

**Rationale for implementing conservation measures
to protect the Porcupine Caribou Herd**

**Environment Yukon
Yukon Government
September 4, 2009**

I. Introduction

This paper articulates Yukon Government's scientific rationale for implementing interim conservation measures for the Porcupine Caribou Herd (PCH) and is aimed at a broad audience with a diverse and varied background. This information has been used in public meetings and for government-to-government consultation.

The Yukon Governments decision to propose interim conservation measures was based on our obligations under the land claims agreements to ensure conservation, optimum long term productivity of the herd, sustainability of the herd, and a sustainable harvest. Yukon Government's concern for conservation is shared by all First Nations and Inuvialuit who use the herd for subsistence, as well as the co-management bodies who have a mandate for the management of the herd, communities within the Canadian range of the herd, and the general Yukon public. These collective concerns and our obligation under the land claims agreements, and our obligation to the Yukon public, provided the direction for government to propose these interim measures.

The two guiding principles that form the basis for the interim measures are based upon **conservation**, and the **precautionary principle**. The Yukon Government's management **goal** for the PCH is to respect conservation principles, ensure sustainability and productivity, stop the decline and promote recovery of the herd. The proposed interim management actions are consistent with this goal and the guiding principles.

The Yukon Government recognizes there are natural caribou cycles driven by strong ecological forces managers have no control over. We can't change these natural processes; however we can "manage" those factors (harvest) we have control over and minimize their effects. The interim measures acknowledge that harvest plays a significant role in determining the rate of decline and recovery of a population. Harvest also affects the long term optimum productivity, sustainability and ultimately the conservation of the herd.

The Yukon Government embarked on government-to-government consultation with the aboriginal parties (Gwich'in Tribal Council, Inuvialuit Game Council, First Nation of Na-Cho Nyak Dun, Tr'ondëk Hwëch'in, and Vuntut Gwitchin First Nation) to the *Porcupine Caribou Management Agreement* (PCMA) regarding conservation and the need for harvest limitations on the PCH.

The relevant First Nations and Inuvialuit land claim agreements identify Yukon Government's ultimate responsibility for the conservation and management of the PCH in Yukon (Appendix A). Harvesting rights are entrenched in the land claims agreement (Appendix B), as are the conditions under which those rights can be limited, i.e. for public health, public safety, and conservation (Appendix C). The land claim agreements also lay out the consultation obligations that Yukon Government will follow (Appendix C) prior to implementing conservation measures.

Consultation with the affected First Nations and the Inuvialuit officially started with the notice of the proposed interim regulations (March 27, 2009) and timelines for a consultation deadline of May 29, 2009. Yukon Government has asked for, and has received, initial comments from all First Nations governments, and the Inuvialuit. Yukon Government is encouraging a dialogue with all parties wishing to discuss the proposal and to offer collaborative management approaches to ensure the well being of this herd, and to further accommodate this, the consultation was extended first to June 30, 2009 and then again to July 31, 2009.

In addition to government-to-government consultation, Yukon Government will follow its land claim obligations to work through the co-management process with the appropriate Boards. This process has been ongoing through Yukon Government representation on the Wildlife Management Advisory Council (North Slope) (WMAC(NS)) and the Porcupine Caribou Management Board (PCMB). The notice of consultation was sent to these two groups as well as Yukon Fish and Wildlife Management Board (YFWMB). Yukon Government has received comments from the WMAC(NS) and the PCMB to date. The Yukon Government has considered comments from the PCMB and WMAC(NS) in its decision process respecting the proposed regulations.

Although the Yukon has been referring to these conservation initiatives as “interim measures”, a more appropriate term may be “transitional measures” - that is, conservation measures that Yukon Government is proposing to implement until a Harvest Management Plan has been approved and implemented by all parties. Further, some of the parties may need to develop necessary tools to establish complimentary legislation or other mechanisms that could assist with the intent of these measures.

II. Harvest Management Plan

As part of the ongoing co-management process Yukon Government and the other parties to the PCMA (this includes the governments of Canada and Northwest Territories (GNWT)) have been collaboratively working to develop a Porcupine Caribou Harvest Management Plan (HMP) to ensure the conservation and wise use of the PCH for present and future generations. Although a HMP has been recommended by the PCMB, the acceptance and implementation of this plan are not yet complete. As a result, Yukon Government has decided to err on the side of conservation and to exercise its responsibility to implement conservation measures in time for the 2009 fall hunting season, and beyond.

