard, icy snow; other (describe)?

Spring Snow Caribou - Travel

a) Did the snow last spring make it easy or hard for caribou to travel? (easy, hard)

b) Would you describe the snow last spring as: sugar snow; hard, icy snow; other (describe)?

Wintering Location Influences

2002-03 to 2006-07: Did anything in particular affect where the caribou have been this winter (yes, no)? Which of the following affected where they have been since the beginning of the rut? Check all that apply: snow conditions; too much snow; not much snow; wind; ice conditions; other weather conditions.(ask for details); poor feed areas; good feed areas; wolves or other predators; human activity (ask for details); other (ask for details).

2001-02: Did anything in particular affect where the caribou calved this year? (yes, no) Checkboxes for the following: snow conditions; too much snow; not much snow; wind; ice conditions; other weather conditions (ask for details); poor feed areas; good feed areas; wolves or other predators; human activity (ask for details); other (ask for details).

2000-01: Did anything in particular seem to affect where caribou are wintering this year? Checkboxes for the following: too much snow; not much snow; good feed areas; poor feed areas; wolves; wind/other; ice conditions; human activity.

1999-00: Did anything in particular seem to affect where caribou are wintering this winter

this year? Weather/snow conditions? Human activities? Other?

1998-99: What things seem to most influence where the caribou chose to winter this year? Weather/snow conditions? Human activities? Other?

8.3 GENERAL OBSERVATIONS OF CHANGE

The database was queried to extract responses to the following questions regarding general observations of change.

2003-04 to 2006-07: Please tell me about the changes you are seeing and how it is affecting your way of life (further prompts: tell me about one or two things you noticed while you were out on the land - things you are noticing about the land, plants, animals; we are also interested in how these changes affected your life this year).

2002-03: Question missing from questionnaire (taped question only).

2001-02: Do you have any observations of recent changes in community hunting and fishing activities? Do you have any observations about recent changes in local employment? The local economy? Education and training? Have there been important changes in this community's local culture in the past two years? If yes, what are they and how are they affecting community life?

2000-01: Are there any other observations you have made or other changes you have noticed that you feel are important to share? (If yes, ask why that is happening). Do you have any other things to say about environmental conditions? Do you have any observations of recent changes in community hunting and fishing activities? In local employment? The local economy? Education and training? In local culture or language?

1999-00: Is there anything else you have noticed recently about plants and changes in plants in our area that you would like to report? Do you have any observations of recent changes in community hunting and fishing activities? Do you have any observations about recent changes in local employment and the local economy? Do you have any observations about recent changes in local culture or language?

1998-99: Are there any other observations or changes you've noticed that you'd like to share? Any observations about community social or economic changes or about plants and animals? (If yes, also ask why that is happening).

1997-98: Do you have any other observations you'd like to share? (for example changes in community life, time on the land, interaction between animals and people or animals and animals….anything?)

1996-97: Record other observations noted by locals about this past year in and around the community. This can include aspects of community life, and any explanations people may have about such things as the activities and condition of animals. People may also wish to comment on how things have changed over a longer period.

9.0 DATA RETRIEVAL RESULTS

Responses to the questions identified in the preceding section were retrieved from the Access database and transferred to Exel software. Digital copies of the Exel output have been provided to WMAC(NS). These data were sufficient to provide for some meaningful summary and preliminary analysis for most of the queries except for the following;

The number of interviewees who were interviewed multiple times during the Community Monitoring Program

Identifying the number of interviewees who were interviewed multiple times required the names of interviewees. The names of the interviewees were not entered into database for 1997-98; 1998-99; 1999-00; 2004-05; 2006-07.

General Observations of Change

These data were incomplete from 1996-97 to 2003-04 and missing for 2004-05. Incomplete data consisted of many of the observations being cut off in mid sentence as a result of a data entry error which did not account for the limit to the number of words that Access can accept in one entry.

Caribou Calving Numbers;

Data output consisted of limited entries for only 2001-02 to 2006-07. The number of responses extracted for these years is summarized below;

2001- 2002: 0 responses
2002- 2003: 2 responses
2003 - 2004: 3 responses
2004 - 2005: 0 responses
2005 - 2006: 1 response
2006 - 2007: 3 responses

In 2006 - 2007, all three interviewees who responded indicated that they do not see caribou calving, suggesting that the interviewees misunderstood the question which asked how many cows with calves were observed. Only in 2003 - 2004 were two of the three responses consistent with the question “How many cows with calves were observed?”

The remaining data output was used to construct an interviewee profile. A summary and

preliminary analysis of several of the questions regarding caribou also was prepared. The summary and preliminary analysis of data output concerning caribou consisted of the following;

- Caribou Availability;
- Caribou Number Harvested;
- Caribou Needs;
- Caribou Herd Health

An overview of the interviewee profile and the summary and preliminary analysis for data output concerning caribou is provided below. A more detailed discussion is provided in Appendix B.

9.2 INTERVIEWEE PROFILE

Number of Interviews

- Between 1996-97 and 2006-07, a total of 205 interviews were conducted.

- The yearly total of interviews ranged from 11 (1996-97) to 23 (1998-99).

Sex of Interviewees

- Data on the sex of the interviewees were included in the database for 2000-01 to 2003-04 inclusive.

- Male interviewees accounted for 80.3% of all interviewees. Male interviewees represented between 75% (2001-02, 2002-03) and 89.5% (2003-04) of yearly respondents.

Type of Interview Conducted

- Data on the type interview conducted were included in the database for 2002-03, 2005-06 and 2006 - 07.

- Of the 49 interviews for which this information was available, the vast majority (87.8%) were conducted with *Individual* respondents. No *Couples* were represented in interviews conducted during 2006-07.

Age of Interviewees

- Data on the age of type interviewees were included in the database for nine years as follows: 1996-97,1999-00, 2000-01, 2001-02, 2002-03, 2003-04, 2004-05, 2005-06 and 2006-07.

- A total of 149 responses were received, ranging from 5 to 20 responses per year. The aggregate of all responses demonstrated that 8.1% of interviewees were *Less than 30 years*, 35.6% of interviewees were *Between 30 and 50*, and 56.4% of interviewees were *Older than 50*.

Interviews Relating to Caribou

- The output assigned interviews relating to caribou into the following six categories;

    1. caribou
    2. caribou spring
    3. caribou summer
    4. caribou fall
    5. caribou winter
    6. caribou other

- The number of interviews conducted for the category *caribou* varied, ranging from no responses obtained during 1998-99 to 2000-01, to 18 questionnaires completed in 2005-06. In total, 102 interviews (49.8%) were conducted for the category *caribou* between 1996-97 and 2006-07.

- The number of interviews conducted for the category *caribou spring* varied, ranging from no responses obtained between 1996-97 and 1999-00, to 16 questionnaires completed in 2000-01 and 2005-06. In total, 71 interviews (34.6%) were conducted for the category *caribou spring* between 2000-01 and 2006-07.

- Very few interviews were conducted for the category *caribou summer*. Only seven questionnaires were completed for this category during 1996-97, representing 3.4% of the total number of interviews conducted between 1996-97 and 2006-07.

- The number of interviews conducted for the category *caribou fall* varied, ranging from four questionnaires completed in 2001-02, to 21 questionnaires completed in 1998-99. In total, 130 interviews (63.4%) were conducted for the category *caribou fall* between 1996-97 and 2006-07.

- The number of interviews conducted for the category *caribou winter* varied, ranging from no responses obtained during 2001-02, to 16 questionnaires completed in 1998-99. In total, 85 interviews (41.5%) were conducted for the category *caribou winter* between 1996-97 and 2006-07.

- The number of interviews conducted for the category *caribou other* varied, ranging from no responses obtained in either 1996-97 or 1997-98, to 20 questionnaires completed in both 1998-99 and 2005-06. In total, 117 interviews (57.1%) were conducted for the category *caribou other* between 1996-97 and 2006-07.

Time on the Land

- The question could be answered with one of four options:
  - Day trips
  - Day trips with overnights
  - Week or more at a time
  - More than half the time on the land

- The output was extracted for nine years, from 1998-99 to 2006-07.

- A total of 171 responses were received, ranging from 14 to 23 responses per year. The aggregate of all responses resulted in 7.6% categorized as *Day trips*, 17.0% categorized as *Day trips with overnights*, 31.0% categorized as *Week or more at a time,* and 44.4% categorized as *More than half the time* on the land.

- Between 1998-99 and 2002-03, the majority (>56.5%) of interviewees indicated that they spent either a *Week or more at a time*, or *More than half the time on the land*. After 2003-04, a large majority of respondents indicated that they spent *More than half the time on the land* (ranging from 65.0% in 2004-05 to 78.9% in 2003-04), although in 2006-07, equal numbers (42.9%) of respondents indicated that they spent a *Week or more at a time*, or *More than half the time on the land*. *Day trips* ranged from none taken in 2003-04 and 2006-07 to 18.8% in 2002-03. *Day trips with overnights* ranged from 5% in 1999-00 to 30.4% in 1998-99.

- The questionnaires did not ask interviewees to indicate how many *day trips, day trips with overnights* or *a week or more at a time* they took. Consequently, the only response category which provided an absolute measure of time was the category *More than half the time on the land*.

- The number of respondents indicated that they had spent *More than half the time on the land* suggests an increasing trend throughout the time period.. The apparent trend suggests that interviewees who chose this response category are spending a greater amount of time on the land, ranging from an increased minimum of between three and 4.5 months.

9.2 CARIBOU

Caribou Availability - Fall

- The output was extracted for seven years, from 2000-01 to 2006-07.

- A total of 115 responses were received during interviews conducted from 2000 to 2006, ranging from 14 to 19 responses per year. The aggregate of all responses resulted in 23.5% of responses indicating caribou were *not available*, 42.6%

indicating that caribou were *not close,* and 20.0% indicating caribou were *close*. Blank cells were recorded for 13.9% of the total responses.

- In 2004-05, approximately the same number of respondents replied that caribou were *not close* (46.7%) as indicated that caribou were *close* (53.3%).

- In 2001-02, 2002-03, and 2003-04, the vast majority >80% of interviewees indicated that caribou were either *not close* or *not available*. Only 5.3%, 12.5% and 15.8% responded that caribou were *close*.

- The incidence of blank cells in the data output in 2000-01, 2005-06 and 2006-07 complicates data interpretation. It is not clear what a blank cell represents. In 2005-06 and 2006-07, blank cell output exists for both respondents that indicated they did and did not hunt, thus suggesting that a blank cell is not representative of interviewees who did not hunt caribou. In 2000-01, data output columns regarding whether an interviewee hunted or observed caribou hunting are also blank, precluding any conclusions regarding whether a blank cell represents a respondent who did not hunt or observe during hunting.

- Comments regarding fall availability of caribou were included for the years 2000-01 to 2005-06. The comments provide additional context to output interpretation and indicate how individual interviewees interpret the response choices. Based on the comments associated with not close and *not available* response choices, it is clear that caribou proximity is not just a spatial concept, but an economic concept as well.

- Regardless of how caribou availability during fall was formally categorized, the accompanying comments demonstrate that numerous other factors are carefully considered by respondents. The comments regarding timing indicate that caribou are only available to hunters during a portion of the fall season, and can be easily missed. The need for proper equipment (in particular, a ski-doo) was repeatedly noted, and economic concerns over rising costs, particularly gas, are especially evident.

Caribou Availability - Winter

- The output was extracted for seven years, from 2000-01 to 2006-07.

- A total of 100 responses were received, ranging from 9 to 19 responses per year. The aggregate of all responses resulted in 56% of responses indicating caribou were *not available,* 15% indicating that caribou were *not close,* and 9% indicating caribou were *close*. Blank cells were recorded for 20% of the total responses.

- Between 2000-01 and 2001-02 the majority of respondents indicated that caribou were *not available*, ranging from 71.4% to 94.7%, respectively.

- In 2002-03 and 2003-04, all respondents indicated that caribou were either *not available* or *not close*.

- In 2004-05, equal numbers of respondents indicated that caribou were either *not available*, *not close*, or *close.*

- In 2006-07, the majority (54.5%) of respondents indicated that caribou were *close.*

- Virtually all (92.9%) entries for 2005-06 were blank, precluding any conclusions for that interview year.

- All of the comments were associated with the responses *not available* or *not close*.

- The comments illustrated that the cost of travel was also considered by interviewees when interpreting caribou availability.

Caribou Availability - Spring

- The output was extracted for seven years, from 2000-01 to 2006-07.

- A total of 112 responses were received, ranging from 12 to 19 responses per year. The aggregate of all responses resulted in 26.8% of responses indicating caribou were *not available*, 54.5% indicating that caribou were *not close*, and 10.7% indicating caribou were *close*. Blank cells were recorded for 8.0% of the total responses.

- Between 2001-02 to 2003-04, and 2005-06 to 2006-07, the vast majority (ranging from 73.4% to 100%) of respondents indicated that caribou were either *not available* or *not close*, although in 2005-06 the responses were somewhat more variable as 20% of respondents indicated that caribou were *close*.

- In 2000-01, 43.8% of respondents indicated that caribou were *not close*, but 31.3% of cells were blank. Caribou were categorized as *close* by 18.8% of respondents.

- Responses were also more variable in 2004-05: although 50.0% of interviewees indicated that caribou were *not close*, 25.5% indicated that caribou were *close*, and 18.8% of cells were blank.

- Most of the comments were associated with responses indicating that caribou were *not available* or *not close*. These comments provided several explanations as to why caribou were not easily available, with the majority of respondents noting that caribou were traveling a different route or were located too far away from the community.

- Some of the interviewees noted the cost of gas as a concern. Several of these comments suggested that respondents did not hunt as a result of high gas prices; caribou were too far away, requiring too much gas to hunt.

Number of Caribou Harvested

- The output was extracted for seven years, from 2000-01 to 2006-07. A total of 113 responses were received, ranging from 11 to 18 per year.

- A total of 651 caribou were harvested between 2000-01 and 2006-07. The total number of caribou harvested per year ranged from one (2000-01) to 173 (2004-05), representing between 0.2% and 26.6% of the total harvest for the seven year period.

- An increasing trend in the total caribou harvest is observed from 2000-01 to 2004-05. After that year, a decreasing trend is observed, although the yearly caribou harvest remained greater during 2005-06 and 2006-07 than during the period between 2000-01 and 2003-04.

- The number of caribou harvested by individual respondents in one year ranged from a minimum of zero (in all years except 2006-07) to a maximum of 50 (2004-05). On average, the number of caribou harvested per interviewee ranged from 0.1 (2000-01) to 10.7 caribou (2006-07) per year. The individual median harvest was slightly lower, ranging from 0.0 (2000-01 to 2002-03) to 8.5 (2005-06) caribou per year. Both mean and median values for the number of caribou harvested per interviewee suggested an increasing trend beginning in 2001-02(mean) and 2003-04(median).

Caribou Needs - Spring

- The question was answered with a response of *Yes* or *No*. The output was extracted for seven years, from 2000-01 to 2006-07.

- A total of 73 responses were received during interviews, ranging from 2 to 15 per year. The aggregate of responses indicates that the majority (65.8%) of respondents were able to meet their needs for caribou in spring. Respondents who indicated that they were not able to meet their needs represent 32.9% of those

interviewed over the seven year period. Only one blank cell was recorded, representing 1.4% of total responses.

- Interviews conducted during 2000-01 and 2001-02 revealed that respondents were generally unable to meet their needs, with *No* responses representing 60% to 69.2% of total responses respectively. In 2002-03, all respondents indicated that they were able to meet their needs, but only two responses were recorded that year. An increasing trend of *Yes* responses becomes apparent in 2002-03. By 2003-04, approximately half of the interviewees were able to meet their needs for caribou, increasing to between 90.0% (2004-05) and 100% (2005-06) of yearly responses for the remainder of the time period.

- Comments were associated with data recorded for the years 2000-01 and 2001-02. The comments associated with *No* responses illustrate the difficulties encountered by interviewees who were unable to meet their needs for caribou, in particular, the cost associated with supplementing their needs with store bought meats.

- Comments associated with *Yes* responses indicated that the number of caribou required to meet one's needs will vary depending on the level of personal responsibility to other family or community members.

- Other comments associated with *Yes* responses suggest that caribou needs were not completely met. In some cases, respondents who answered *Yes* to the question appeared to be indicating that they harvested some caribou, but not enough.

Caribou Needs - Fall

- The output was extracted for seven years, from 2000-01 to 2006-07.

- A total of 77 responses were received, ranging from 8 to 14 per year. The aggregate of responses indicates that the majority (61.0%) of respondents were able to meet their needs. A total of 29.9% of those interviewed indicated that they were not able to meet their needs for caribou in fall. During 2000-01 and 2001-02, seven blank cells were recorded, representing 9.1% of total responses.

- The majority of interviewees were not able to meet their needs for caribou during fall in either 2000-01 or 2001-02. In 2000-01, eight (61.5%) *No* responses were recorded, and in 2001-02, six (42.9%) were entered. However, blank cells also represent 42.9% of responses recorded for 2001-02. Comments associated with the blank cells suggest that respondents were not able to meet their needs.

- A trend towards increasing numbers of *Yes* responses is evident beginning in 2002-03, when approximately equal numbers of respondents provided *Yes* and *No*

responses. Between 2003-04 and 2006-07, interviewees who indicated that they were able to meet their needs represent between 75% (2003-04) and 100% (2006-07) of yearly responses.

Caribou Needs - Winter

- The output was extracted for five years, from 2002-03 to 2006-07.

- A total of 42 responses were received during interviews, ranging from 4 to 14 per year. The aggregate of responses indicates that 40.5% of respondents were able to meet their needs for caribou in winter. Interviewees who could not meet their needs represent 14.3% of all respondents. The majority of responses recorded during 2005-06 and 2006-07 were entered as blank cells, representing 45.2% of total responses.

- With the exception of 2002-03, the majority of respondents were able to meet their needs for caribou during winter. During 2002-03, four of five respondents (80%) indicated that they were not able to meet their needs. For the years 2003-04, 2004-05, and 2006-07, interviewees who were able to meet their needs ranged from 53.8% (2006-07) to 83.3% (2003-04). During 2005-06, 13 of 14 responses (92.9% of the yearly total) were entered as blank cells. Blank cells also represent a large proportion of the data recorded during 2006-07 (46.2%).

- The supplementary hunting data further confirm that the 13 entries recorded as blank cells in 2005 - 06 represent respondents who had not participated in hunting. Similarly, the six blank cells recorded during 2006 - 07 also represent interviewees who did not hunt.

Caribou Herd Health

- The question was answered with a *Yes* or *No* response.

- The output was extracted for nine years, from 1998-99 to 2006-07.

- A total of 149 responses were received, ranging from 12 to 20 per year. The aggregate of responses indicate that the vast majority of interviewees considered the Porcupine Caribou Herd to be healthy. Of the 149 interviewees, 94% responded *Yes* to the question; only 4% responded *No*. Three blank cells were recorded, representing 2.0% of total responses.

- Interviewees who indicated that the Porcupine Caribou Herd was healthy ranged from 75.0% in 2002-03 to 100% in 1999-00, and 2004-05 to 2006-07.

- Several comments were associated with the *Yes* responses, which demonstrate that

some interviewees appear to have been interpreting the question in terms of the physical health of harvested animals.