The following timeline demonstrates the challenges of developing a HMP. In October 2003 the PCMB agreed on the need for a HMP. In May 2004 a scoping document was produced to guide the process of developing a HMP. It took another three and a half years for all parties to the PCMA to accept and sign a protocol which outlined an agreed upon approach and product for a HMP (February 22, 2007). The first HMP Working Group meeting was held in Dawson City, October 4, 2007, followed by a general workshop held in Inuvik, October 18-21, 2007. In May 2009 the Working Group submitted its recommendations to the PCMB.

To put this into perspective, of the 30 years of study of this herd, it has been declining for over half (17 years) that time; it has been 17 years since the decline started and 6 years since the PCMB recognized the need for a HMP; it has been 5 years since a scoping document was produced; and 2 years since the protocol was signed and the working group first met.

Yukon Government appreciates the challenges and complexity of developing a multi-user, inter-jurisdictional HMP. However, this timeline does not reflect Yukon Government's concern for the herd, or its' commitment to act responsibly given the declining trend in the PCH. In addition, the process remains far from complete: the HMP must be accepted by all eight parties and subsequent to that, the native user agreements (Yukon and NWT) need to be developed and signed. It is anticipated that these processes will take considerable time. In addition, the Yukon Government will need to consult with the co-management boards with responsibilities for the PCH in Yukon, i.e. WMAC(NS), PCMB and YFWMB regarding limitations in the HMP on

aboriginal harvesting rights in the Yukon. Yukon Government believes it is time for government to take action.

Yukon Government's interim conservation measures are not intended to pre-empt the recommended management actions received from the PCMB. Those recommendations have been given due consideration but must meet the conservation requirements. Yukon Government's proposed timeline for implementing these conservation measures is the fall of 2009, prior to the commencement of the majority of the hunting activity on the PCH. In order to achieve that deadline and fulfill its obligations to consult with First Nations and Inuvialuit, Yukon Government initiated preliminary discussions in the spring 2009.

III. Interim Measures

The Yukon Government's decision to propose interim conservation measures was based on our obligations under the land claims agreements to ensure conservation, optimum long term productivity of the herd, sustainability of the herd, and a sustainable harvest. Yukon Government's concern for conservation is shared by all First Nations and Inuvialuit who use the herd for subsistence, as well as the co-management bodies who have a mandate for the management of the herd, communities within the Canadian range of the herd, and the general Yukon public. These collective concerns and our obligation under the land claims agreements, and our obligation to the Yukon public, provided the necessary direction for government to propose these interim measures.

The interim conservation measures reflect the management goal to ensure sustainability and productivity, stop the decline and promote recovery of the herd. The interim conservation measures include a mandatory bull-only harvest for all hunters and a mandatory reporting system for all hunters. The mandatory bull-only harvest and the mandatory reporting are designed to be responsive to the conservation needs of the PCH. Both are proposed to be implemented immediately through legislation, and where possible through collaborative agreements with First Nations and Inuvialuit. The Yukon Government will also utilize education and communication tools to assist with the transition to mandatory provisions.

In addition, Yukon Government has provided some information to the general public on the above, as well as a harvest limit of one (1) bull only for resident and non-resident licensed hunters. **The limit of one (1) bull is not applicable to aboriginal subsistence harvesters.**

An accurate harvest tracking system is essential to assess the impact of harvesting and, if required in the future, to further limit harvest, or to remove any limitations. These actions may affect First Nation's harvesting and/or management rights pursuant to land claims agreements.

The proposed measures will apply only in Yukon but apply to all hunters whether they are from Yukon, NWT, or elsewhere, as long as they hunt in Yukon. The Yukon Government will work collaboratively with the GNWT to adopt similar measures in the NWT and to help enforce Yukon regulations on caribou harvested in Yukon and transported to the NWT.