- Comments associated with the *Yes* response also indicated that hunters select healthy animals for harvesting.

- Comments associated with *No* responses indicate that some interviewees interpreted caribou health according to how many caribou were in the area.

- Comments associated with the three blank cells recorded between 2001-02 and 2003-04 suggest that herd health was assessed according to both physical condition and relative numbers of caribou.

- Although physical condition of harvested animals and relative numbers of caribou are both valid measures of herd health, the discrepancy in how respondents interpreted the question somewhat compromises the consistency of responses, as interviewees who assessed caribou health in physical terms responded *Yes* while noting that there were fewer caribou, while other interviewees responded *No* since they used the decreasing number of caribou as their measure for assessing herd health. However, given the large number of respondents who answered *Yes* to the question, this issue does not affect the overall conclusion, which is that the vast majority of community members who participated in interviews between 1998-99 and 2006-07 considered the Porcupine Caribou Herd to be healthy.

10.0 DISCUSSION

The discussion addresses the retrieval of data from the database, interpretation of responses to questions, and future direction regarding how the Program can contribute to the WMAC(NS) mandate.

10.1 RETRIEVING QUESTIONNAIRE RESPONSES FROM ACCESS

Efficient retrieval of responses requires an individual or several individuals working together who are;

a) Proficient in working with Access software.
b) Very familiar with the codes that have been designed as part of the system of storing the question responses in Access.
c) Very familiar with the questionnaire and changes to the questionnaire over the years.

There appear to be only two or three individuals who possess all elements of this

necessary skill set. During the data familiarization process, it became apparent that even an individual very proficient in working with Access software would have difficulty extracting responses to the questions. Persons proficient only in working with Access software would be confronted with the following two significant challenges when attempting to design queries to extract responses to specific questions;

1) They would have to spend a considerable amount of time understanding how the database is organized (two types of tables; those beginning with ***"mt"***or ***"t"*** and those beginning with ***"list"***), what each table type contains and how the data entry coding system works, before designing specific queries.

2) They would have to become very familiar with all of the questionnaires in order to understand how inputted responses are related to specific questions. Since the database only includes responses to questions and not the specific questions, designing a query to extract the responses to a specific question requires a review of the responses first and then referral back to the questionnaire to determine which question(s) the responses are for. It is possible, by referring back to the questionnaire, to determine, with reasonable certainty, which questions are specific to the responses that are coded and stored in the Acess database. However, this process would be very time consuming for someone not extremely familiar with both the questionnaires and the process of inputting responses.

For this project, these challenges were overcome by sub-contracting the data retrieval tasks to an individual who possesses all elements of the necessary skill set. Responses to 46 questions relating to Interviewee Characteristics, Caribou and General Observations of Change for the Aklavik Inuvialuit were obtained. Designing the queries, extracting the responses and exporting the data to an Exel format required 30 person hours. The 46 questions to which responses were obtained represent a small percentage of the total number of questions that have been asked since the questionnaire's inception. The Caribou and General Observations of Change questions are two of 12 subject areas, some of which contain a greater number of questions and some of which contain less. Assuming data extraction from each subject area would take about the same amount of time as was required for these two subject areas, simple extrapolation suggests that extracting responses to all questions answered by Aklavik Inuvialuit could require about 170 - 180 person hours.

This experience with response retrieval illustrates that this process is extremely dependent upon two or three key persons. Even with a key person conducting the data retrieval exercise, a fair amount of time is still required. Key person dependency could be somewhat reduced if a "Manual" was developed that described how the data coding system works, how the questionnaires can be used to link responses to specific questions and explained how the database can be queried with a variety of relevant working examples. However, even with such a tool, the challenge presented by the database only including responses to questions and not the questions that the responses relate to would still persist and represent a significant challenge for persons

trying to extract data who are unfamiliar with the questionnaire. Key person dependency could be reduced further, if the database were expanded to include a field that linked each response to the specific question that generated the response. Given the large amount questions that have been asked over the last 11 years, expanding the database now to include this information could constitute a substantial amount of work.

The dependency upon two or three key persons for response retrieval represents an impediment to using and evaluating how the responses stored in the database can contribute to the WMAC(NS) mandate. There may or may not be a substantial amount of data stored in the database that can make a significant contribution to the WMAC(NS) mandate. This project will assist WMAC(NS) is assessing how the responses to questions from Aklavik Inuvialuit concerning caribou can contribute to achieving its mandate. However, there may be responses to questions relating to the other subject areas that also could be useful. WMAC needs to decide which of the responses to questions from the other subject areas are of interest to them. If there are other responses that are of interest, these should be retrieved (exported to Exel format) by one of the key persons while they are still available. Once these key persons are no longer available, retrieval of responses could become extremely time consuming and costly.

10.2 USING AND INTERPRETING THE RESPONSES TO THE QUESTIONS

The process of data retrieval, summary and preliminary analysis generated the following observations concerning use and interpretation of responses.

Data Interpretation Context:

The questionnaire deconstructs the interviewees' experiences. Understanding and interpreting those experiences, requires retrieving, summarizing and analyzing the responses from the questionnaire or reconstructing the experiences. Partial reconstruction of those experiences or retrieving, summarizing and analyzing only some of the responses to the questions, provides an incomplete context for data interpretation that can yield conflicting or contradictory results. For example, based upon the responses that were reviewed, it appears that although the majority of interviewees indicated that caribou were *not available at all* or *not close* to the community, the majority of interviewees also indicated that they were able to meet their needs(exceptions include Fall 2000-01, 2001-02; Spring 2000-01, 2001-02; Winter 2002-03) and that they believe the Porcupine caribou herd is healthy. In addition, despite caribou not being available or not close to the community, the aggregate harvest of all interviewees and the average and median harvest per interviewee has increased since 2001-02 .This example illustrates that a partial context for data interpretation leads to potentially conflicting and contradictory interpretation possibilities. The appropriate context for data interpretation is one that includes a review and analysis of all responses (including spatial data) to the caribou questions.

Questions that Provide Highly Subjective Response Choices Complicate Data Interpretation

Questions that provide highly subjective response choices can add complexity to data interpretation. For example, the response choices for; *How available were caribou to this community during hunting last fall*? are;

- *close by and easily found;*
- *not close;*
- *not at all available.*

Each interviewee's perception of what is meant by each response choice is based upon their own set of personal circumstances. Consequently two interviewees may characterize the same location in opposite ways. This is illustrated by some interviewees choosing the response choice *close* and adding in the comments portion of the interview that the location associated with *close* was *Shingle Point*, while other interviewees chose the response choices *not close* or *not available at all*, but added in the comments portion of the interview, that the location associated with *not close* or *not available at all* also was *Shingle Point* .

Incorporating subjective concepts into response choices makes any meaningful interpretation of responses dependent upon a review of the comments that accompanied a respondents choice. The more subjective the responses choices are, the more relevant the comments become. Once comments associated with responses to the caribou availability questions were reviewed, it became apparent that the only reasonable interpretation of these responses was that the "availability of caribou" was dependent upon a wide variety of factors many of which were related to the interviewees personal economic circumstances (price of gas, access to a snowmachine). A better understanding of the physical location of caribou relative to the community could only be obtained by reviewing responses to other questions (including spatial).

Apparent Misinterpretation of Questions by Interviewee, Interviewer or Both

Based upon comments associated with responses to questions concerning the Porcupine herd's health and number of cows with calves, it appears that interviewees, the interviewer or both have been misinterpreting what these questions are trying to address. As noted earlier, several comments associated with the herd health question suggest that some interviewees who responded *Yes* appear to have been interpreting the question in terms of the physical health of harvested animals. The cows with calves question appears to have been understood as referring to observations related to cows actually calving, which may explain the very low number of responses to this question. These types of misunderstandings could have been identified earlier, if responses were retrieved from the database and reviewed sooner.

Interviewee Turnover

Interviewee turnover may impact upon how results are interpreted. For example, without some understanding of interviewee turnover, it is difficult to determine whether the apparent increasing trend in average and median number of caribou harvested per interviewee is an

indication of increasing numbers or availability of caribou or simply reflects recruitment of interviewees who are more successful hunters. Low interviewee turnover would favour the former interpretation, while high interviewee turnover would suggest that factors other than caribou abundance or availability may be influencing higher average and median harvests per interviewee.

Incomplete Data

Incomplete data precluded data interpretation and increased uncertainty associated with data interpretation. Incomplete data concerning interviewees names and the General Observations of Change question precluded any analysis of interviewee turnover or the General Observations of Change responses. Incomplete data concerning whether an interviewee hunted or observed caribou increased the uncertainty of the meaning of blank cells (in Exel output format) associated with the caribou availability and caribou needs questions. Data concerning the sex of the interviewee and the type of interview conducted (individual or couple) also were incomplete, although minimal impact on response interpretation resulted.

Spatial Data

As noted previously, data interpretation can be compromised without an understanding of the entire context of the interviewee's experience, i.e. responses to all of the questions. Map data should contribute substantially to providing the context necessary for interpretation. The ability to pursue interpretation of responses consistent within this broader context is reduced because digitized map data are available only for 1999-00 to 2003-04 as map observations prior to 1999-00 and after 2003-04 have not been digitized.

10.3 FUTURE DIRECTION - WMAC(NS) AND THE COMMUNITY MONITORING PROGRAM

As noted in 10.1, WMAC needs to decide which of the responses to questions from the other subject areas are of interest to them. Also, as was discussed in 10.2, a meaningful interpretation of responses to the caribou questions requires retrieval, summary and analysis of responses to all questions including mapping (spatial) responses. Proceeding with additional work, either in terms of the other subject areas or completing the summary and analysis of caribou responses, will be costly. Allowing data to accumulate means that what would have been a modest annual cost of data retrieval, summary and analysis has become a larger accumulated cost that would be incurred over a shorter time. Adding to the difficulty of the decision to proceed, is the uncertainty associated with the "value" of the additional work. It may produce information that is very useful to WMAC(NS) or the information may be of little value.

Notwithstanding the difficulty of the decision, there appears to be an underlying obligation on the part of WMAC(NS) and other agencies who have supported the community monitoring program to "do something" with the data. The community monitoring program is based upon the fundamental premise that the knowledge and observations of persons in the communities are

valuable and can contribute to resource management decision-making. It was this understanding that was the basis for developing the program and securing the cooperation of community people to provide the data. Failure to "use" the information acquired through the community monitoring program would undermine this basic understanding and disrespect the value of community knowledge and observations. Continuing to collect and store data without a plan for its systematic retrieval, analysis and integration into the decision-making processes of the various supporting agencies does not appear to be an option.

Supporting this status quo (collect and store only) means that the "value" of the community monitoring program data will remain unknown. The possibility that the data collected by the community monitoring program may not be particularly useful should not be a reason for not proceeding to find out if they are. If the data are not useful, it does not follow that community knowledge is not useful and not worth considering. Rather, it would mean that all parties need to continue to search for better ways to acquire and use the knowledge the communities have to offer.

LITERATURE CITED

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APPENDIX A:

QUESTIONNAIRE DESCRIPTION

1.0 INTRODUCTION

Interviews have increased in length since they first began. In 1996-97, the interviews took approximately one half hour to complete. However, the latest interview (2007-08) took approximately two hours to complete. Although the sections have increased in length over the years, weather, caribou, fish, berries and human activities have remained important sections of the interviews since 1996-97 and the questions have remained fairly consistent over the past 10 years, especially since 2001-02.

Spatial information recorded on the questionnaire maps has only been transferred into digital format for years 1999-00 to 2003-04. Map observations prior to interview year 1999-00 and after 2003-04 have not been rendered into digital format. Therefore there is attribute data available for 1996-97 to 1998-99 and 2005-06 to 2006-07, but no spatial information. There is more spatial information for interview years 2001-02, 2002-03, and 2003-04 than years 1999-00 and 2000-01. This can be partly explained by the more detailed, lengthy questionnaires used from 2001-04 and also because 1999-00 and 2000-01 use colour codes for map references (only three categories therefore less specific types of observations) and 2001-02 to 2006-07 questionnaires use codes for each type of observations.

2.0 INTERVIEWEE CHARACTERISTICS

The following general characteristics about the interviewees are recorded on the questionnaire.

Time on the Land

Since 1998-99, the amount of time that respondents spend out on the land has been a part of the community monitoring. In reference to the amount of time they spend out on the land, respondents select one of the following options: spend more than half of their time out of town and on the land; spend one week or more at a time; take day trips out on the land with occasional overnights; or only take day trips from town. Participants' comments about being out on the land are also recorded on the questionnaires.

Age of Interviewees

In 1999-00, respondents were asked what age group they belong to: less than 30; between 30 and 50; or older than 50. However, since 2001-02, interviewers also record the year that the respondents were born, in addition to their age group.

Individual or Couple

On the cover of the questionnaire, a note is made as to whether the interviewee is an individual or if it is a couple who is being interviewed. This extra information has been recorded since 2001-02. In the case of a couple, the oldest person's date of birth is recorded.

Spatial Data – Area and Routes Travelled, Lifetime Travel Area

The area and routes where respondents traveled for subsistence activities from April until the end of the year, are labeled on the questionnaire map. These routes are labeled "2001" or the year in question. This component was added to the interviews in 2001-02. As well, respondents record where they traveled for subsistence in their lifetime. Using the map, they draw a line around the area where they have traveled on the land. This area is labeled, "lifetime" or "LT" on the questionnaire maps.

3.0 WEATHER

Weather has been and continues to be one of the largest sections of the interview (along with caribou and fish sections).

General Seasonal Weather Descriptions

Respondents are asked to describe what the weather was like this past summer. The comments can be either about summer in general or month by month (June, July, and August), as long as it is clear. Similarly, respondents are also asked to describe fall (September, October, and November) and winter (December, January, and February) weather. For fall and winter, interviewees also describe what the snow was like (no snow, very little snow, about average amount of snow, or lots of snow). After these open-ended questions on seasonal weather, interviewees are asked close-ended questions about summer, fall, and winter weather (drier/wetter, warmer/colder than most years, unusually windy/calm, fewer/more storms than most years). Interviewees can check off more than one weather description.

Freeze-up and Overflow

Respondents are asked where they were during freeze-up, either in town or out on the land. They are asked about the freeze-up of the lakes, the freeze-up of the rivers, and for relevant communities, the freeze up of the ocean. Interviewees are also asked about the timing of the freeze-up of the lakes, rivers, and ocean earlier/later later than most years, similar to most years). Next, respondents are asked about the amount of overflow (lots, not much, average amount) and since 2000-01, if the weather conditions this year created any problems for them getting out on the land (no problems, made it easy, made it hard). Another question that has also been asked since 2000-01 is how problems getting out on the land affected their day-to-day life.

Changes to the Weather Questions Over Time

When the monitoring first began, the weather section was relatively short. Respondents were asked about the weather last spring, summer, fall, and winter. Responses were not structured. Also, respondents were asked if they had any comments about the number or strength of storms over the past year. Ice and snow were important components of the weather section. Interviewees were asked to describe last spring's break-up (for example, if it was early or late or if the ice went slowly or quickly). They were also asked how they would rate the spring break-up

(about the same as usual or unusual). If respondents considered the break-up to be unusual, they were asked to elaborate. These same questions were asked about the fall freeze-up. Finally, respondents described the quality of the snow and were asked to rate it (about an average year or an unusual year for snow).

In 1997-98, respondents were asked if there were any unusual storms over the past year (e.g., big winds, bad ice storms, or heavy rains). Questions about seasonal weather and snow were removed from the interview for this year's monitoring. Interviewees were still asked about the fall freeze-up and spring break-up but they were given options to check off (ice went out/froze up slowly or quickly).

In 1998-99, respondents were asked what the overall weather was like from summer through to winter. They were also asked about unusual storms or weather and if they were in town or out on the land. The freeze up of the river was described as either quick, slow, or average.

In 1999-00, weather descriptions were broken down into summer and fall observations.

In 2000-01, summer and fall weather were still described in an open-ended format but a close-ended component was added. Respondents also checked off if it was: stormy/few storms; dry/wet; warm/cold; or windy/calm. Snow conditions were also described by respondents. First, respondents were given the opportunity to discuss their general observations of snow conditions during the past year then they also checked off whether the snow was early, late, deep, icy, if there was no snow, or if the snow could be described by none of the preceding descriptions.

It was not until 2001-02 that weather descriptions were provided on a monthly basis.

4.0 GENERAL OBSERVATION OF CHANGE

Included in the Coop's monitoring program is a section on general observations of change. It is a relatively short part of the interviews. Respondents have the opportunity to discuss the changes they are seeing and how it is affecting their way of life. People have a chance to talk more generally about the most important things they observed on the land and in the community. Interviewers sometimes prompt respondents by asking them about one or two things they noticed while out on the land such as things they noticed about the plants and animals. These observations are sometimes written by the interviewer but this is also the only question where some answers are on tape. Interviewers are equipped with a tape recorder and if the interviewee feels comfortable, the answers are recorded on the tape. Respondents are also given the option of speaking in their native language. If a respondent refers to the map when answering this question, notes are recorded on the hard copy map (using species names or map reference codes). Observations of change are grouped into the following categories;

Other observations
Hunting and fishing
Employment and economy
Culture and language
Environment
General observations
Plants
Main changes

5.0 HUMAN ACTIVITY

Types of Human Activity

Changes in human activity have been monitored by the Coop since 2001-02. The nine activities which comprise this section of the questionnaire are: airplane and helicopter traffic; snowmobile use; ATVs/four-wheelers; sport hunting; hunting for food by local people; tourism, oil and gas drilling and exploration; research by scientists on land and water; and other activities which are a concern to the respondent. Interviewees report whether each of these activities during the past year, have been either increasing, decreasing, or if there has been no observable change. Respondents also comment on the effects of each activity on land, animals, fishing, and trapping. Interviewees are asked about the cumulative effects of these human activities on the environment, animals, or hunting, fishing, and trapping.

Spatial Aspects of Human Activity

The nine different types of monitored activities are assigned map reference codes (HA1 to HA9). Some respondents refer to the questionnaire map when discussing these observations with the interviewer. The interviewer records information on the corresponding map for the interviewee (which is labeled with the respondents' unique identification number) with the map reference code.

Changes Over Time

Prior to 2001-02, when the section on human activity was introduced, respondents commented on recent changes in community hunting and fishing activities, local employment, the local economy, education and training, and in local culture and language.

6.0 BERRIES

Participation

Respondents are asked if they picked berries during the past year (2001-02 to 2007-08). They are also asked if they usually go berry picking and if they answer "no" then why they did not go berry picking during the past year (2001-02 to 2007-08). In response to the latter question,

respondents are given the options: berry crop was too poor; or other reasons (explanations are recorded on the questionnaire).

Berry Types, Needs, General Crop Conditions, Weather Impacts

Interviewees are asked which types of berries they picked during the past year, salmonberries, cranberries, blueberries and/or other berries (2001-02 to 2007-08). Since 2001-02, respondents have also been asked if they got enough berries to meet their needs. For each berry that was picked, local berry harvesters are asked what kind of year is was for that particular berry. This question has been open-ended since 2001-02. Prior to this year, respondents were given the following options: exceptionally good year; pretty good year; not that good; or really bad year. If they do not make comments on how the weather affected the berry crop in question, they are prompted by the interviewer to discuss the weather.

Berry Quantities

The interviewee is given the following options in regards to berry quantity: lots; usual number; few or not many; or none. The list is either checked off by the interviewer based on the respondents' comments or it is read aloud by the interviewer.

Berry Quality

A list of berry quality characteristics is read to the respondents and the interviewer checks off all those that are applicable (e.g., sweet, juicy, mushy, cooked, dry, poor flavour, and other, which is described by the respondent).

Spatial Data

Prior to 2001-02, coloured markers were used to record observations on the questionnaire map. Only one colour was used to denote areas where respondents picked berries. These colour codes limited the amount of detail recorded on the maps. For example, there was no differentiation between types of berries on the maps. In 2001-02, map reference codes were introduced. SB is used to represent salmonberry picking locations on the map, CB for cranberries and BB for blueberries. In 2001-02, respondents were asked where they did most of their berry picking (general area, not exact location). Other years the location of berry picking activities may not have been asked directly, but the respondent often refers to the map when talking about these activities. The interviewer records these locations on the map.

Changes to the Questions Over Time

The berry questions have been asked fairly consistently since 2001-02. In 1996-97 and 1997-98, salmonberries were the only type of berry that were monitored. Crops were compared to the previous year (open-ended question). In 1997-98, salmonberry quantity, quality, and overall crop conditions were compared to the year before. These questions were all close-ended but comments were recorded if it was not an average year.

Cranberry questions were added to the questionnaire in 1998-99. Quantity and quality of

crops were open-ended only. This year it was also asked in what kind of areas did both the salmonberries and cranberries grow best.

The 1999-00 questionnaire was similar to the previous year except that one additional question about changes in plants in the area was added at the end of the berry section (it was discontinued the following year).

In 2000-01, each type of berry crop was compared to the year before. This question was close-ended but space was allotted for comments. Interviewees had the following choices: better; the same; not as good. For each type of berry, the respondent was asked if this year's crop made it hard or easy for the animals (this question was also asked in 2002-03).

The 2001-02 questionnaire asked about the terrain and conditions (dry, wet, sunny, shady) where most berries were picked.

7.0 VEGETATION CHANGE AND WATER LEVELS

Vegetation

In 1999-00, respondents were asked if there was anything else they had noticed recently about plants and changes in plants in their area.

Water Levels

In 2000-01, respondents were asked if they had observed any changes in the water levels of rivers and lakes in their region. The question is close-ended and therefore respondents chose from the following options: higher water levels; lower water levels; or no recent changes. If interviewees noticed higher water levels, they were asked to describe them and tell how they were affecting the plants and animals in their area.

Spatial Data – Vegetation Change, Permafrost and Water Levels

In 2001-02, several questions about vegetation change, water levels, and permafrost were added to the questionnaire. Participants were asked the location of unusual observations on the map (using map reference codes). Respondents were asked where and when they noticed the change in water levels and were also asked why they think it had occurred. Interviewees were asked if they noticed any changes in permafrost in the past five years. These locations were recorded on the hard copy maps using the map reference code for permafrost, "perm". Participants also noted if they had observed any other changes in where or how plants, shrubs, and trees were growing. Changes in plants and trees are recorded on the maps as "PT".

8.0 FISH

Participation and Harvesters' Needs

The interviewer records information from those who went fishing during the past year. Respondents report if they met their needs for fish for that year. If respondents did not meet their needs, they are asked if it was because there were not enough fish. If the respondent provides another reason, it is recorded on the questionnaire.

Species Harvested

Respondents select from the following list of fish, the type of fish that they fished for during the past year as well as fish that they also caught (whitefish, crooked back, herring, coney, arctic char, grayling, blue herring, loche, jackfish, lake trout and salmon).The two most important fish are recorded for each interviewee.

Spatial Data – Fishing Locations

The respondent is then asked a series of questions about the fish that were fished for. They are asked where they do most of their fishing (for each type of fish that was fished for). The general area and the exact location is either described by the interviewee or the location is marked on the map with the species name.

Harvest Numbers and Fish Quality

They are also asked about the numbers of each type of fish that were fished for (lots, some, few, or none), the size (larger than usual, average, smaller than usual), and the quality (mushier than usual, about as usual, firmer than usual). Respondents are also asked about fish parasites (lots, some, or none). If they saw parasites, they are asked to describe what they looked like. Interviewees are asked if they have general comments about the health, condition, and number of any of the fish that were fished for. They are also asked if there is anything unusual about the year's fishing for any type of fish.

Changes to Fish Questions

In 1996-97, respondents were asked what the most important fish species are for the community. Next, a series of questions were asked about each important species of fish, beginning with the most important: the number of fish this year (more than usual, about average, not as many as usual, or none this year); how this year's fishing compared with the year before; and comments on the quality of the fish. Quality-related comments were asked in regard to firmness of flesh and taste. Respondents were also asked if there were any observations of unusual livers. These questions are asked for each of the three most important species of fish identified by each interviewee.

In 1997-98, respondents were asked if they did any fishing last year. They were also asked what the two most important kinds of fish that they used were (instead of an unlimited number as was asked the previous year). The questions that follow are asked in relation to the two most important species of fish as noted by the respondent: the number of each type of fish this past spring and this past year compared with an average year (were there: a lot more; an average year; a below average year); unusual observations about where fish were located or the way they

moved during the past year (for migratory fish; the firmness of the flesh (usual or unusual); the taste (usual or unusual); liver problems (usual or unusual); and parasites (usual or unusual).

In 1998-99, the two most important types of fish are recorded, but the questions about the two types of fish changed. The size, parasites, liver descriptions, colour, firmness of flesh and taste of the fish were asked of respondents but these were changed to all open-ended questions. In addition, respondents were asked if they think the fish are healthy and why or why not. Also, if the respondent selected herring, salmon or char as one of their two most important fish, they are asked about the timing and location of the run.

Since 1998-99, respondents who fished for or caught loche were asked if they saw any unusual livers during the past year. In 1998-99, respondents were only asked one specific question about loche. They were asked if they thought the loche in the area were healthy.

In 2000-01, respondents were not asked questions only about their two most important fish, but were instead asked about the numbers of fish (lots, few, some, or none), the timing of the run (early, normal, late), size of fish (larger than usual, average size, smaller than usual), firmness (very firm, normal, mushy), parasites (lots, some, none), and colour (good or unusual). Respondents were also asked for general comments about health, condition, numbers, and unusual observations for each of these fish. 2000- 01 was also the first year that interviewees were asked if they met their needs for fish during the past year (and if not, why). The Coop also recorded how not meeting their needs affected their way of life.

The fish section in 2001-02 was very similar to 2000-01, but in addition to the questions about each type of fish listed previously, the number of unusual loche livers, where they were caught (either a description of the location or it is marked on the map using the map reference code “LL”), and the description of unusual loche livers.

In 2002-03, respondents who didn’t go fishing but usually go fishing were asked the main reason why they did not fish during the past year. Respondents were asked which of the following fish they caught or tried to catch this past year (whitefish, crooked back, herring, coney, artic char, grayling, or loche). Each of the fish had a separate sheet of questions. They were also asked what other fish they caught during the past year: jackfish; lake trout; salmon (and type of salmon if known by the respondents); and other fish not listed

Two specific fish questions were added in 2004-05 as a result of salmon being caught in the Mackenzie system and also larger than usual jackfish being caught by local fishermen. Since 2004-05, descriptions of loche livers are recorded as well as the number of loche that had unusual livers and how many loche were caught in total. In addition, respondents either describe the location where the loche with the unusual livers were caught or the location is marked on the questionnaire map using the map reference code “LL”.

Since 2004-05, all respondents who went fishing during the past year are asked if there have been changes in jackfish over the past five years or so. Respondents from Fort McPherson, Tsiighetchic, and Inuvik (Gwich'in and Inuvialuit) have been asked since 2004-05 about salmon being caught in the Mackenzie system. If the respondent caught salmon in the area during the past year, they are asked what kind of salmon they were (Dog, King, or Silver), and where they were caught. People either describe this location or record it on the hard copy map using the species name or the map reference code "SALM". Next, they are asked if the salmon were silvery, if the flesh was firm and good to eat and what they think is causing salmon to start coming into the area.

9.0 CARIBOU

Caribou Availability

To begin, respondents are asked about the availability of caribou to their community during the hunt last spring, fall and winter (close by and easily found, not close, or not at all available). If interviewees did not hunt caribou during the spring, fall, or winter, they are asked to explain why they did not hunt (caribou were too far away to try hunting them, weather or snow conditions were too bad for hunting, or other reasons).

Caribou Migration

Respondents are asked to describe the migration of caribou during the spring and fall and the caribou's movements during the winter

Harvesters' Needs

They are also asked whether they got enough caribou in the spring, fall and winter to meet their seasonal caribou needs.

Weather and Other Factors Affecting Caribou Location, Feeding and Travel

Also recorded is whether the location of caribou during the winter was affected by anything in particular. Respondents then elaborate and describe which of the following affected where the caribou have been since the beginning of the rut (snow conditions, too much snow, not much snow, wind, ice conditions, other weather conditions, poor feed areas, good feed areas, wolves or other predators, human activity, or other). Respondents often select more than one of these options. Next, respondents are asked to describe the spring snow conditions. They are asked if the snow was: sugary snow; hard, icy snow; or other. Interviewees are also asked if the snow last spring made it hard or easy for caribou to dig for food and feed. In addition, they are asked if spring snow conditions made it easy of difficult for caribou to travel.

Caribou Body Condition

Next, based on their harvest since the beginning of the rut, interviewees are asked if the caribou were in good shape (lots of rump fat), in fair condition (some back fat, but less than one

inch), in poor/skinny shape (little or no rump fat or gut fat), if there was a mix of some skinny and some poor, or respondents can simply state that they do not know. The body condition of caribou is recorded not only for winter, but also for the spring and fall. Body condition has been recorded in this manner since 1998-99. However, from 1998-99 to 2000 body condition was recorded separately for cows and bulls. If there was anything unusual to report about these animals' body condition in the spring, fall or winter, this information is also recorded.

Porcupine Caribou Herd Health

Respondents have been asked if they think the Porcupine caribou herd is healthy since 1998-99. If they answer "no" to the previous question, then they are asked to explain why they do not think the herd is healthy.

Predator Kills

Since 2001-02, interviewees have been asked if they saw any kills of caribou by predators this past year. If they answer "yes", respondents are asked where they saw the predatory kills (the location is either described or it is recorded on the questionnaire map using the map reference code "KILL") as well as the type of predator (e.g., wolves, bears, wolverines, or other) and the number of kills.

Location of Unhealthy or Sick Caribou

Respondents are also asked to describe the unhealthy or sick caribou that they either harvested or observed. The location of sick caribou, where possible, are either described or marked on the maps using the code "UC". The sex and age class of the sick caribou, as well as the malady, are all explained by the interviewee.

Calves

Information about calves is also recorded on the questionnaire and accompanying map. Respondents are asked if they have seen any caribou with new calves since June. Observations are recorded on the map. The date that the calves were seen, the number of cows with calves, and the type of land where they were seen (e.g., ridge tops, valley bottoms, boulder fields, shorelines, frozen lakes, water crossings, other) are all recorded by the interviewer. Next, in relation to calves, respondents are asked if anything in particular affected where caribou calved last spring (snow conditions, too much snow, not much snow, wind, ice conditions, other weather conditions, poor feed areas, good feed areas, predators, human activity, or other).

Caribou Harvest Numbers

Respondents used to be asked how many caribou they harvested from last April until now. It was first asked in 2000-01.

Number of Caribou Seen and Direction of Travel

Finally, there is an important table for fall, spring, and winter observations. The interviewer fills in the tables based on what the interviewees answers. In each table, the date the

caribou were seen, the direction they were moving, the number seen [just a few caribou, lots (50 to 100), LOTS (100 to 500), and REALLY LOTS (more than 500)], the composition of the group (bulls, cows, cows with calves, mixed groups), and general comments about the conditions observed by respondents.

Changes to the Caribou Questions

When the interviews first began, respondents were asked when caribou were available to the community over the past year: spring; fall; winter. They were asked about the number of caribou (lots, some, only a few) and the condition of bulls and the condition of cows (unusually fat, about average, unusually thin). These questions were asked in regard to last spring, last fall, and the current winter season. They were also asked where hunters were finding caribou and how the caribou migrated during the past year (described as a story, beginning with the caribou's first appearance in the spring and through to their choice of winter grounds). Respondents were also asked about antlers (unusually large, about average, unusually small and if they noticed anything unusual about antler shedding in late summer or antler drop in late fall), calves (their size, antler growth, and numbers compared to the year before), and warble flies (lots, about normal, very few).

In 1997-98, respondents were asked to describe the herd's fall migration as well as their migration north during February and March. Using the map, "C" was used to represent cows and "B" for bulls. Observations were broken down into summer, fall, and winter. Body condition of bulls and cows were recorded (similar to 1996-97). The number of caribou in the winter were added to the interview (e.g., unusually high number, average number, or unusually low number of caribou for winter).

In 1997-98, respondents were asked about the abundance of warble flies on the hides (lots, about normal, or very few fly larva).

In 1998-99, there were a lot of changes to the format of the caribou questions. Respondents were asked to document (using the map) where caribou were from July to November 1, when they were in each of these areas, their direction of travel, and the number of caribou in the groups, the composition of the groups (cows, bulls, or mixed), the weather and snow conditions, and human activities. These questions were also asked for the winter season (from November 1 until the date of the interview). Added to the questionnaire was whether the Porcupine caribou's body condition has changed in the past five years (don't know/can't tell, better shape, about the same, worse shape). Respondents were also asked if they thought there had been a decrease in the herd's numbers and why they thought there were fewer caribou.

In 1999-00, interviewees were asked if they had noticed anything about the past five springs (March to May) that may have affected the survival of caribou. Also, interviewers informed participants that March, April, and May have slowly been getting warmer over the past 30 years. Respondents were asked how this might be affecting the caribou herd. In 2000-01, the

caribou section went through a lot of changes. The caribou questions have since remained fairly consistent.

10.0 OTHER ANIMALS

Unusual Animals, Unusual Locations

To begin, respondents report if they saw any unusual animals during the past year (including birds, fish, and insects). They are also asked if they saw animals in places where they do not usually see them.

Other Animals, Pertinent Information, Spatial Data

Next, the interviewer goes through a list of animals, beginning with birds, and records any information that the respondent feels important to mention. For example, numbers of animals, where they were this year, diseases, if these animals are having an effect on other animals, as well as anything that is unusual or changing about these animals. If the interviewee gives a location on the map related to an animal observation, the interviewer marks it on the map, using the map reference code for that animal (or the name of the animal if it given by the respondent). For example, the interviewee may have discussed a certain type of duck, such as an eider or a mallard, or simply ducks in general.

List of Animals

The following is the list of animals included in the monitoring program: grouse and ptarmigan; waterfowl (ducks, cranes, geese and swans); birds of prey (eagles, hawks, owls, falcons); small birds (the name of the bird of a description of the bird is given by the respondent); mosquitoes (comments on the number of bugs last summer are reported (worse than other years, about normal, fewer bugs than usual); mice, voles and lemmings; ground squirrels; rabbits (lots, few, more)' moose; muskrats; beavers; marten, mink, or weasels; muskoxen (number seen, location, and approximate date); wolverines; red and white fox; lynx; bears (also recorded are the number and location of bear cubs); and wolves.

The list of other animals was fairly short when the monitoring program first began in 1996-97. In 2002-03, eagles were added to the list of birds of prey, cranes were added to the list of waterfowl. Red and white fox, wolverines, muskrats, ground squirrels and bear cubs were also added. In 2003-04, mice, voles, lemmings, beavers, and marten, mink or weasels.

11.0 FURBEARERS AND TRAPPING

Fur Quality

From 1996-97 to 1998-99, there was only one question related to furbearers and trapping. Respondents reported about the quality of furs during the past year (which furs seemed to be in good shape and which in poor shape).

Trapping Productivity, Factors Affecting Productivity, Number of Furbearers, Fur Quality

In 2000-01, respondents discussed it if was a good or bad year, but perhaps more importantly, what made it a good year (e.g., price for fur, weather – warm/cold, lots/few or hard to find animals). Interviewees also reported on the various types of fur, number of animals (lots, some, few), and conditions of furs during the past year.

Fur Quality, Target Species, Number of Furbearers, Spatial Data

Since 2001-02 the conditions of furs have been posed as a close-ended question (poor, fair, prime, other). Some of the questions are only asked to those who were out trapping during the past year. The animal that was trapped, the number of animals (lots, some, few) and the conditions of furs (poor, fair, prime, other) are recorded on the questionnaire. If the respondent uses the map to describe their trapping activities, the interviewee records this information on the questionnaire map and labels it with the map reference code FR.

12.0 MARINE MAMMALS

Marine mammals have been monitored by the Coop since 1996-97, when the community monitoring program first began. Whales were included in the list of monitored animals for the community of Aklavik. However, in 1996-97, there was no section in the questionnaire dedicated solely to the monitoring of marine mammals.

Observations Recorded

Unusual sightings, interesting observations, changes in populations, diseases, strange habitat-use patterns, locations, and dates (where possible) are examples of the types of observations that were recorded.

In 1998-99, seals were added to Aklavik's list of monitored animals. Respondents were also asked if they had any other observations about other animals, not included in the list of monitored animals.

In 2000-01, questions about whales became more specific. Comments about whales, the locations of sightings, the number of observed whales, as well as anything unusual about whales, were all recorded on the questionnaire and hard copy map. These same questions were also asked about seals.

In 2001-02 the marine mammal questions asked of Aklavik and Inuvik respondents (the community of Inuvik became part of the monitoring program in 2001- 02) became even more

specific. There were now separate questions about beluga and bowhead whales. The location of sightings, the number of whales in a group, the timing of the migration of whales into an area and out of an area (early, normal, late), as well as anything unusual about whales were all recorded by the interviewer. The spatial information about whales also became more specific. Separate map reference codes were assigned for beluga (BG) and bowhead (BH) whales. Information regarding seals also became more detailed. The location of seal sightings, the species of seal (Ringed, Bearded, or Spotted), the number of seals, the thickness of the blubber (thin, normal, thick), and anything unusual about seals were all asked of the interviewees from Aklavik and Inuvik. The map reference code "SL" was used to record spatial information about seals, although sometimes the species name was also recorded on the maps.

Since 2003-04 a section of the interview has been dedicated to marine mammal observations. The questions listed previously were asked of Kaktovik and Tuktoyaktuk residents in regard to beluga and bowhead whales, but there were no longer specific questions about bowhead whales asked of Aklavik and Inuvik participants. Instead, the latter two communities were simply asked if they had any observations about bowhead whales. Those who hunted beluga whales were also asked to comment on the thickness of the blubber (thin, average, thick). The seal questions listed previously were asked of Kaktovik and Tuktoyaktuk respondents but Aklavik and Inuvik participants were simply asked if they had any seal observations to report.

13.0 EVALUATION

Recommendations by participants are also an important component of the Coop's monitoring program. When the interviews first began in 1996-97, interviewees were not asked for their opinion of the program, nor were they asked how to improve it.

In 1998-99, at the end of the interview, interviewers asked respondents if there were questions that should have been asked that were not. In 1998-99, respondents were also asked if they were getting the information they needed about environmental issues and natural resources. Information that is unavailable to respondents but deemed important was also recorded by the interviewer. Respondents were informed that this monitoring is conducted every year and were asked for their input on how to improve the interview.