The interim measures call for a mandatory bull-only harvest; not a voluntary harvest. The rationale for mandatory restrictions is seven fold:

1. Voluntary harvest restrictions on aboriginal hunters have been tried in the Yukon over the past two decades. In most cases the outcomes have not met the management objectives. The exception was the Southern Lakes Caribou Recovery program which did result in an increase of caribou, but it required 15 years of no hunting, with the population plummeting to less than 1000. Such a lengthy period of no hunting is not an option for the communities who rely on the PCH.
2. A common pitfall has been that individuals, or groups, believe they have little, or less, impact on the resource than other individuals or groups, therefore they are reluctant to voluntarily reduce their own harvest.
3. The PCH has been declining for about 17 years, and it continues to decline. The management actions should reflect the severity of the decline. There is a sense of urgency to stop the decline; therefore it was concluded that mandatory measures are more appropriate at this point in time.
4. The historical harvest has been about 60% cows and 40% bulls. Changing these harvest practices would be difficult through voluntary measures.
5. There are diverse views from the various groups either using or managing the herd, which has led to a lack of consensus on the best approach. Taking a voluntary approach under these circumstances would be problematic.
6. Some individuals still believe there are a lot of caribou. It will be difficult to convince these individuals to voluntarily restrict their harvest.
7. Having one group voluntarily limiting their harvest while another group doesn't may create or enhance animosity between user groups.

Given the prolonged decline of the herd, the future projections which suggest a continued dramatic decline if action is not taken immediately, the perception by some that there are still ample caribou, the complexity of involving multiple jurisdictions, the different land claims agreements, and the long standing practice of harvesting primarily cows, the Yukon believes it is better to err on the side of caution and not experiment with voluntary measures at this time.

The continuing decline in the herd is a concern but it is not the sole reason for these measures i.e. there has not been a recent catastrophic collapse in numbers. This does not constitute an emergency closure. The transition measures are in response to the lack of an agreed-upon harvest management plan, and the lack of necessary instruments to implement conservation measures by all parties. The transition proposal is meant to fill the conservation and management void until an approved harvest management plan and the parties' necessary legislative instruments are in place. The only purpose of the transition measures is to address conservation in a timely manner; not to take over other parties' responsibilities, limit aboriginal rights, or force the Yukon Government's will on to others.

The Yukon Government acknowledges that the interim limits may not apply in those circumstances where a self-governing First Nation has enacted equivalent measures to effectively manage the subsistence harvesting rights of their citizens as provided for under Self-Government and Final Agreements. Where a First Nation government has the capacity and the legislative and regulatory tools in place to effectively implement these measures, Yukon Government will work with First Nations to address

implementation of these limitations including the application of First Nations' legislative or management authority.

Again, it is intended that there not be a limit on the number of bulls that may be harvested by entitled aboriginal subsistence hunters. It is anticipated that in the future numbers will need to be limited. If this occurs, there will be a determination on allocation where necessary to implement an annual allowable harvest. The regulation interest at this time does not address harvest allocation in the absence of a total allowable harvest. This latter point cannot be overemphasised as the land claims agreements are specific around roles and responsibilities when harvest allocation and a total allowable harvest are being considered.

The Yukon Government does not believe the proposed interim conservation measures trigger Total Allowable Harvest provisions in any of the land claims agreements. This position is based on the fact that First Nation and Inuvialuit harvesting rights on the PCH are described under the PCMA, and all other agreements are subject to the PCMA, with respect to areas of disagreement between those agreements and the PCMA (Appendix D). The PCMA was signed in 1985 but was imbedded in the Inuvialuit Final Agreement signed in 1984.

Under the PCMA, "Allowable harvest" means the level of harvest of the Porcupine Caribou Herd. The interim measures do not limit the level, or number, of caribou that can be harvested and therefore does not invoke an allowable harvest or a Total Allowable Harvest. However, the PCMA states that limitation on the sex of the caribou harvested can be set within the terms of the agreement:

Section J. Allocations of Annual Allowable Harvest in Canada

- I. Any of the parties to this Agreement may provide the Board with information that will, in the opinion of the submitting party, assist the Board in determining its recommendation of the annual allowable harvest from the Porcupine Caribou Herd.
- 2.a. After the Board has considered all relevant information, the Chairman shall submit its report to the Ministers to facilitate the enactment of any necessary regulations.
- b. The report of the Board may include, but is not restricted to, recommendations related to the following:
 - i. annual allowable harvest;
 - ii. categories and priorities of harvest allocations;
 - iii. methods of harvest;
 - iv. areas of harvest;
 - v. means of access;
 - vi. seasons;
 - vii. **age and sex of Porcupine Caribou to be harvested;** (Emphasis added) and
 - viii. research study requirements related to the harvest.
- c. In determining the native user allocation the Board shall take into account, among other things, the following criteria:
 - i. food and clothing requirements of the native users;
 - ii. usage patterns and levels of harvest by the native users;
 - iii. ability of caribou and other wildlife populations to meet the subsistence requirements of the native users; and

- iv. projections of changes in caribou populations.
- d. The Board may also include in its report the appropriate principles, considerations and procedures that should be used in order to calculate a total annual allowable harvest and its allocations, and more generally to define the conservation limit for the harvest of the Porcupine Caribou Herd.
- e. If the Porcupine Caribou Herd is healthy and of sufficient numbers to satisfy all reasonable completing needs, the Board may recommend that the setting of an annual allowable harvest is not required.

The Working Group has struggled with this issue in relation to the *Gwich'in Comprehensive Land Claim Agreement*. To clarify Yukon Government's understanding regarding the relationship between the PCMA and the *Gwich'in Comprehensive Land Claim Agreement* we offer the following assessment:

Section 12.6.4 in the main body of the *Gwich'in Comprehensive Land Claim Agreement* states that the *Porcupine Caribou Management Agreement* applies to the *Gwich'in Comprehensive Land Claim Agreement* notwithstanding (i.e. in spite of) any provisions of the *Gwich'in Comprehensive Land Claim Agreement* that are inconsistent. This means that the PCMA applies to Appendix C: Yukon Transboundary Agreement as well.

Therefore, any provisions in Appendix C: Yukon Transboundary Agreement that are inconsistent with the provisions of the PCMA are not applicable in the Yukon. If the PCMA allows for limitations, and a process, that are different from Appendix C then those PCMA limitations and process apply over anything that is in the *Gwich'in Comprehensive Land Claim Agreement*. Accordingly, section 12.4 of Appendix C: Yukon Transboundary Agreement, does not apply in regards to implementing a total allowable harvest (TAH) before any conservation limitations can be developed as a result of the PCMA.

Alternatively, and in addition to, 12.4 of Appendix C: Yukon Transboundary Agreement states that a total allowable harvest and/or basic needs level needs to be determined if there is a limitation of the Gwich'in harvesting right for the purposes of conservation. Section 12.3.1(a) of Appendix C: Yukon Transboundary Agreement states that the aboriginal right to harvest applies to "all species of fish and wildlife for themselves and their families at all seasons of the year and in any numbers on Crown land" (emphasis added). The right applies to quantum of animals and the timing of harvesting. Such limitations of quantum or timing for the purposes of conservation (excluding PCMA related measures as per section 12.6.4 in the main agreement) would trigger the application of 12.4; but as the 'mandatory bull only' proposal from Yukon Government does not limit the quantum or timing of a harvest the provisions of section 12.4 do not apply. The interim conservation measure only applies to the sex of an animal and that is only as an interim measure intended to reduce or stabilize the decline of the herd.

As section 12.2.3 of Appendix C: Yukon Transboundary Agreement is not in conflict with the PCMA and forms a cornerstone of the final agreement. Yukon must ensure that any limitations are "consistent with this chapter, reasonably required to achieve those purposes and may only limit those rights to the extent necessary to achieve those purposes" and Yukon must consult on the proposed limitations as per ss. 12.6.2 and 12.2.3(c). A bulls only harvest is significantly less intrusive than a harvest limit (i.e. quantum) of the number of animals that can be harvested. A limitation of the number of animals would require the development of a basic needs level and a total allowable harvest which is substantially more intrusive and limiting than a bulls only harvest.

IV. Harvest Rights under the *Porcupine Caribou Management Agreement*

Beneficiaries of the Vuntut Gwitchin First Nation, First Nation of Na-Cho Nyak Dun, Tr'ondëk Hwëch'in Final Agreements, the *Gwich'in Comprehensive Land Claim Agreement*, and the *Inuvialuit Final Agreement*, may hunt the Porcupine Caribou Herd for subsistence anywhere in the Yukon, within the range of this herd, except on settlement lands belonging to another Yukon First Nation (permission is required). Permission cannot be granted in overlap areas between settlement lands.

The harvest of Porcupine Caribou, on land in the Yukon, including the primary and secondary use areas under the *Gwich'in Comprehensive Land Claim Agreement* (Appendix E), is a preferential right not an exclusive right. The exception is the Inuvialuit who have exclusive right to harvest caribou in Ivvavik National Park and Herschel Island Territorial Park. The other exception is all First Nations have the exclusive hunting right on Yukon land which they hold title (e.g. Settlement Land and Tetlit Gwitchin Yukon land). For the sake of clarity, this does not include the secondary use area or most of the primary use area under the *Gwich'in Comprehensive Land Claim Agreement* where title is not held.

Along with preferential harvesting rights of the First Nations and Inuvialuit, all the land claims affecting the Yukon establish the principle of sharing the resource with non-aboriginal people (Appendix F).

V. Conservation

Conservation of fish and wildlife is one of the pillars all the land claims were built upon (Appendix G). The proposed regulations are designed to ensure Yukon Government meets its conservation obligation to the PCH, through responsible management, and its obligations to consult with affected aboriginal governments. Yukon Government is bound by the definition of conservation in the land claim agreements for the purposes of limiting aboriginal rights.

Porcupine Caribou Management Agreement (A.3)

“Conservation” means the management and use of Porcupine Caribou and its habitat which best ensures the long term productivity and usefulness of the Herd for present and future generations.

Tr'ondëk Hwëch'in, Na-Cho Nyak Dun and Vuntut Gwitchin Final Agreements

(Chapter 1 - Definitions)

"Conservation" means the management of Fish and Wildlife populations and habitats and the regulation of users to ensure the quality, diversity and Long Term Optimum Productivity of Fish and Wildlife populations, with the primary goal of ensuring a sustainable harvest and its proper utilization.

"Long Term Optimum Productivity" means the productivity required to ensure the long term continuation of a species or population while providing for the needs of Yukon Indian People and other harvesters and non-consumptive users of Fish and Wildlife in the short term.

Gwich'in Comprehensive Land Claim Agreement

(2.1.1) -“Conservation” means the management of wildlife populations and habitat to ensure the maintenance of the quality and diversity including the long-term optimum productivity of those resources, and to ensure a sustainable harvest and its efficient utilization”

(Appendix C 1.1.1) - “Conservation” means the management of fish and wildlife populations and habitats and the regulation of users to ensure the quality, diversity and long term optimum productivity of fish and wildlife populations, with the primary goal of ensuring a sustainable harvest and its proper utilization;

Inuvialuit Final Agreement (Section 2 - Definitions)

“Conservation” means the management of the wildlife populations and habitat to ensure the maintenance of the quality, including the long term optimum productivity, of these resources and to ensure the efficient utilization of the available harvest;

Conservation is also defined in scientific circles as follows:

Webster’s Dictionary – “the act of keeping free from depletion...wise management and maintaining...”

International Union for the Conservation of Nature’s (IUCN) *Communication, Education and Public Awareness (CEPA) Toolkit* – “The management of human use of nature so that it may yield the greatest sustainable benefit to current generations while maintaining its potential to meet the needs and aspirations of future generations.”

The Wildlife Society - Conservation is defined as the responsible stewardship of wildlife populations, species, and their habitats, with the goal of sustaining them into the future.

In biological terms productivity refers to the recruitment (fertility, calf and yearling survival) into a population. Both land claim and scientific definitions of conservation place the onus on humans to do everything reasonably possible to ensure that our actions do not adversely affect population numbers now and into the future. It is implicit in these definitions that humans should not implement actions that would deplete populations. Yukon Government believes that continuing to harvest this herd at the existing levels is not in keeping with its conservation obligations under land claim agreements, as well as its public trust responsibilities.

VI. Precautionary Principle

Yukon Government endorses the precautionary principle in making management decisions for the PCH. The following are useful working definitions of this principle.