In 2001-02, respondents were still asked if there were any questions that should be added to the interview and what the Coop could do to make it better, but they were also asked to evaluate the Arctic Borderlands Knowledge Co-op community monitoring program by selecting one of the following four choices: it is worthwhile and needs to be continued; the idea is good, but it needs some major changes; it is okay, but is not really that necessary; or it is really a waste of time and money and should be ended.

Since 2003-04, interviewees are no longer asked if there are questions that should have been asked. However, respondents are still asked how to improve the interview and also to evaluate the monitoring program.

APPENDIX B:

DATA RETRIEVAL RESULTS

1.0 INTERVIEWEE PROFILES

1.1 Total number of Interviews Conducted Per Year

Between 1996-97 and 2006-07, a total of 205 interviews were conducted. The number of interviews conducted per year is summarized in Table 1 and Figure 1. The yearly total of interviews ranged from 11 (1996-97) to 23 (1998-99).

Table 1. Total number of interviews conducted per year.

Interview Year	No. of Interviews
1996-97	11
1997-98	20
1998-99	23
1999-00	20
2000-01	21
2001-02	20
2002-03	16
2003-04	20
2004-05	20
2005-06	20
2006-07	14
Total	**205**

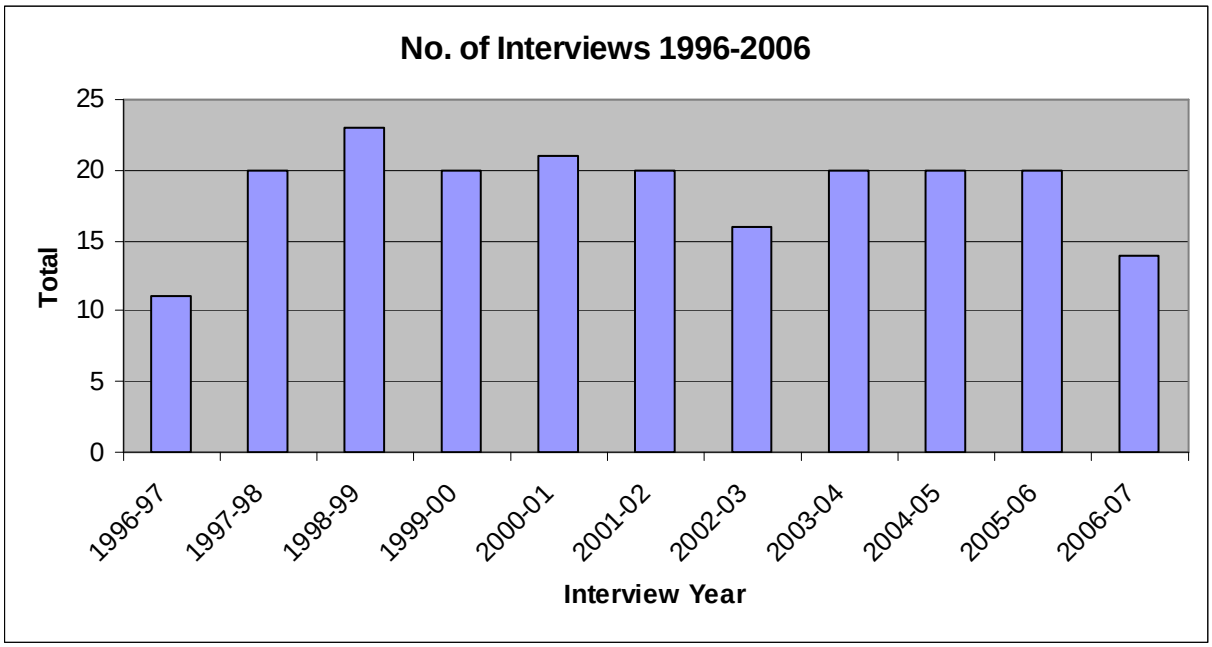

Figure 1: **Total number of interviews conducted per year.**

Information regarding sex of interviewee/type of interview conducted and interviewee age were used to develop interviewee profiles. The sex of interviewees (male or female) was recorded for 2000-01 to 2003-04, with the type of interview conducted (individual or couple) recorded for 2005-06 and 2006-07. The age of interviewees was recorded for 1996-97 and 1999-00 to 2006-07 using three age categories: Less than 30 years, Between 30 and 50, and Older than 50. If a couple was interviewed, the birth date of the oldest person was recorded.

Information regarding the number of interviewees who responded to questions relating to caribou was also recorded. Six categories of caribou questions were included in interviews conducted from 1996 to 2006:

- caribou
- caribou spring
- caribou summer
- caribou fall
- caribou winter
- caribou other

1.2 Sex of Interviewees and Type of Interview Conducted

Tables 2a and 2b and Figures 2a and 2b present the results of the analysis of output from the database regarding the sex of interviewees and type of interview conducted. From 2000-01 to

2003-04, a simple count of *Male* or *Female* was obtained using a checkbox on the cover of the questionnaire. From 2005-06 to 2006-07, the checkbox on the cover of the questionnaire related to interview type (*Individual* or *Couple*). In 2002-03, records were entered into the database as *Male*, *Female*, or *Couple*, consequently, these data were separated for the purpose of analysis: *Male* and *Female* responses were re-classified as *Individual* when the type of interview conducted was assessed. No information was recorded in the database for 2004-05.

Table 2a. Sex of interviewees.

Year	Male	%	Female	%	Total
2000-01	16	80.0%	4	20.0%	20
2001-02	15	75.0%	5	25.0%	20
2002-03	9	75.0%	3	25.0%	12
2003-04	17	89.5%	2	10.5%	19
Total	**57**	**80.3%**	**14**	**19.7%**	**71**

Figure 2a: Sex of interviewees

As shown in Table 2a, a total of 71 individuals[2] indicated whether they were *Male* or *Female*. Figure 2a illustrates that the overwhelming majority of these were *Male*, in all interview years. When all years were considered together, 80.3% of interviewees were *Male*, 19.7% were *Female*. *Male* interviewees represented between 75% (2001-02, 2002-03) and 89.5% (2003-04) of yearly respondents.

Table 2b. Type of interview conducted.

Year	Individual	%	Couple	%	Total
2002-03	12	75.0%	4	25.0%	16
2005-06	18	90.0%	2	10.0%	20
2006-07	13	100.0%	0	0.0%	13
Total	**43**	**87.8%**	**6**	**12.2%**	**49**

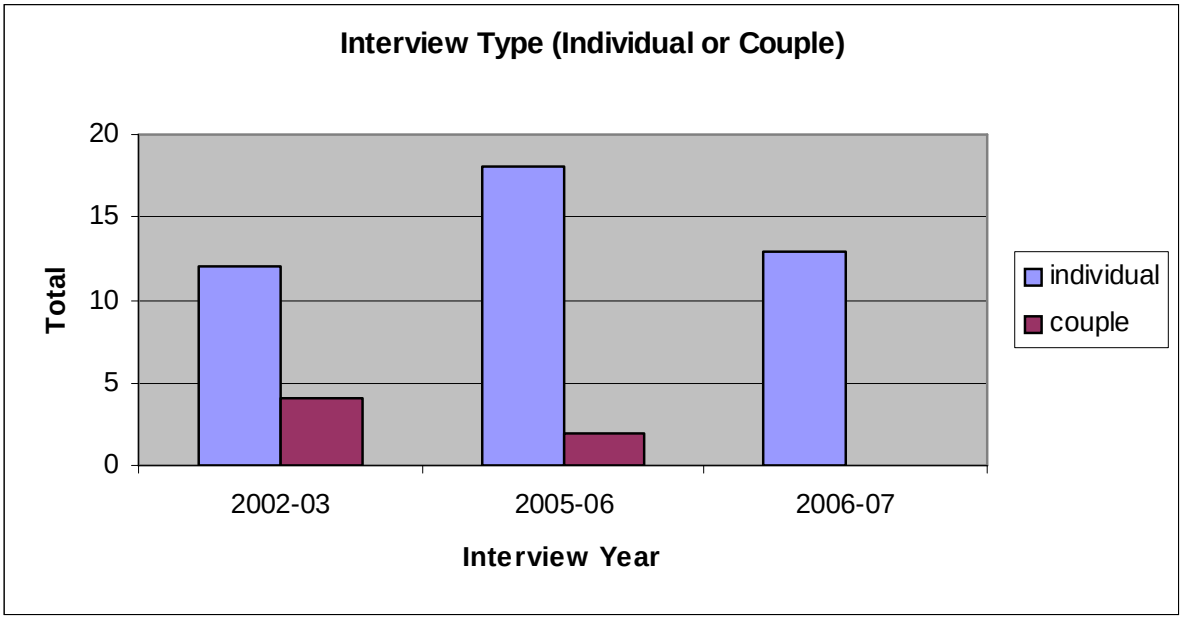

Figure 2b: Type of interview conducted

Table 2b and Figure 2b demonstrate the type of interview conducted during 2002-03,

[2] Two records entered as "individual" were removed from the database (2000-01 and 2003-04).

2005-06 and 2006-07. Of the 49 interviews for which this information was available, the vast majority (87.8%) were conducted with *Individual* respondents. No *Couples* were represented in interviews conducted during 2006-07.

1.3 Age of Interviewees

QUESTION: What year were you born? (if a couple was interviewed, the birth date of the oldest person was recorded).

The question could be answered with one of three options:

- Less than 30 years
- Between 30 and 50
- Older than 50

Table 3 and Figure 3 present the results of the analysis of output from the database regarding this question:

Table 3. Age of interviewees.

Year	Less than 30 years	%	Between 30 and 50	%	Older than 50	%	Total
1996-97	0	0.0%	2	40.0%	3	60.0%	5
1999-00	0	0.0%	8	40.0%	12	60.0%	20
2000-01	0	0.0%	8	40.0%	12	60.0%	20
2001-02	2	10.0%	6	30.0%	12	60.0%	20
2002-03	0	0.0%	4	26.7%	11	73.3%	15
2003-04	2	10.0%	6	30.0%	12	60.0%	20
2004-05	1	6.7%	5	33.3%	9	60.0%	15
2005-06	3	15.0%	10	50.0%	7	35.0%	20
2006-07	4	28.6%	4	28.6%	6	42.9%	14
Total	**12**	**8.1%**	**53**	**35.6%**	**84**	**56.4%**	**149**

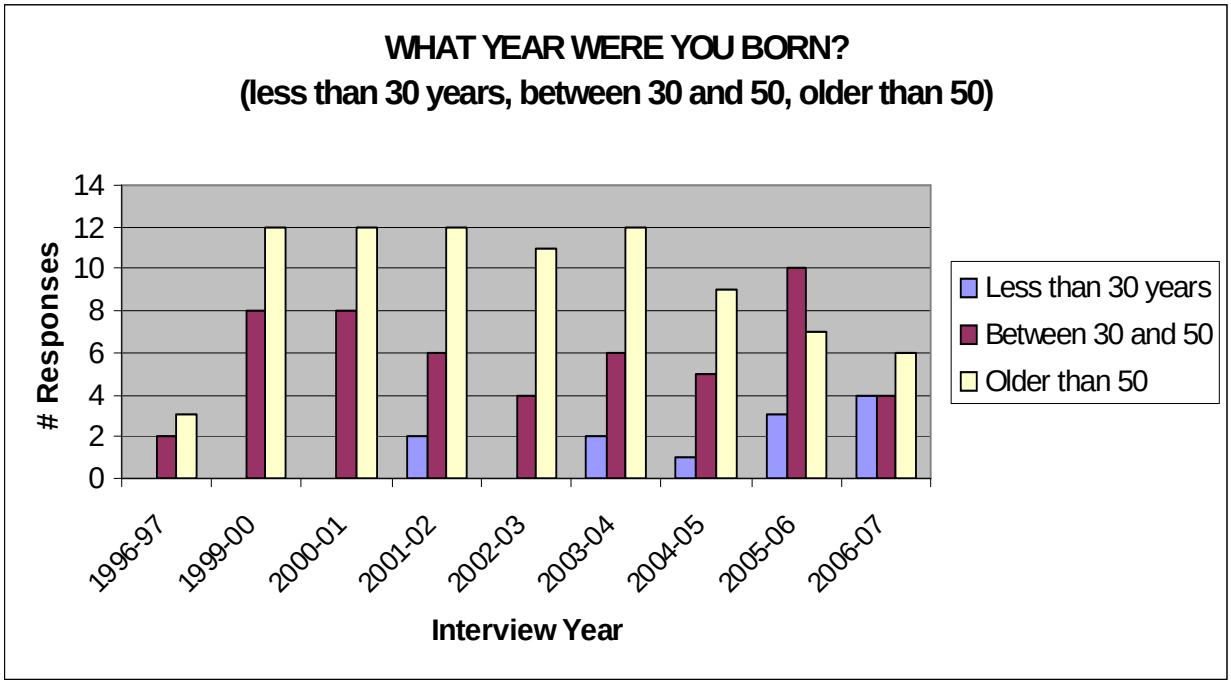

Figure 3: Age of interviewees

The output was extracted for a total of nine years: for 1996-97, and 1999-00 to 2006-07. As summarized in Table 3 and illustrated in Figure 3, a total of 149 responses were received during interviews, ranging from 5 to 20 responses per year. The aggregate of all responses demonstrated that 8.1% of interviewees were *Less than 30 years*, 35.6% of interviewees were *Between 30 and 50*, and 56.4% of interviewees were *Older than 50.*

As Table 3 and Figure 3 demonstrate, the majority of interviewees were consistently *Older than 50* in all interview years, with the exception of 2005-06. In 2005-06, the majority (50.0%) of interviewees were *Between 30 and 50*, with those categorized as *Older than 50* representing 35.0% of individuals interviewed during that year. Respondents categorized as *Older than 50* ranged from 42.9% (2006-07) to 73.3% (2002-03) in all other years.

Very few interviewees were categorized as *Less than 30 years*. No individuals in this age category were interviewed during 1996-97, 1999-00, 2000-01, or 2002-03. In other interview years, those categorized as *Less than 30 years* represented between 6.7% (2004-05) and 28.6% (2006-07) of respondents. During the last two years of interviews (conducted in 2005 and 2006) a slight increase in the number of respondents who were *Less than 30 years* was observed.

1.4 Interviews Relating to Caribou

Information regarding the number of interviews conducted per year was assessed using a simple count. A total of 205 interviews were conducted over an eleven year period, from 1996-97 to 2006-07. Six categories relating to caribou were included in the interviews, with *True*[3] indicating the box was checked off and the questionnaire relating to that category completed:

- caribou
- caribou spring
- caribou summer
- caribou fall
- caribou winter
- caribou other

The summary of results for each of these categories is presented in Tables 4a to 4f and Figures 4a to 4f.

Table 4a. Number of interviews conducted for *caribou*.

Year	TRUE	%	FALSE	%	Total
1996-97	10	90.9%	1	9.1%	11
1997-98	13	65.0%	7	35.0%	20
1998-99	0	0.0%	23	100.0%	23
1999-00	0	0.0%	20	100.0%	20
2000-01	0	0.0%	21	100.0%	21
2001-02	8	40.0%	12	60.0%	20
2002-03	10	62.5%	6	37.5%	16
2003-04	14	70.0%	6	30.0%	20
2004-05	15	75.0%	5	25.0%	20
2005-06	18	90.0%	2	10.0%	20
2006-07	14	100.0%	0	0.0%	14
Total	**102**	**49.8%**	**103**	**50.2%**	**205**

[3] Presumably, *False* indicates that information relating to a particular category was not obtained.

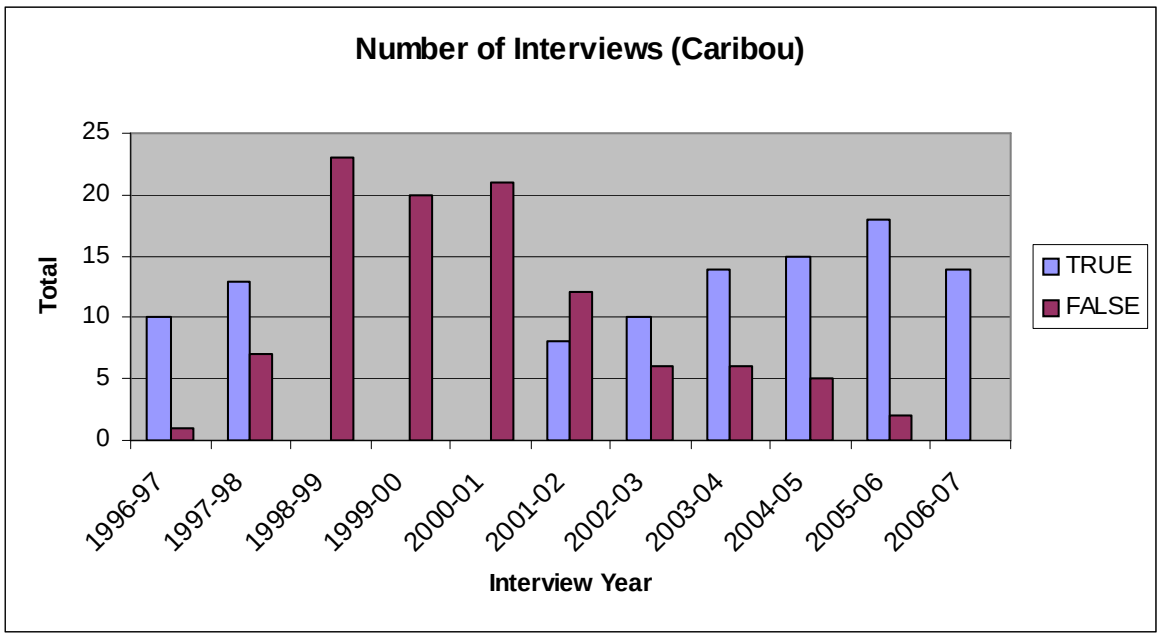

Figure 4a: Number of interviews conducted for *caribou*

As demonstrated in Table 4a and Figure 4a, the number of interviews conducted for the category *caribou* varied, ranging from no responses obtained during 1998-99 to 2000-01, to 18 questionnaires completed in 2005-06. In total, 102 interviews (49.8%) were conducted for the category *caribou* between 1996-97 and 2006-07.

Table 4b . Number of interviews conducted for *caribou spring*.