The International Union for Conservation of Nature (IUCN):

‘precautionary principle’ or ‘precautionary approach’ – is a response to uncertainty, in the face of risks to health or the environment. In general, it involves acting to avoid serious or irreversible potential harm, despite lack of scientific certainty as to the likelihood, magnitude, or causation of that harm. Precaution is now an established principle of environmental governance, prominent in law, policy and management instruments at international, regional and domestic level, across such diverse areas as pollution, toxic chemicals, food and phytosanitary standards, fisheries management, species introductions and wildlife trade. Applying precaution in natural resource management (NRM) and biodiversity conservation is clearly essential.

Environment Canada:

The precautionary approach recognizes that the absence of full scientific certainty shall not be used as a reason to postpone decisions where there is a risk of serious or irreversible harm. Even though scientific information may be inconclusive, decisions have to be made to meet society’s expectations that risks be addressed and living standards maintained.

The precautionary principle states that if an action might cause severe or irreversible harm to the environment, in the absence of a scientific consensus that harm would not ensue, the burden of proof falls on those who would advocate taking the action. This puts the burden of proof on those who would advocate taking action that would potentially cause harm to the PCH. In this paper Yukon Government is presenting its rationale for limiting the potential harmful effects of harvest; however it is equally important that those who do not agree with these conservation measures present the counter proof that continuing to harvest at more liberal levels will have no affect on the population.

VII. Sociological value of the herd

Although this paper outlines the scientific basis for implementing conservation measures, it is the social values that will ultimately determine the need for management actions, how they will be implemented, and if they will be respected.

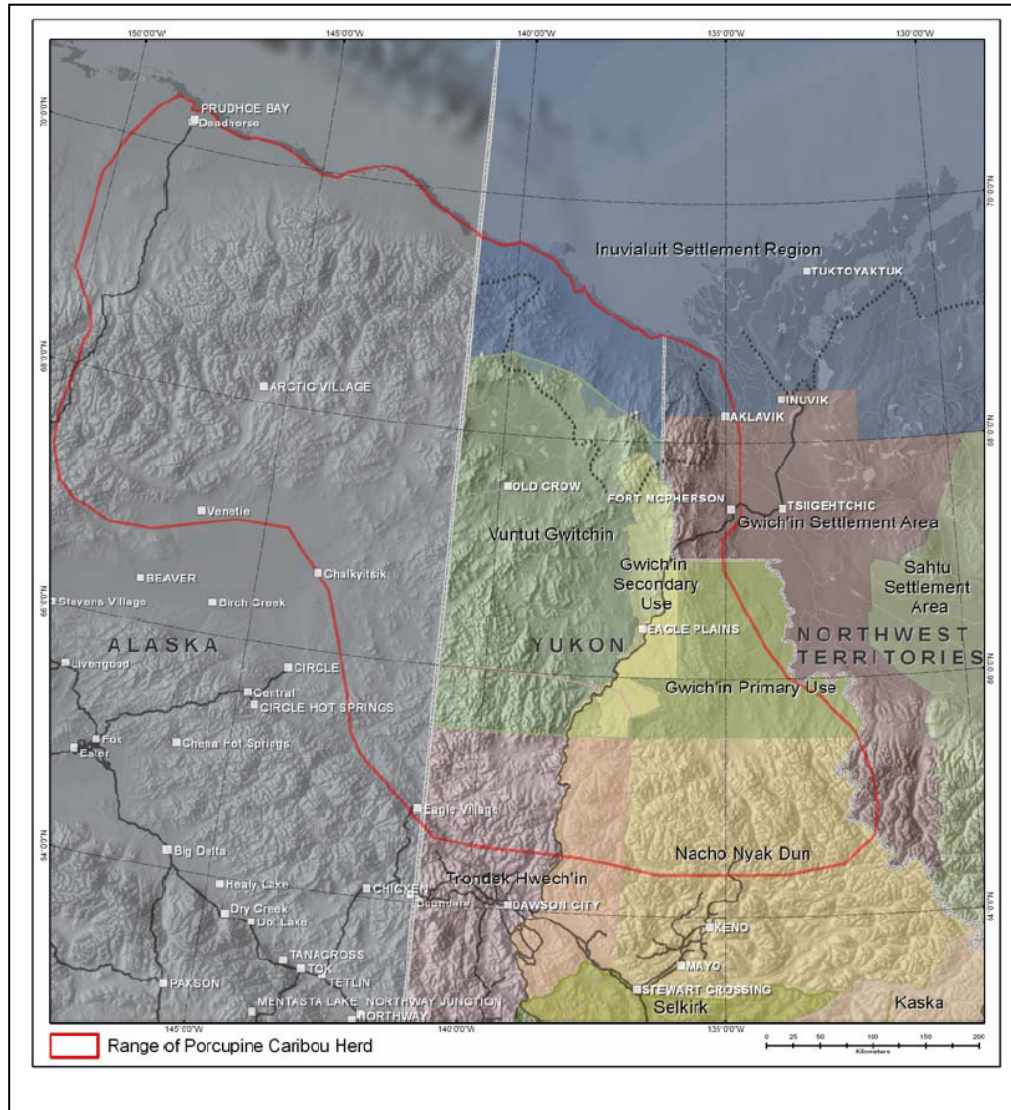
The societal values of the PCH and the acceptable management practices have been articulated in a number of forums. Most recently, the Working Group consulted with aboriginal communities and users of the PCH in Yukon and the NWT. When asked the question “What management actions do you think should be applied to the harvest now and in the near future?” the response was unequivocal: communities want to stop the decline of the herd and restore higher densities. A summary of that question suggested that respondents were either supportive of the plan or thought that more needed to be done, sooner, including stopping cow hunting now. Some felt the thresholds between colour/management zones, as noted at that time, should be higher. There were several comments about the importance of harvest reporting and the ability of First Nations (and Inuvialuit) to regulate their hunters.