Year	TRUE	%	FALSE	%	Total
1996-97	0	0.0%	11	100.0%	11
1997-98	0	0.0%	20	100.0%	20
1998-99	0	0.0%	23	100.0%	23
1999-00	0	0.0%	20	100.0%	20
2000-01	16	76.2%	5	23.8%	21
2001-02	6	30.0%	14	70.0%	20
2002-03	3	18.8%	13	81.3%	16
2003-04	7	35.0%	13	65.0%	20
2004-05	10	50.0%	10	50.0%	20
2005-06	16	80.0%	4	20.0%	20
2006-07	13	92.9%	1	7.1%	14
Total	**71**	**34.6%**	**134**	**65.4%**	**205**

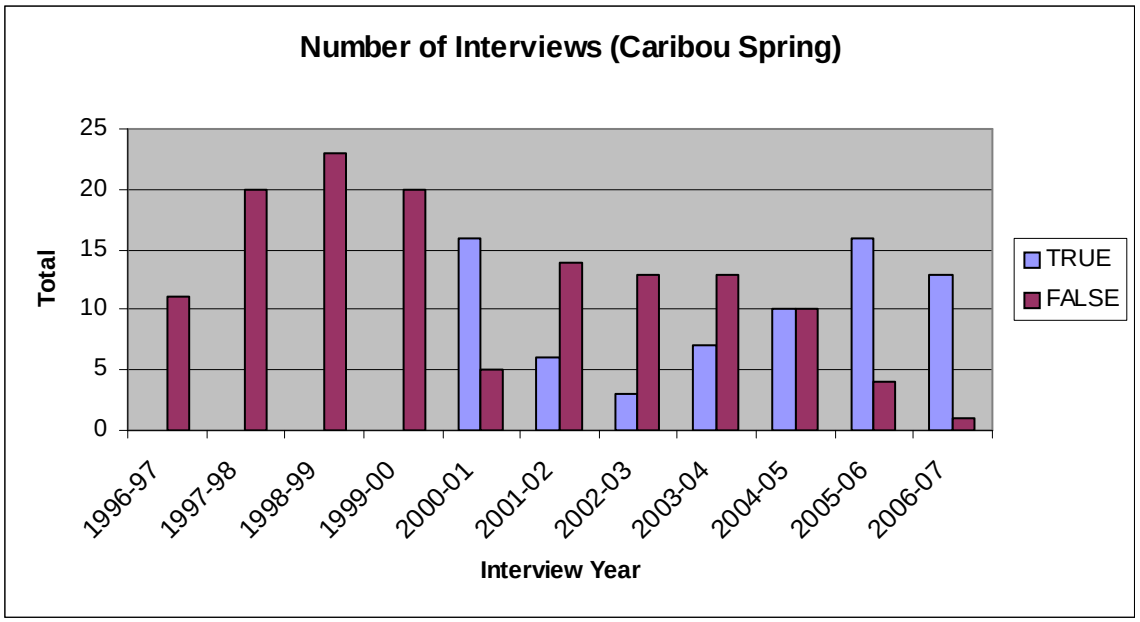

Figure 4b: Number of interviews conducted for *caribou spring*

As demonstrated in Table 4b and Figure 4b, the number of interviews conducted for the category *caribou spring* varied, ranging from no responses obtained between 1996-97 and 1999-00, to 16 questionnaires completed in 2000-01 and 2005-06. In total, 71 interviews (34.6%) were conducted for the category *caribou spring* between 2000-01 and 2006-07.

Table 4c. Number of interviews conducted for *caribou summer*.

Year	TRUE	%	FALSE	%	Total
1996-97	7	63.6%	4	36.4%	11
1997-98	0	0.0%	20	100.0%	20
1998-99	0	0.0%	23	100.0%	23
1999-00	0	0.0%	20	100.0%	20
2000-01	0	0.0%	21	100.0%	21
2001-02	0	0.0%	20	100.0%	20
2002-03	0	0.0%	16	100.0%	16
2003-04	0	0.0%	20	100.0%	20
2004-05	0	0.0%	20	100.0%	20
2005-06	0	0.0%	20	100.0%	20
2006-07	0	0.0%	14	100.0%	14
Total	**7**	**3.4%**	**198**	**96.6%**	**205**

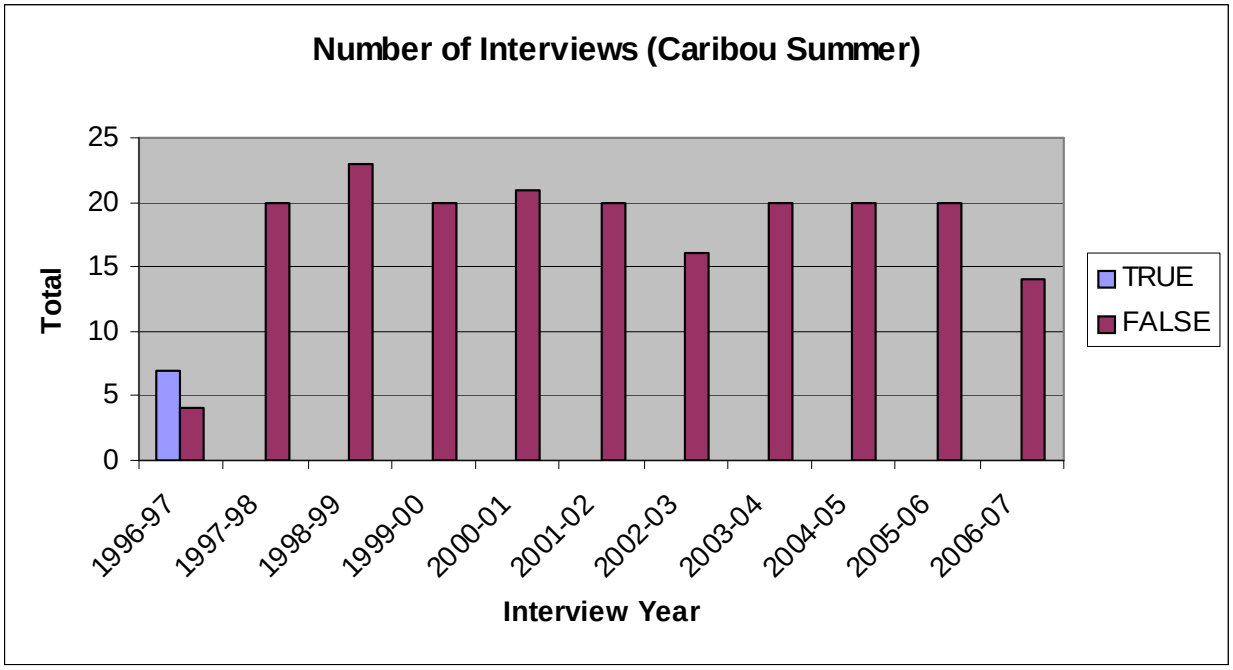

Figure 4c: Number of interviews conducted for *caribou summer*

As demonstrated in Table 4c and Figure 4c, very few interviews were conducted for the category *caribou summer*. Only seven questionnaires were completed for this category during 1996-97, representing 3.4% of the total number of interviews conducted between 1996-97 and 2006-07.

Table 4d. Number of interviews conducted for *caribou fall*.

Year	TRUE	%	FALSE	%	Total
1996-97	10	90.9%	1	9.1%	11
1997-98	9	45.0%	11	55.0%	20
1998-99	21	91.3%	2	8.7%	23
1999-00	17	85.0%	3	15.0%	20
2000-01	15	71.4%	6	28.6%	21
2001-02	4	20.0%	16	80.0%	20
2002-03	6	37.5%	10	62.5%	16
2003-04	7	35.0%	13	65.0%	20
2004-05	13	65.0%	7	35.0%	20
2005-06	14	70.0%	6	30.0%	20
2006-07	14	100.0%	0	0.0%	14
Total	**130**	**63.4%**	**75**	**36.6%**	**205**

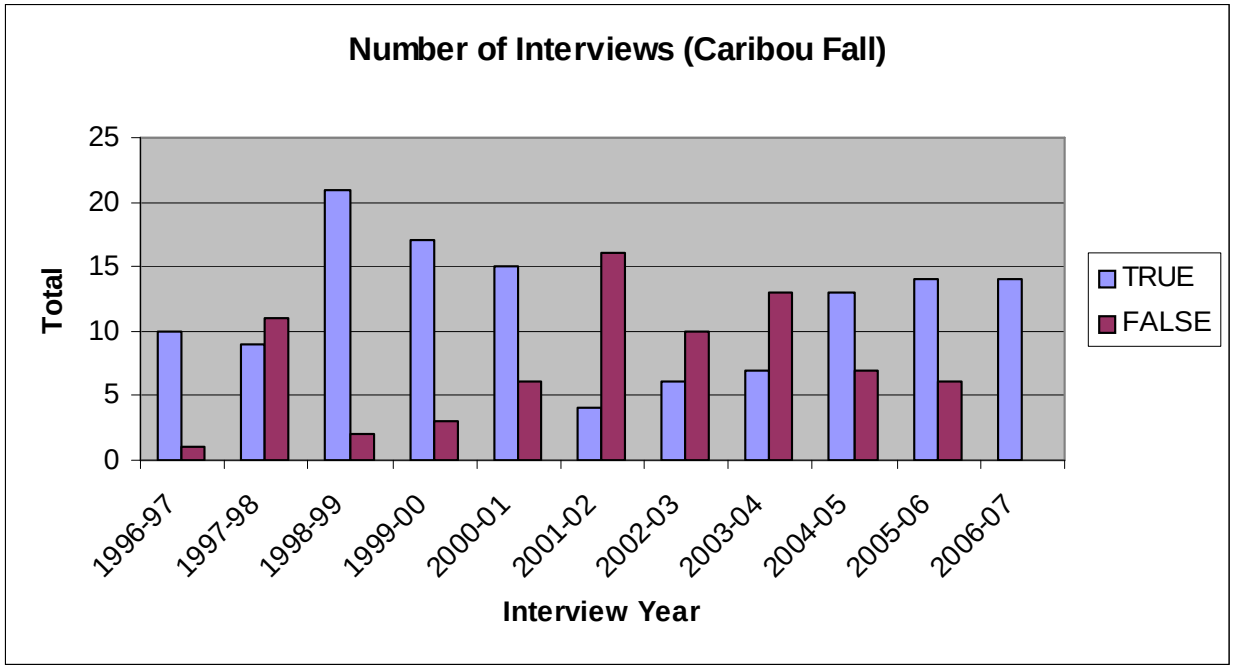

Figure 4d: Number of interviews conducted for *caribou fall.*

As demonstrated in Table 4d and Figure 4d, the number of interviews conducted for the category *caribou fall* varied, ranging from four questionnaires completed in 2001-02, to 21 questionnaires completed in 1998-99. In total, 130 interviews (63.4%) were conducted for the category *caribou fall* between 1996-97 and 2006-07.

Table 4e. Number of interviews conducted for *caribou winter*.

Year	TRUE	%	FALSE	%	Total
1996-97	4	36.4%	7	63.6%	11
1997-98	12	60.0%	8	40.0%	20
1998-99	16	69.6%	7	30.4%	23
1999-00	11	55.0%	9	45.0%	20
2000-01	15	71.4%	6	28.6%	21
2001-02	0	0.0%	20	100.0%	20
2002-03	1	6.3%	15	93.8%	16
2003-04	5	25.0%	15	75.0%	20
2004-05	3	15.0%	17	85.0%	20
2005-06	5	25.0%	15	75.0%	20
2006-07	13	92.9%	1	7.1%	14
Total	**85**	**41.5%**	**120**	**58.5%**	**205**

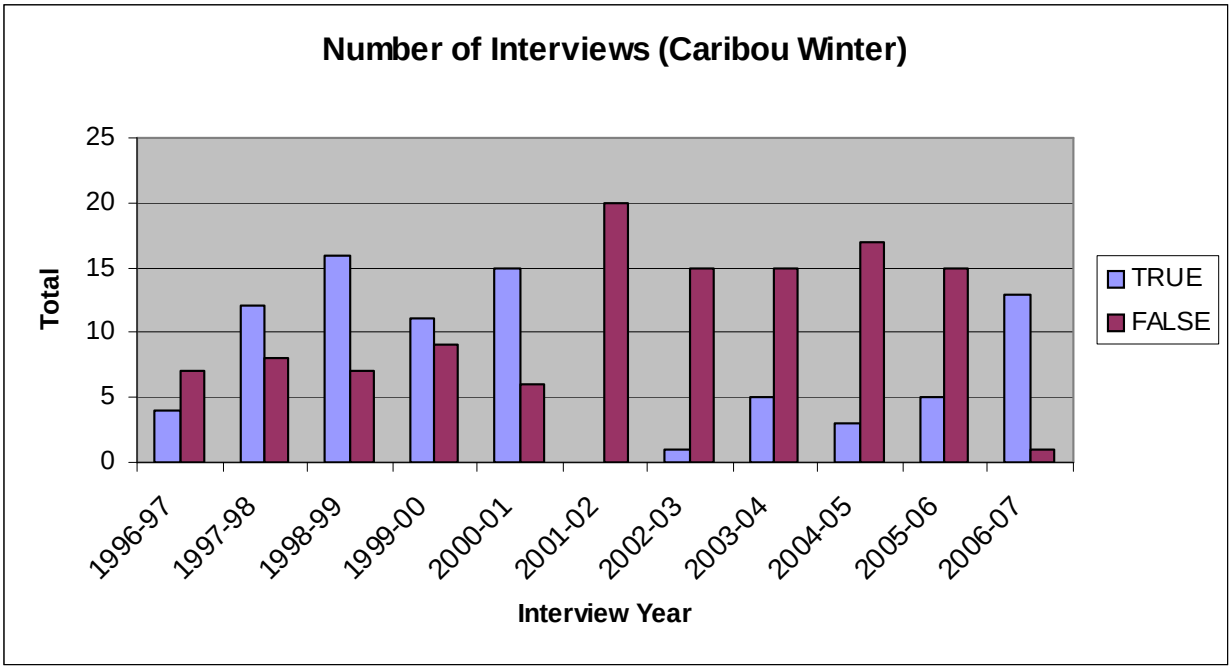

Figure 4e: Number of interviews conducted for *caribou winter*

As demonstrated in Table 4e and Figure 4e, the number of interviews conducted for the category *caribou winter* varied, ranging from no responses obtained during 2001-02, to 16 questionnaires completed in 1998-99. In total, 85 interviews (41.5%) were conducted for the category *caribou winter* between 1996-97 and 2006-07.

Table 4f. Number of interviews conducted for *caribou other*.

Year	TRUE	%	FALSE	%	Total
1996-97	0	0.0%	11	100.0%	11
1997-98	0	0.0%	20	100.0%	20
1998-99	20	87.0%	3	13.0%	23
1999-00	18	90.0%	2	10.0%	20
2000-01	17	81.0%	4	19.0%	21
2001-02	6	30.0%	14	70.0%	20
2002-03	6	37.5%	10	62.5%	16
2003-04	12	60.0%	8	40.0%	20
2004-05	4	20.0%	16	80.0%	20
2005-06	20	100.0%	0	0.0%	20
2006-07	14	100.0%	0	0.0%	14
Total	**117**	**57.1%**	**88**	**42.9%**	**205**

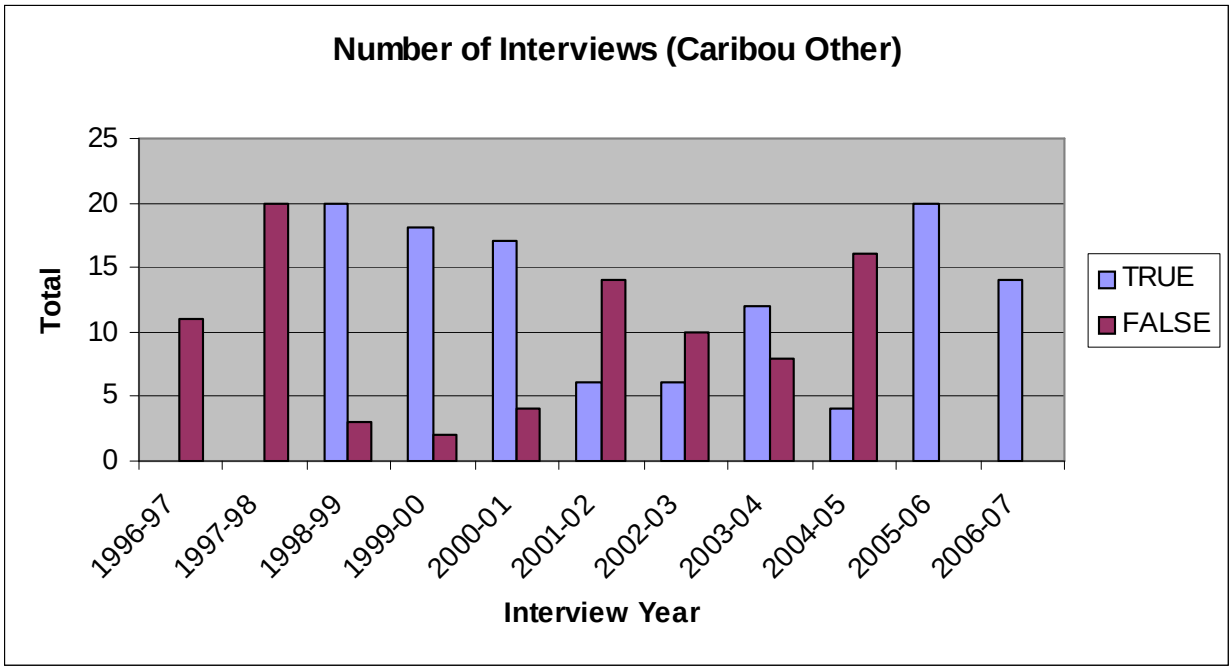

Figure 4f: Number of interviews conducted for *caribou other*

As demonstrated in Table 4f and Figure 4f, the number of interviews conducted for the category *caribou other* varied, ranging from no responses obtained in either 1996-97 or 1997-98, to 20 questionnaires completed in both 1998-99 and 2005-06. In total, 117 interviews (57.1%) were conducted for the category *caribou other* between 1996-97 and 2006-07.

Summary

Six categories relating to caribou were included in interviews conducted between 1996-97 and 2006-07. Between years, the number of questionnaires completed for individual categories ranged from zero to 21. Very little information was obtained for the category *caribou summer*. Only seven questionnaires were completed for this category, all within one interview year (1996-97).

Excluding *caribou summer*, the total of completed questionnaires for each caribou category ranged from 34.6% (71 of 205 interviews for *caribou spring*) to 63.4% (130 of 205 interviews for *caribou fall)* of interviews conducted during the eleven year period.

1.5 Time on the Land

QUESTION:

1998-99 to 2001-02: How much time did you spend on the land this past year from July 1 through December? Did you: only take day trips from town, take day trips with occasional overnights, were you on the land for a week or more at a time, or did you spend more than half of your time out of town on the land?

2002-03 to 2006-07: I'd like you to think back to how much time you've spent out on the land this past year, from April until the end of December. Did you: only take day trips from town, take day trips with occasional overnights, were you on the land for a week or more at a time, or did you spend more than half of your time out of town on the land?

For each of the variations, the question could be answered with one of four options:

- Day trips
- Day trips with overnights
- Week or more at a time
- More than half the time on the land

Table 5 and Figure 5 present the results of the analysis of output from the database regarding this question, which was varied slightly beginning in 2002:

The output was extracted for nine years, from 1998-99 to 2006-07. As summarized in Table 5 and illustrated in Figure 5, a total of 171 responses were received during interviews conducted from 1998 to 2006, ranging from 14 to 23 responses per year. The aggregate of all responses resulted in 7.6% categorized as *Day trips*, 17.0% categorized as *Day trips with overnights*, 31.0% categorized as *Week or more at a time*, and 44.4% categorized as *More than half the time* on the land.