As well, the PCMB passed a resolution (Appendix H) to take immediate steps to ensure the conservation of the PCH. The Vuntut Gwich'in First Nation has been the strongest proponent of all aboriginal groups to limit harvesting and to stop the development on the PCH calving grounds in Alaska. The WMAC(NS) has added its concern with the decline and management actions on the herd. The Yukon general public have expressed concern over the decline in the herd, too.

The PCMA recognizes the value of these caribou to Canada generally and that a special relationship exists between native users and these caribou: "The parties recognize the special dependence of all native users on the Porcupine Caribou and in particular, the unique dependence of the native users of Old Crow on the Porcupine Caribou." (J. 8.)

VIII. The Science basis for adopting a conservative harvest management approach for the PCH

Herd Distribution



The PCH ranges between Alaska, Yukon and the Northwest Territories. In Yukon it crosses four First Nations and the Inuvialuit traditional territories. The Tetlit Gwich'in claims in Yukon consist of a primary use area and a secondary use area and the Inuvialuit claim in Yukon consists of Yukon's North Slope.

Historical and Future Population Trends

Past - The PCH increased from about 100,000 animals in the early 1970s to 178,000 in 1989. Between 1989 and 1992 the herd started to decline. The last time the herd was counted was in 2001 when there were 123,000 animals; 3% of the population had been

lost every year since 1989. There are no confidence intervals calculated for these estimates since they are considered censuses.

Present - Since 2001, biologists have continued to monitor the birth rate, early calf survival and 9-month old survival each year. From radio-collar data, biologists have been able to estimate mortality of adult cows. A model of likely population growth rates was developed from these data. The model suggests that the herd continued to decline and may be about or lower than 100,000 animals now, a level similar to the early 1970's.

Population model

The following is a brief description of the model and the assumptions that were made to estimate the current population. The model incorporates: calves born each year (birth rate), population size from post-calving photocensus (late June / early July), calf survival (first month of life, and over-winter), annual estimated harvest (4,000), and estimated wounding loss (15%). The most complete reported harvest was from the only three years (1992, 1993 and 1994) when we have information from all user groups across the range of the herd.

The model tracks both sexes for calves, yearlings, 2 year subadults and adults (3 years and older). For each year the model computes the number of calves born (from pregnancy rates and the number of cows) and how many of the calves survive their first month of life. It also uses input values for adult mortality (from natural causes, hunter harvest and wounding losses). We can then vary the harvest to see a predicted effect on the population; increase in number of bulls taken; and change in wounding loss.