Between 1998-99 and 2002-03, the majority (>56.5%) of interviewees indicated that they spent either a *Week or more at a time*, or *More than half the time on the land*. After 2003-04, a large majority of respondents indicated that they spent *More than half the time on the land* (ranging from 65.0% in 2004-05 to 78.9% in 2003-04), although in 2006-07, equal numbers (42.9%) of respondents indicated that they spent a *Week or more at a time*, or *More than half the time on the land*. *Day trips* ranged from none taken in 2003-04 and 2006-07 to 18.8% in 2002-03. *Day trips with overnights* ranged from 5% in 1999-00 to 30.4% in 1998-99.

Time, by definition, is an absolute measure. An absolute measure of time should incorporate both duration (how long) and frequency (how often). The only response category which provided an absolute measure of time was the category *More than half the time on the land*.

Between 1998 and 2001, the question asked how much time was spent on the land

between July and December (a six month period). Responses falling into *More than half the time on the land* category indicate that interviewees spent between three and six months on the land. As of 2002, the time frame specified in the question was increased to nine months, from April to December. Interviewees who indicated that they spent *More than half the time on the* land beginning in 2002 spent between 4.5 months to nine months on the land.

The other response categories do not provide an absolute measure of time since information regarding trip frequency is lacking. Without knowing how many trips were made, it is impossible difficult to quantify the total amount of time spent on the land. Numerous day or overnight trips could total a *Week or more at a time,* similarly, several *Week or more at a time* trips could amount to *More than half the time on the land.*

Because *More than half the time on the land* is the only response category which provides an absolute measure, it is the only category for which additional analysis and interpretation could be undertaken. As Figure 5 illustrates, the number of respondents indicated that they had spent *More than half the time on the land* suggests an increasing trend throughout the time period. The apparent trend suggests that interviewees who chose this response category are spending a greater amount of time on the land, ranging from an increased minimum of between three and 4.5 months.

Table 5. Amount of time spent on the land during the past year.

Interview Year	Day trips	%	Day trips with overnights	%	Week or more at a time	%	More than half the time on the land	%	Total
1998-99	3	13.0%	7	30.4%	12	52.2%	1	4.3%	23
1999-00	2	10.0%	1	5.0%	10	50.0%	7	35.0%	20
2000-01	1	5.0%	4	20.0%	6	30.0%	9	45.0%	20
2001-02	2	10.0%	5	25.0%	4	20.0%	9	45.0%	20
2002-03	3	18.8%	4	25.0%	7	43.8%	2	12.5%	16
2003-04	0	0.0%	1	5.3%	3	15.8%	15	78.9%	19
2004-05	1	5.0%	4	20.0%	2	10.0%	13	65.0%	20
2005-06	1	5.3%	1	5.3%	3	15.8%	14	73.7%	19
2006-07	0	0.0%	2	14.3%	6	42.9%	6	42.9%	14
Total	**13**	**7.6%**	**29**	**17.0%**	**53**	**31.0%**	**76**	**44.4%**	**171**

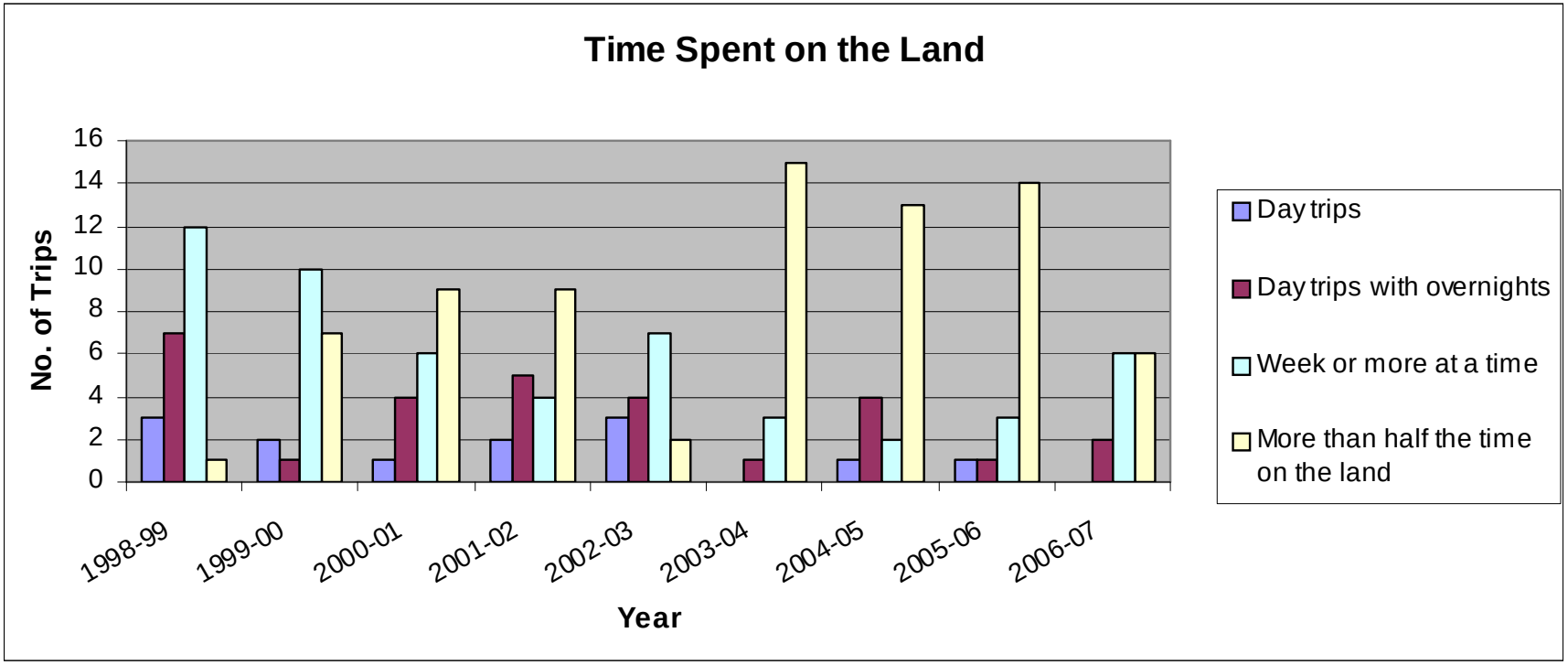

Figure 5: Amount of time spent on the land during the past year.

2.0 CARIBOU

2.1 Caribou Availability - Fall

QUESTION: How available were caribou to this community during hunting last fall?

The question could be answered with one of three options:

- not at all available,
- not close, or
- close by and easily found.

Table 6 and Figure 6 present the results of the analysis of output from the database regarding this question:

Table 6. Availability of caribou during fall.

Year	not available	%	not close	%	close	%	blank	%	Total
2000-01	1	7.1%	5	35.7%	4	28.6%	4	28.6%	14
2001-02	13	68.4%	5	26.3%	1	5.3%	0	0.0%	19
2002-03	5	31.3%	9	56.3%	2	12.5%	0	0.0%	16
2003-04	6	31.6%	10	52.6%	3	15.8%	0	0.0%	19
2004-05	0	0.0%	7	46.7%	8	53.3%	0	0.0%	15
2005-06	2	11.1%	7	38.9%	1	5.6%	8	44.4%	18
2006-07	0	0.0%	6	42.9%	4	28.6%	4	28.6%	14
Total	**27**	**23.5%**	**49**	**42.6%**	**23**	**20.0%**	**16**	**13.9%**	**115**

The output was extracted for seven years, from 2000-01 to 2006-07. As summarized in Table 6 and illustrated in Figure 6, a total of 115 responses were received during interviews conducted from 2000 to 2006, ranging from 14 to 19 responses per year. The aggregate of all responses resulted in 23.5% of responses indicating caribou were *not available,* 42.6% indicating that caribou were *not close,* and 20.0% indicating caribou were *close*. Blank cells were recorded for 13.9% of the total responses.

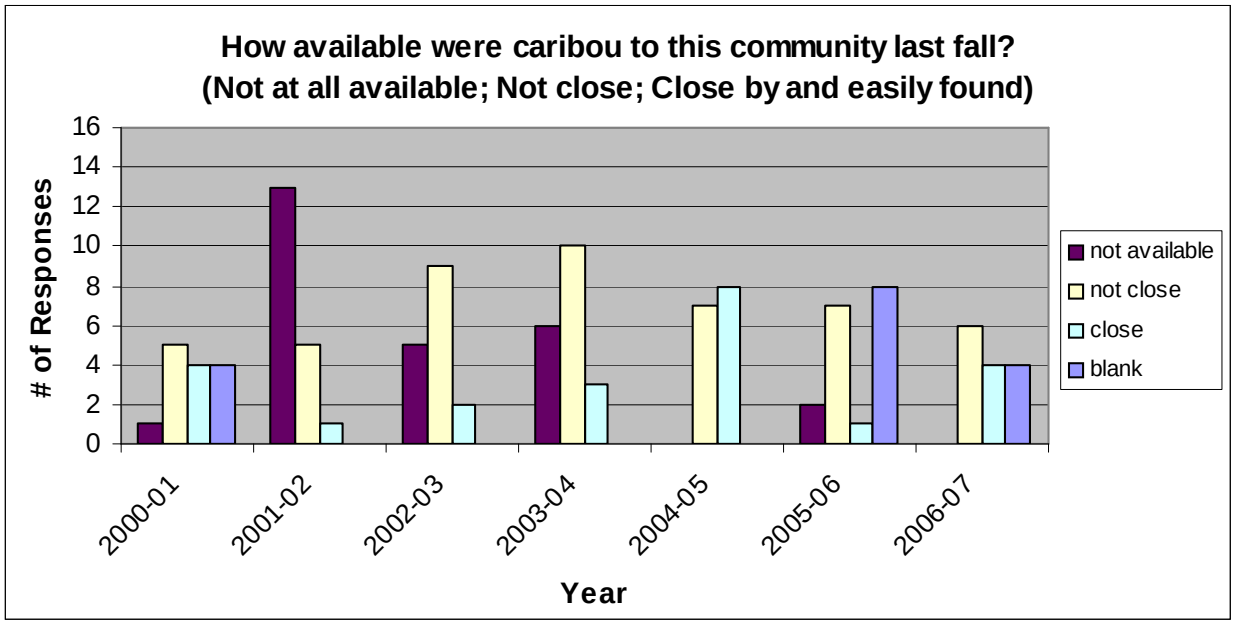

Figure 6: Availability of caribou during fall.

Perceptions of availability varied among years:

- In 2004-05, approximately the same number of respondents replied that caribou were *not close* (46.7%) as indicated that caribou were *close* (53.3%).

- In 2001-02, 2002-03, and 2003-04, the vast majority >80% of interviewees indicated that caribou were either *not close* or *not available*. Only 5.3%, 12.5% and 15.8% responded that caribou were *close*.

The incidence of blank cells in the data output in 2000-01, 2005-06 and 2006-07 complicates data interpretation. It is not clear what a blank cell represents. In 2005-06 and 2006-07, blank cell output exists for both respondents that indicated they did and did not hunt, thus suggesting that a blank cell is not representative of interviewees who did not hunt caribou. In 2000-01, data output columns regarding whether an interviewee hunted or observed caribou hunting are also blank, precluding any conclusions regarding whether a blank cell represents a respondent who did not hunt or observe during hunting.

Comments regarding fall availability of caribou were included for the years 2000-01 to 2005-06. The comments provide additional context to output interpretation and indicate how individual interviewees interpret the response choices. Based on the comments associated with not close and *not available* response choices, it is clear that caribou proximity is not just a spatial concept, but an economic concept as well. For example, in 2001-02 one respondent indicated that

caribou were *not close*, but then indicated that (s)he had not gone hunting that fall because (s)he did not have a ski-doo. After 2002-03, many respondents indicating that caribou were *not close* or *not available* commented that hunting had become too expensive, the cost of gas was too high, and/or many people did not have the proper equipment (gun or ski-doo) to go hunting.

Other respondents indicated that the lack of caribou during fall was related to changes in movements, pointing out that the caribou were traveling a different route, or staying "back", far away in the hills. Others based their perception of availability from a temporal perspective, comparing it to other hunts ("Last year we got caribou pretty well every time I go hunting").

Similarly, some respondents who indicated that caribou were *close by and easily found* also appeared to be referring to more than just the spatial concept. The importance of having the right equipment and finding caribou in good shape also appeared to be part of the interpretation of *close*. In some cases, caribou appeared to be perceived as *close* when they were successfully hunted, in spite of the fact that the hunt required traveling some distance:

- "Easily hunted when people use ski-doos; also people could get lots of caribous but don't have good storage space to keep their meat".

- "At Shingle Point summer camp. In order to get caribou people had to travel to the coast or Shingle Point to get caribou. Caribou were in very good shape".

Some of these comments were contradicted by other interviewees. Although the respondent quoted above characterized caribou located at Shingle Point as "*close*", another respondent indicated that caribou were "*not close*" because the animals were located at Shingle Point. Others indicated that caribou were "*not close*" because they had to use a ski-doo to hunt.

The importance of timing when attempting to hunt caribou was also mentioned by several interviewees:

- "Close by for August but not close in October".

- "They were close by when they were passing through; you had to be up there or you would lose out on the hunt".

- "At the right time along the coast, they are close by and easily found, but they came early".

Regardless of how caribou availability during fall was formally categorized, the accompanying notes demonstrate that numerous other factors are carefully considered by respondents. The comments regarding timing indicate that caribou are only available to hunters during a portion of the fall season, and can be easily missed. The need for proper equipment (in particular, a ski-doo) was repeatedly noted, and economic concerns over rising costs, particularly gas, are especially evident.

2.2 Caribou Availability - Winter

QUESTION: How available were caribou to this community during hunting this winter?

The question could be answered with one of three options:

- not at all available,
- not close, or
- close by and easily found.

Table 7 and Figure 7 present the results of the analysis of output from the database regarding this question:

The output was extracted for seven years, from 2000-01 to 2006-07. As summarized in Table 7 and illustrated in Figure 7, a total of 100 responses[4] were received during interviews conducted from 2000 to 2006, ranging from 9 to 19 responses per year. The aggregate of all responses resulted in 56% of responses indicating caribou were *not available*, 15% indicating that caribou were *not close*, and 9% indicating caribou were *close*. Blank cells were recorded for 20% of the total responses.

Table 7. Availability of caribou during winter.

Year	not available	%	not close	%	close	%	blank	%	Total
2000-01	10	71.4%	0	0.0%	0	0.0%	4	28.6%	14
2001-02	18	94.7%	1	5.3%	0	0.0%	0	0.0%	19
2002-03	11	73.3%	4	26.7%	0	0.0%	0	0.0%	15
2003-04	13	72.2%	5	27.8%	0	0.0%	0	0.0%	18
2004-05	3	33.3%	3	33.3%	3	33.3%	0	0.0%	9
2005-06	0	0.0%	1	7.1%	0	0.0%	13	92.9%	14
2006-07	1	9.1%	1	9.1%	6	54.5%	3	27.3%	11
Total	**56**	**56.0%**	**15**	**15.0%**	**9**	**9.0%**	**20**	**20.0%**	**100**

[4] Two records entered as "don't know" were removed from the analysis.

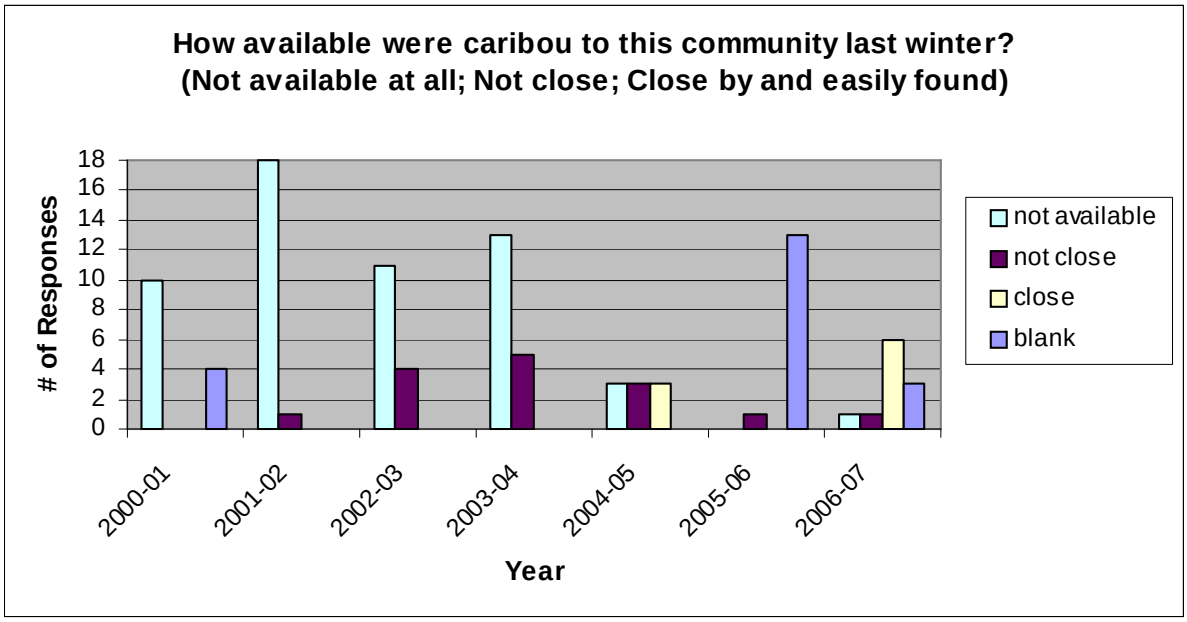

Figure 7: Caribou availability during winter

Perceptions of availability varied among years:

- Between 2000-01 and 2001-02 the majority of respondents indicated that caribou were *not available*, ranging from 71.4% to 94.7%, respectively.
- In 2002-03 and 2003-04, all respondents indicated that caribou were either *not available* or *not close*.
- In 2004-05, equal numbers of respondents indicated that caribou were either *not available*, *not close*, or *close*.
- In 2006-07, the majority (54.5%) of respondents indicated that caribou were *close*.
- Virtually all (92.9%) entries for 2005-06 were blank, precluding any conclusions for that interview year.

Blank cells were found in the data output for 2000-01, 2005-06, and 2006-07, representing between 27.3% and 92.9% of total yearly responses. It is not clear what a blank cell represents. Although most of the blank cell output exists for respondents who indicated that they did not hunt, one blank cell was associated with a record for an interviewee who did hunt, and two other records did not indicate whether or not the person had participated in hunting caribou.

All of the comments provided by respondents regarding the availability of caribou during

winter were associated with the responses *not available* or *not close*. The vast majority of comments received described caribou as being located far away, or not easily found:

- "Went hunting in Nov. but never see any caribou around so there's really no caribou this year".

- "Just no caribou, if there's caribou, they're all scattered".

- "Have to go long way to hunt".

Many of the interviewees reported that did they not hunt, although the reasons were not always clear. In some cases, respondents who indicated that they did not hunt commented that caribou were located far away. Presumably, perceptions of caribou availability were considered when making a decision regarding whether or not to hunt.

The cost of travel was also considered by interviewees when interpreting caribou availability:

- "Cost lots to travel, as caribou are far".

- "We don't know where the caribou could be. Gas cost too much to travel long ways".

Other respondents indicated that caribou had passed through a different route, or were wintering elsewhere. No comments were provided by interviewees who categorized caribou as *close*, although one comment associated with a blank cell indicated that "caribou had been close for a while; there were too many hunters so they all moved into the mountains".

Although the question attempted to assess the availability of caribou during winter, four respondents commented on the availability of caribou during fall, suggesting that the seasonal component of the question was sometimes loosely interpreted.

2.3 Caribou availability - Spring

QUESTION: How available were caribou to this community during hunting last spring?

The question could be answered with one of three options:

- not at all available,
- not close, or
- close by and easily found.

Table 8 and Figure 8 present the results of the analysis of output from the database regarding this question:

Table 8. Availability of caribou during spring.

Year	not available	%	not close	%	close	%	blank	%	Total
2000-01	1	6.3%	7	43.8%	3	18.8%	5	31.3%	16
2001-02	13	68.4%	5	26.3%	1	5.3%	0	0.0%	19
2002-03	10	62.5%	6	37.5%	0	0.0%	0	0.0%	16
2003-04	4	22.2%	13	72.2%	1	5.6%	0	0.0%	18
2004-05	1	6.3%	8	50.0%	4	25.0%	3	18.8%	16
2005-06	1	6.7%	10	66.7%	3	20.0%	1	6.7%	15
2006-07	0	0.0%	12	100.0%	0	0.0%	0	0.0%	12
Total	**30**	**26.8%**	**61**	**54.5%**	**12**	**10.7%**	**9**	**8.0%**	**112**

The output was extracted for seven years, from 2000-01 to 2006-07. As summarized in Table 8 and illustrated in Figure 8, a total of 112 responses were received during interviews conducted from 2000 to 2006, ranging from 12 to 19 responses per year. The aggregate of all responses resulted in 26.8% of responses indicating caribou were *not available*, 54.5% indicating that caribou were *not close*, and 10.7% indicating caribou were *close*. Blank cells were recorded for 8.0% of the total responses.

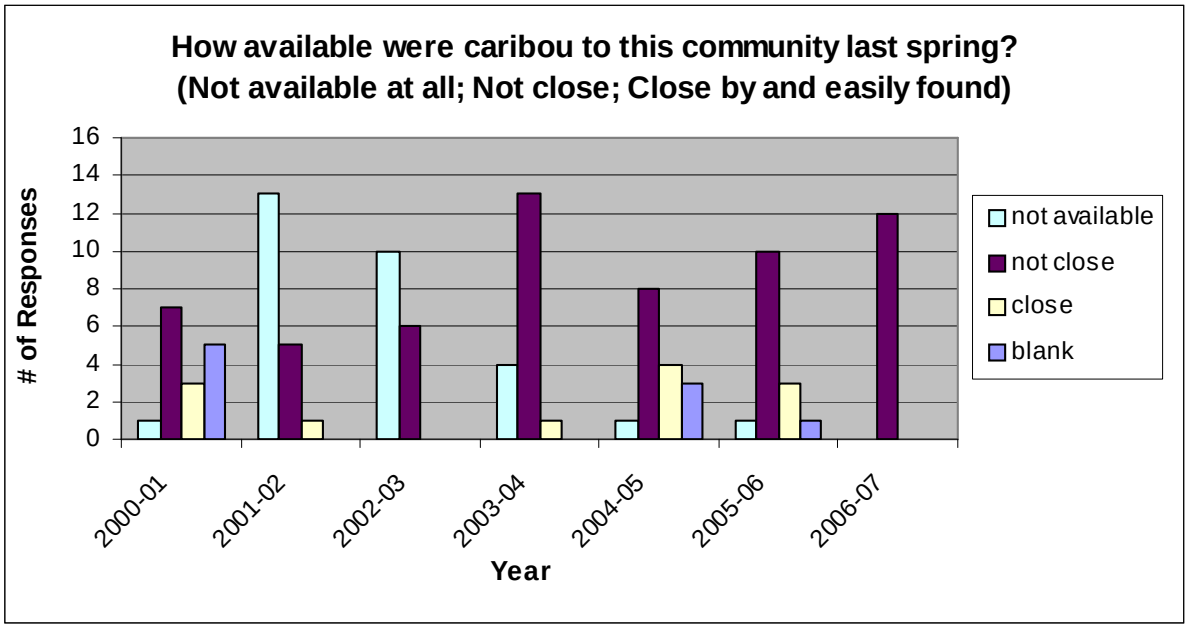

Figure 8: Availability of caribou during spring.

Perceptions of availability varied somewhat among years, although the majority of responses indicated that caribou were either *not available* or *not close*:

- Between 2001-02 to 2003-04, and 2005-06 to 2006-07, the vast majority (ranging from 73.4% to 100%) of respondents indicated that caribou were either *not available* or *not close*, although in 2005-06 the responses were somewhat more variable as 20% of respondents indicated that caribou were *close*.

- In 2000-01, 43.8% of respondents indicated that caribou were *not close*, but 31.3% of cells were blank. Caribou were categorized as *close* by 18.8% of respondents.

- Responses were also more variable in 2004-05: although 50.0% of interviewees indicated that caribou were *not close*, 25.5% indicated that caribou were *close*, and 18.8% of cells were blank.

Output for the years 2000-01, 2004-05, and 2005-06 consisted of blank cells, which represented between 6.7% (2005-06) to 31.3% (2000-01) of the total yearly responses. Notes accompanying the output indicated that some of the blank cells represented individuals who did not hunt. However, this could not be confirmed for all blank cells, as some of the accompanying notes indicated that the respondents "didn't get" or "didn't see" caribou, or conversely, indicated where caribou were located ("Down by the coast or by the west channel", or "They took a different route"). Another comment suggested that they were successfully hunted later on in the season ("...but we got caribous later on in June"). Consequently, whether or not blank cells represented participation in hunting could not be confirmed.

Most of the comments were associated with responses indicating that caribou were *not*

available or *not close*. These comments provided several explanations as to why caribou were not easily available, with the majority of respondents noting that caribou were traveling a different route or were located too far away from the community:

- "Had to go long ways to get caribou and they weren't in very good shape".
- "Long ways to get caribou, they were too far back to hunt".
- "Never see caribous close by, the migration is further back on the land".
- "Never get any caribou this year due to caribous traveling a different route".

Some of the interviewees noted the cost of gas as a concern. Several of these comments suggested that respondents did not hunt as a result of high gas prices; caribou were too far away, requiring too much gas to hunt.

Many respondents indicated that they were having difficulties locating caribou and deciding where to hunt, noting that caribou had been unavailable for several years:

- "Hard to give answers or even put mark on map as we never have caribous to hunt for last 3 or 4 years".
- "Never get any caribou for a few years so can't mark anything on map".
- "Due to illness or NO caribou around our usual hunting areas we never hunt at all so it makes it very hard to tell or even to mark on map. Whatever area I mark is an idea of where I used to hunt when we used to see caribous".
- "Because we never really see the caribou migration it's very hard to mark on the map where the caribou travel".

Even the comments provided by respondents who characterized caribou as *close* suggested that hunting was difficult:

- "Too much ski-dooing makes it very hard to hunt caribous".
- "For a while then they started to travel north back to calving grounds".
- "Close by but the migration were in a hurry".

Although the vast majority of comments referred to the lack of caribou, three of the respondents qualified this somewhat by indicating that caribou were more available during the month of June:

- “Not available till June. Using too much gas”.

- “We didn't see caribou migration; it was too far back. But we got caribous later on in June”.

- “In June was lots”.

This suggests that the seasonal component of the question may not be accurately assessing caribou availability, which appeared to vary greatly within the season.

2.4 Number of Caribou Harvested

QUESTION: How many caribou did you harvest from last April until now?[5]

Tables 9a and 9b and Figures 9a and 9b present the results of the analysis of output from the database regarding this question:

The number of caribou harvested by each respondent was recorded for each interview year. The output was extracted for seven years, from 2000-01 to 2006-07[6]. A total of 113 responses[7] were received during interviews, ranging from 11 to 18 per year. The total yearly caribou harvest is presented in Table 9a and Figure 9a. Table 9b and Figure 9b summarize the number of caribou harvested per interviewee per year.

Table 9a. Total number of caribou harvested per year.

Interview Year	No. Caribou Harvested	%
2000-01	1	0.2%
2001-02	30	4.6%
2002-03	93	14.3%
2003-04	95	14.6%
2004-05	173	26.6%
2005-06	141	21.7%
2006-07	118	18.1%
TOTAL	**651**	**100.0%**

[5] The time interval ("*...from last April until now*") was not specifically defined in the question, therefore, it was assumed to be consistent between years.

[6] The question was discontinued in 2007-08.

[7] This file originally contained 120 records. Seven records were removed from the analysis as they did not include a harvest number, but a comment only (usually the response "don't know"). Another record entered as "none" was changed to "0".

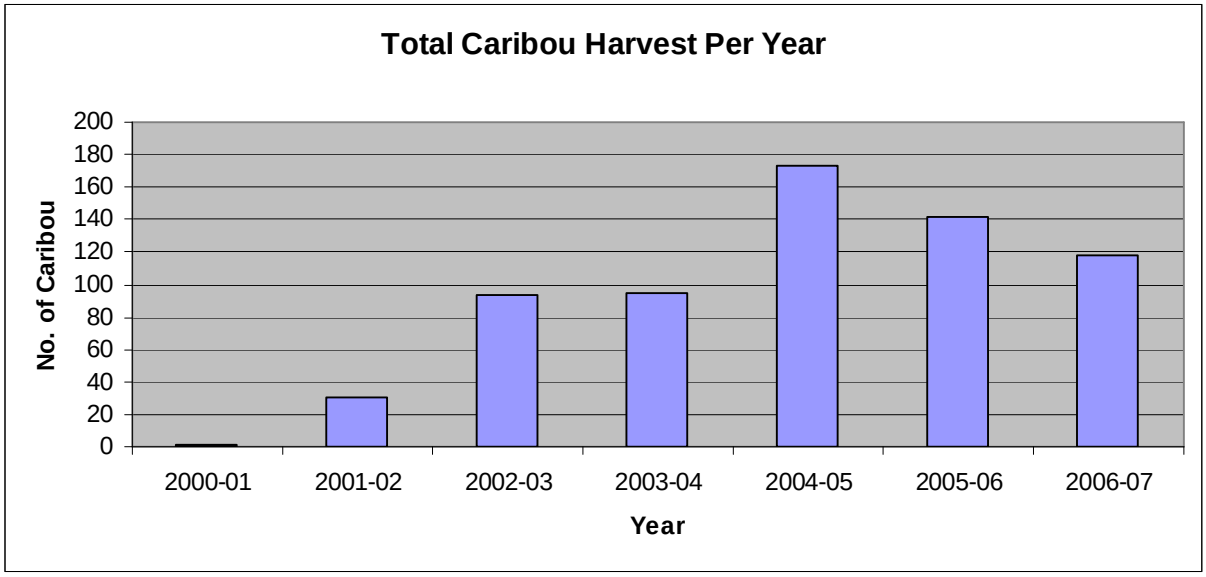

Figure 9a: Total number of caribou harvested per year

As summarized in Table 9a, a total of 651 caribou were harvested between 2000-01 and 2006-07. The total number of caribou harvested per year ranged from one (2000-01) to 173 (2004-05), representing between 0.2% and 26.6% of the total harvest for the seven year period. Figure 9a illustrates an increasing trend in the caribou harvest until 2004-05. After that year, a decreasing trend is observed, although the yearly caribou harvest remained greater during 2005-06 and 2006-07 than during the period between 2000-01 and 2003-04.

Table 9b. Number of caribou harvested per interviewee per year.

Interview Year	No. Of Caribou Harvested				N=	Min	Max	Mean	Median
	0	1 to 10	11 to 20	>20					
2000-01	16	1	0	0	**17**	0	1	0.1	0.0
2001-02	12	6	0	0	**18**	0	7	1.7	0.0
2002-03	8	3	3	1	**15**	0	24	6.2	0.0
2003-04	6	9	3	0	**18**	0	15	5.3	5.0
2004-05	2	11	4	1	**18**	0	50	9.6	5.5
2005-06	1	10	5	0	**16**	0	20	8.8	8.5
2006-07	0	8	2	1	**11**	3	30	10.7	8.0
Total	**45**	**48**	**17**	**3**	**113**				

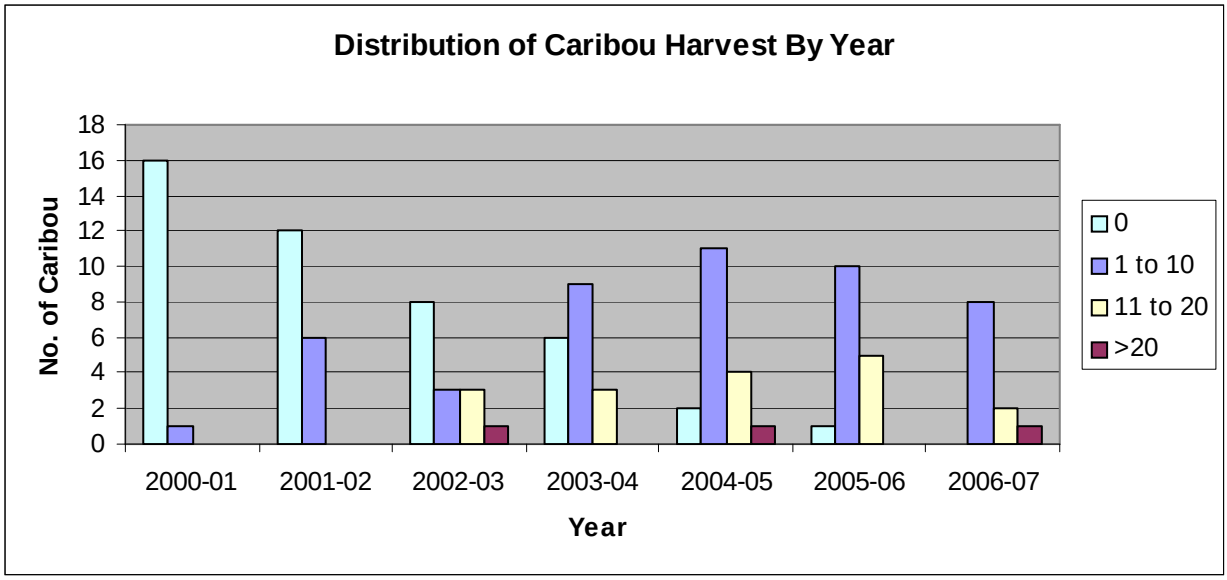

Figure 9b: Number of caribou harvested per interviewee per year.

Table 9b demonstrates the number of caribou harvested per interviewee per year. As shown in Table 9b, a large number (45 of 113, or 39.8%) of respondents indicated that they did not harvest any caribou[8]. During 2000-01, 16 of 17 respondents did not harvest a caribou. However, as Figure 9b illustrates, this category shows a decreasing trend over the seven year period, such that by 2006-07, all respondents indicated that they had harvested at least one caribou.

The majority of interviewees (48 of 113, or 42.5% of all respondents) harvested between one and ten caribou. This category shows a generally increasing trend, which drops slightly after 2004-05 (Figure 9b). A total of 17 (15.0%) respondents harvested between 11 and 20 caribou. Between 2000-01 and 2006-07, only three (2.7%) interviewees indicated that they had harvested more than 20 caribou.

The number of caribou harvested by individual respondents in one year ranged from a minimum of zero (in all years except 2006-07) to a maximum of 50 (2004-05). On average, the number of caribou harvested per interviewee ranged from 0.1 (2000-01) to 10.7 caribou (2006-07) per year. The individual median harvest was slightly lower, ranging from 0.0 (2000-01 to 2002-03) to 8.5 (2005-06) caribou per year.

[8] It is not clear whether or not a harvest number of zero represents respondents who did not hunt as well as respondents who went hunting but were unsuccessful.

Summary - Number of caribou harvested

Caribou harvest data confirm that greater numbers of caribou were harvested beginning in 2002-03. The average number of caribou harvested by interviewees each year also demonstrates an overall increase beginning in 2002-03, although this trend may have been influenced by the small number of individuals who harvested large numbers of caribou in some years (particularly in 2004-05 when one respondent reported harvesting 50 caribou), as well as by the decrease in the number of individuals interviewed during 2006-07 (which dropped to a low of eleven interviewees).

2.5 Caribou Needs

QUESTION: Did you get enough caribou last spring to meet your needs?

Table 10 and Figure 10 present the results of the analysis of output from the database regarding this question:

The question was answered with a response of *Yes* or *No*. The output was extracted for seven years, from 2000-01 to 2006-07. A total of 73 responses[9] were received during interviews, ranging from 2 to 15 per year. The aggregate of responses indicates that the majority (65.8%) of respondents were able to meet their needs for caribou in spring. Respondents who indicated that they were not able to meet their needs represent 32.9% of those interviewed over the seven year period. Only one blank cell was recorded, representing 1.4% of total responses.

Table 10. Total of responses regarding ability to meet caribou needs: SPRING.

Year	Yes	%	No	%	blank	%	Total
2000-01	6	40.0%	9	60.0%	0	0.0%	15
2001-02	3	23.1%	9	69.2%	1	7.7%	13
2002-03	2	100.0%	0	0.0%	0	0.0%	2
2003-04	5	55.6%	4	44.4%	0	0.0%	9
2004-05	9	90.0%	1	10.0%	0	0.0%	10
2005-06	12	100.0%	0	0.0%	0	0.0%	12
2006-07	11	91.7%	1	8.3%	0	0.0%	12
Total	**48**	**65.8%**	**24**	**32.9%**	**1**	**1.4%**	**73**

[9] One record of "yes, but not quite" was changed to "Yes".

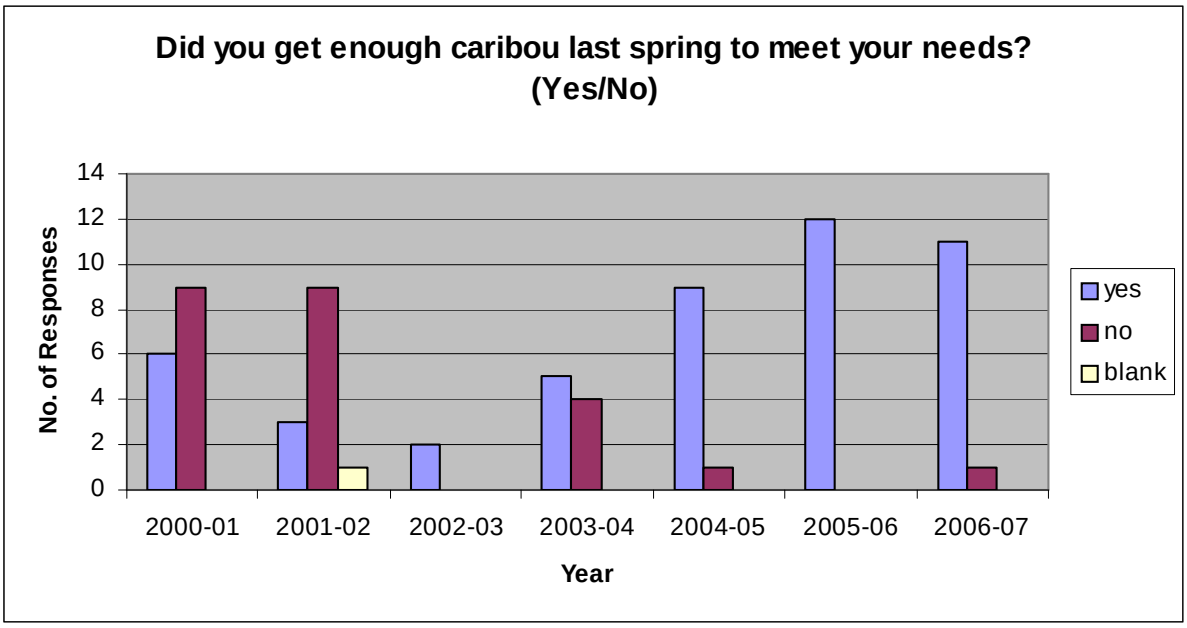

Figure 10: Caribou needs - SPRING

As Table 10 demonstrates, interviews conducted during 2000-01 and 2001-02 revealed that respondents were generally unable to meet their needs for caribou during spring, with *No* responses representing 60% to 69.2% of yearly responses, respectively. In 2002-03, all respondents indicated that they were able to meet their needs, but only two responses were recorded that year. As Figure 10 illustrates, an increasing trend of *Yes* responses becomes apparent at that time. By 2003-04, approximately half of the interviewees were able to meet their needs for caribou, increasing to between 90.0% (2004-05) and 100% (2005-06) of yearly responses for the remainder of the time period.

The single blank cell recorded in 2001-02 was associated with the comment "*don't know*". Other comments were associated with data recorded for the years 2000-01 and 2001-02. The comments associated with *No* responses illustrate the difficulties encountered by interviewees who were unable to meet their needs for caribou, in particular, the cost associated with supplementing their needs with store bought meats:

- "*Very hard not to eat our own native food off the land. Can't afford store bought meats.*"
- "*Pocket book - have to buy more from the store, even have to order from Yellowknife*".
- "*Have to buy more meat from the store which costs too much.*"

Comments associated with *Yes* responses also emphasize the difficulties encountered by interviewees, and indicate that the number of caribou required to meet one's needs will vary depending on the level of personal responsibility to other family or community members:

- "*We got few caribous but we gave a lot away to people*".

Other comments associated with *Yes* responses suggest that caribou needs were not completely met. In some cases, respondents who answered *Yes* to the question appeared to be indicating that they harvested some caribou, but not enough:

- "*Only got a few*".
- "*Have to buy more store bought meats*".
- "*Really affects our life; cost too much to get meat from the stores*".

QUESTION: Did you get enough caribou this fall to meet your needs?

Table 11 and Figure 11 present the results of the analysis of output from the database regarding this question:

The question was answered with a response of *Yes* or *No*. The output was extracted for seven years, from 2000-01 to 2006-07. A total of 77 responses[10] were received during interviews, ranging from 8 to 14 per year. The aggregate of responses indicates that the majority (61.0%) of respondents were able to meet their needs. A total of 29.9% of those interviewed indicated that they were not able to meet their needs for caribou in fall. During 2000-01 and 2001-02, seven blank cells were recorded, representing 9.1% of total responses.

[10] One record of "don't know" was removed.

Table 11. Total of responses regarding ability to meet caribou needs: FALL.

Year	Yes	%	No	%	blank	%	Total
2000-01	4	30.8%	8	61.5%	1	7.7%	13
2001-02	2	14.3%	6	42.9%	6	42.9%	14
2002-03	5	55.6%	4	44.4%	0	0.0%	9
2003-04	6	75.0%	2	25.0%	0	0.0%	8
2004-05	10	83.3%	2	16.7%	0	0.0%	12
2005-06	10	90.9%	1	9.1%	0	0.0%	11
2006-07	10	100.0%	0	0.0%	0	0.0%	10
Total	**47**	**61.0%**	**23**	**29.9%**	**7**	**9.1%**	**77**

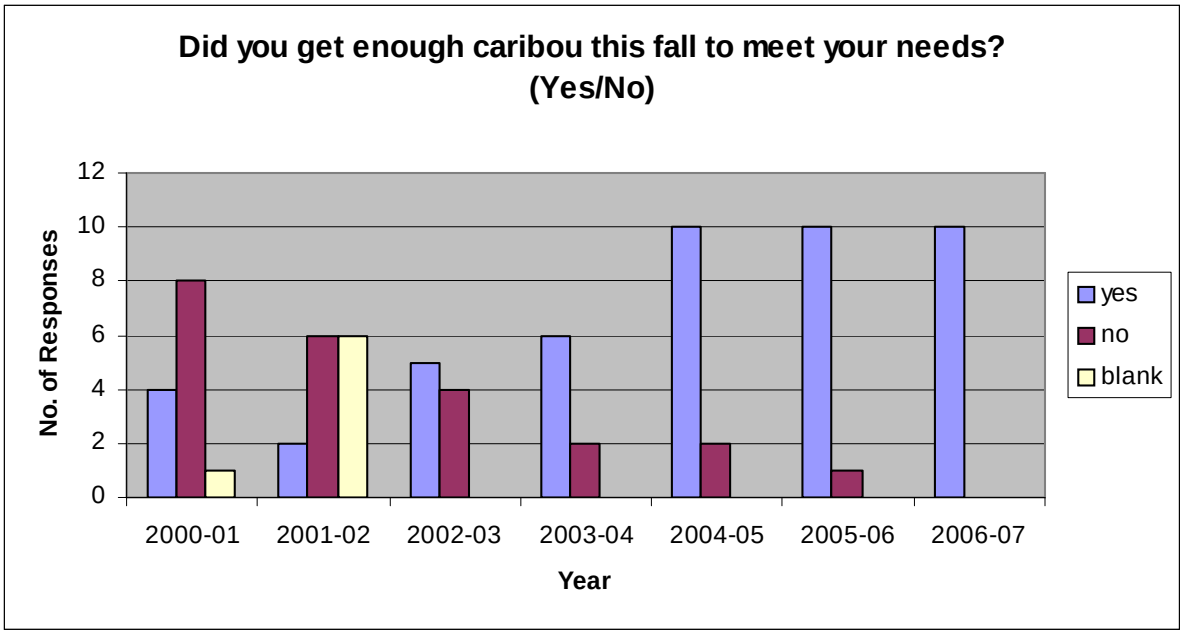

Figure 11: Caribou needs - FALL

As shown in Table 11, the majority of interviewees were not able to meet their needs for caribou during fall in either 2000-01 or 2001-02. In 2000-01, eight (61.5%) *No* responses were recorded, and in 2001-02, six (42.9%) were entered. However, blank cells also represent 42.9% of responses recorded for 2001-02. Comments associated with the blank cells suggest that respondents were not able to meet their needs:

- " *Barely got any.*" (2000-01)

- "*Just NO caribous to hunt.*" (2001-02)

- "*No caribou for our food, have to buy more store-bought meat.*"(2001-02)

As illustrated in Figure 11, a trend towards increasing numbers of *Yes* responses is evident beginning in 2002-03, when approximately equal numbers of respondents provided *Yes* and *No* responses. Between 2003-04 and 2006-07, interviewees who indicated that they were able to meet their needs represent between 75% (2003-04) and 100% (2006-07) of yearly responses.

Comments associated with *No* responses again highlight the difficulties of not meeting one's needs:

- "*Makes it very hard for a big family as you have to buy store bought meat - very expensive.*"

For two of the interview years (2005-06 and 2006-07), additional data were provided which indicated whether or not respondents participated in hunting. Of the 20 respondents who indicated that they had met their caribou needs during those years, 19 had hunted. The single interviewee who did not hunt but responded *Yes* to the question indicated that "*For those who hunt the meat was shared by all*", suggesting that for some, caribou needs may be defined at the community level. The one respondent who was unable to meet his/her needs during those years but had participated in hunting indicated that "*Due to gas price some people don't have equipment so it's very hard to hunt*", suggesting that economic constraints may have limited the hunting effort.

QUESTION: Did you get enough caribou this winter to meet your needs?

Table 12 and Figure 12 present the results of the analysis of output from the database regarding this question:

The question was answered with a *Yes* or *No* response. The output was extracted for five years, from 2002-03 to 2006-07. A total of 42 responses were received during interviews, ranging from 4 to 14 per year. The aggregate of responses indicates that 40.5% of respondents were able to meet their needs for caribou in winter. Interviewees who could not meet their needs represent 14.3% of all respondents. The majority of responses recorded during 2005-06 and 2006-07 were entered as blank cells, representing 45.2% of total responses.

Table 12. Total of responses regarding ability to meet caribou needs: WINTER.

Year	Yes	%	No	%	blank	%	Total
2002-03	1	20.0%	4	80.0%	0	0.0%	5
2003-04	5	83.3%	1	16.7%	0	0.0%	6
2004-05	3	75.0%	1	25.0%	0	0.0%	4
2005-06	1	7.1%	0	0.0%	13	92.9%	14
2006-07	7	53.8%	0	0.0%	6	46.2%	13
Total	**17**	**40.5%**	**6**	**14.3%**	**19**	**45.2%**	**42**

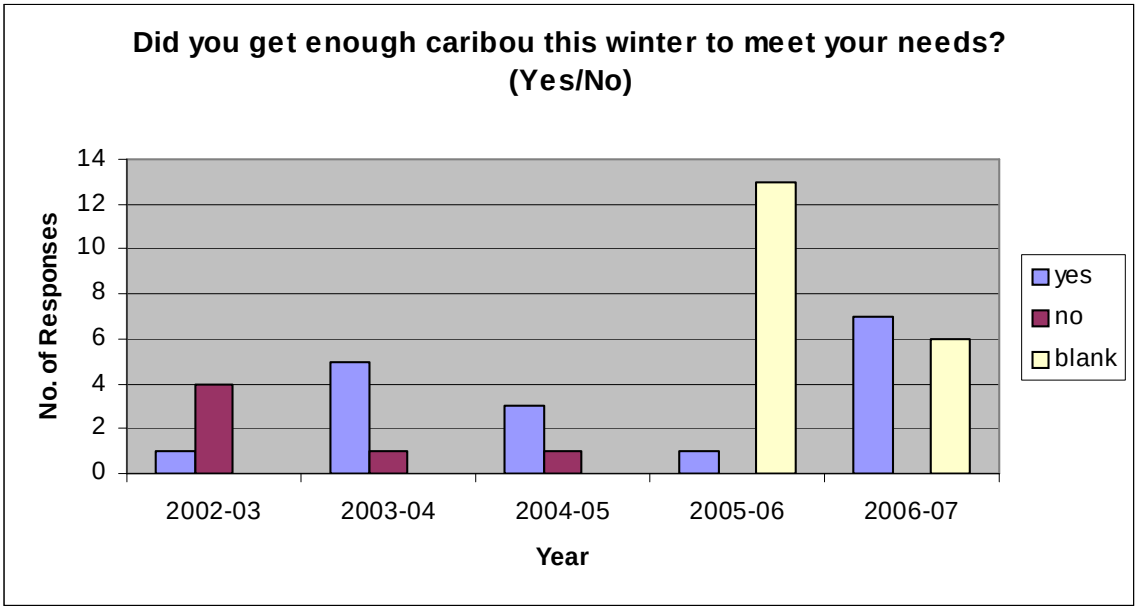

Figure 12: Caribou need - WINTER

Table 12 and Figure 12 demonstrate that with the exception of 2002-03, the majority of respondents were able to meet their needs for caribou during winter. During 2002-03, four of five respondents (80%) indicated that they were not able to meet their needs. For the years 2003-04, 2004-05, and 2006-07, interviewees who were able to meet their needs ranged from 53.8% (2006-07) to 83.3% (2003-04). During 2005-06, 13 of 14 responses (92.9% of the yearly total) were entered as blank cells. Blank cells also represent a large proportion of the data recorded during 2006-07 (46.2%).

Comments were not associated with the responses obtained during interviews, however, data regarding whether or not respondents participated in hunting were recorded during 2005-06 and 2006-07. In 2005-06, only one interviewee responded *Yes* to the question, and participation in hunting was confirmed. The supplementary hunting data further confirm that the 13 entries recorded as blank cells represent respondents who had not participated in hunting. Similarly, all seven interviewees who responded *Yes* during 2006-07 had also hunted. The six blank cells recorded during that year also represent interviewees who did not hunt.

Caribou needs summary - SPRING, FALL & WINTER

During 2000-01 and 2001-02, interviewees generally indicated that they had difficulty in meeting their caribou needs during spring and fall. A winter assessment was not undertaken until 2002-03. That year, the vast majority of respondents again indicated that they were unable to meet their needs for caribou.

Beginning in 2003-04, a more positive trend emerges, as more respondents indicated that they were able to meet their needs during all three seasons. However, for winter, the large number of respondents who did not hunt during 2005-06 and 2006-07 complicate data interpretation, as participation in hunting was otherwise assumed. Comments associated with *Yes* responses demonstrate how caribou needs vary according to one's personal responsibilities to other family or community members. It was not clear if these needs remained consistent between interview years.

2.6 Caribou Herd Health

QUESTION: Do you think the Porcupine Caribou Herd is healthy? If no, why not?

Table 13 and Figure 13 present the results of the analysis of output from the database regarding this question:

The question was answered with a *Yes* or *No* response. The output was extracted for nine years, from 1998-99 to 2006-07. A total of 149 responses[11] were received during interviews, ranging from 12 to 20 per year. The aggregate of responses indicate that the vast majority of interviewees considered the Porcupine Caribou Herd to be healthy. Of the 149 interviewees, 94% responded *Yes* to the question; only 4% responded *No*. Three blank cells were recorded, representing 2.0% of total responses.

Table 13. Yearly total of responses regarding health of the Porcupine Caribou Herd.

Year	Yes	%	No	%	blank	%	Total
1998-99	19	95.0%	1	5.0%	0	0.0%	20
1999-00	18	100.0%	0	0.0%	0	0.0%	18
2000-01	15	88.2%	2	11.8%	0	0.0%	17
2001-02	14	93.3%	0	0.0%	1	6.7%	15
2002-03	9	75.0%	2	16.7%	1	8.3%	12
2003-04	16	88.9%	1	5.6%	1	5.6%	18
2004-05	16	100.0%	0	0.0%	0	0.0%	16
2005-06	19	100.0%	0	0.0%	0	0.0%	19
2006-07	14	100.0%	0	0.0%	0	0.0%	14
Total	**140**	**94.0%**	**6**	**4.0%**	**3**	**2.0%**	**149**

[11] One record indicating “don’t know” was removed from the analysis (2005-06).

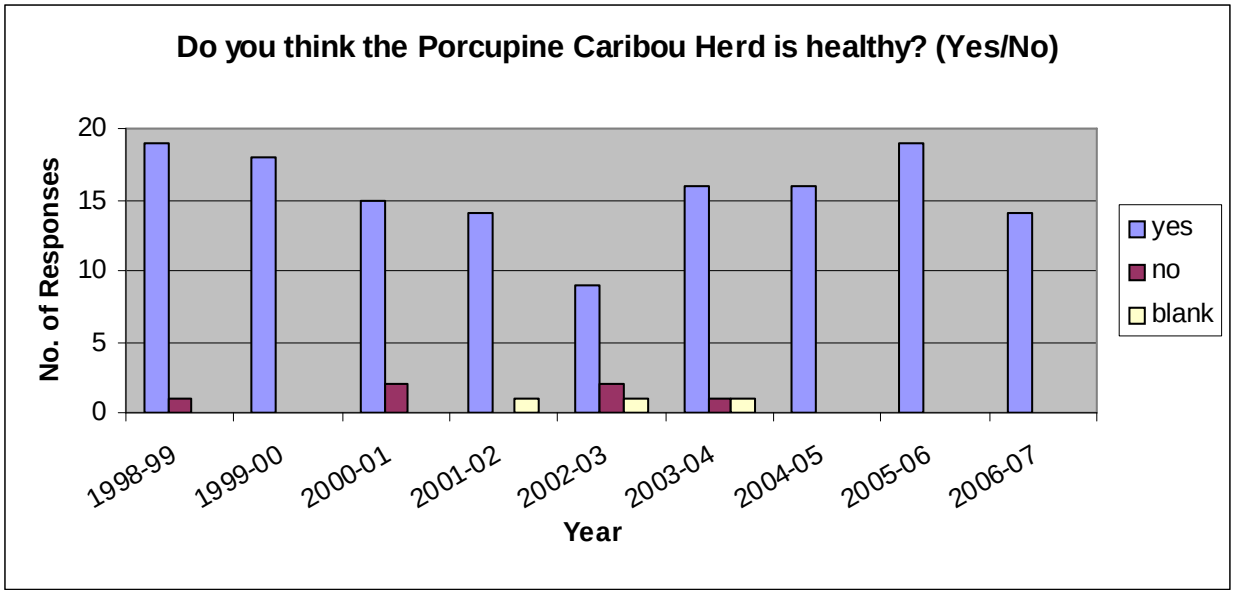

Figure 13: Responses regarding health of Porcupine Caribou Herd

As demonstrated in Table 13 and illustrated in Figure 13, interviewees who indicated that the Porcupine Caribou Herd was healthy ranged from 75.0% in 2002-03 to 100% in 1999-00, and 2004-05 to 2006-07. Several comments were associated with the *Yes* responses, which demonstrate that some interviewees appear to have been interpreting the question in terms of the physical health of harvested animals. Selection for healthy animals was also evident:

- "*All the caribou we get are very good*".
- "*We always pick out the ones we think are good; cool summer and hardly any snow so caribou had good feeding*".
- "*Because whatever people get is good*".

Although interviewees noted that the harvested caribou were in good shape, some of the comments suggest that there were fewer caribou to harvest:

- [Yes] "*If there is any*".
- [Yes] "*Seems to be getting less each year*".
- [Yes] "*But decreasing*".

Interviewees who did not consider the herd to be healthy ranged from 0% in 1999-00, 2001-02, and 2004-05 to 2006-07, to 16.7% in 2002-03.Of the six interviewees who responded

No to the question, five provided additional explanations. One comment related to the physical health of the caribou:

- "*Some are, seen white spots on liver and lungs*".

The remainder of the comments associated with *No* responses indicate that some interviewees interpreted caribou health using a different measure. Instead of commenting on the physical condition of harvested caribou, these interviewees appear to have assessed the health of the Porcupine herd according to how many caribou were in the area:

- "*Not as many a long ago. Use to be a lot of caribous, but not like that anymore*".
- "*Less around*".
- "*Don't know as we never hardly see any around. In fact we never had caribous for last few years*".

Similarly, each of the comments associated with the three blank cells recorded between 2001-02 and 2003-04 suggest that herd health was assessed according to both physical condition and relative numbers of caribou. Based on these comments, blank cells appear to represent interviewees who were not successful in harvesting caribou:

- "*If we get caribou they seem to be good*".
- "*Maybe just don't seem to be on regular route*".
- "*Wouldn't know because we don't get any*".

Although physical condition of harvested animals and relative numbers of caribou are both valid measures of herd health, the discrepancy in how respondents interpreted the question somewhat compromises the consistency of responses, as interviewees who assessed caribou health in physical terms responded *Yes* while noting that there were fewer caribou, while other interviewees responded *No* since they used the decreasing number of caribou as their measure for assessing herd health. However, given the large number of respondents who answered *Yes* to the question, this issue does not affect the overall conclusion, which is that the vast majority of community members who participated in interviews between 1998-99 and 2006-07 considered the Porcupine Caribou Herd to be healthy.