The model makes several assumptions. Missing data are estimated based on typical historical values such that the model trends fit what data were available, mortality varies from year to year (varies around a long term average), subadult females (2-year olds) have relatively low parturition rate (~4%), percent of breeding females (3 years and older) varies from year to year (varies around a long term average), harvest is additive to natural mortality, and the number of bulls in the population is not a limiting constraint on the proportion of cows conceiving in the fall.

Some limitations on the model include difficulty in measuring accurate natural mortality as sample sizes of collared animals are not large, yet herd population trends are sensitive to small changes in adult cow mortality. Also, the data related to harvest are not well documented at a herd-wide level, and wounding loss is poorly understood.

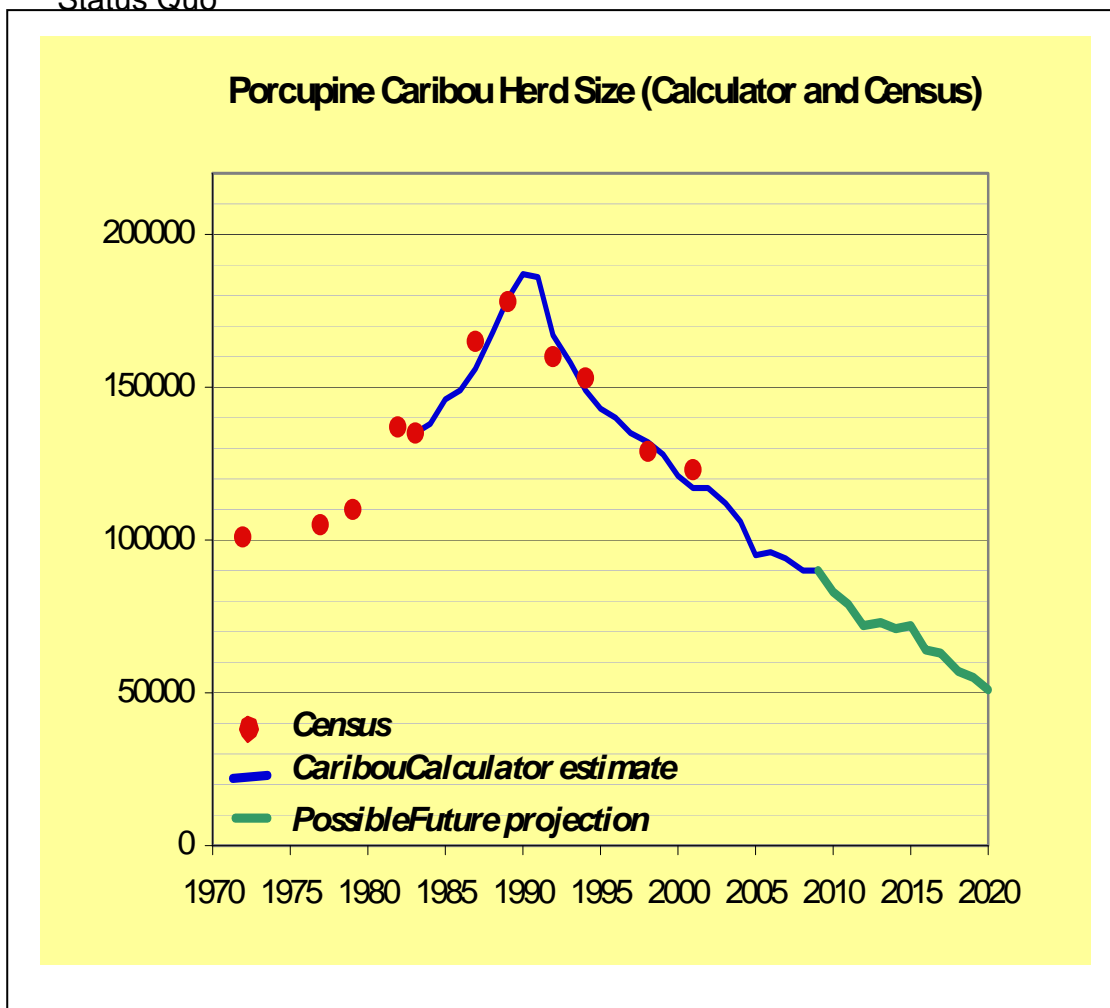
It is important to realize that this model continues to be refined and developed and that in its current form it was intended to be used as an information tool, not as the sole basis for decision-making. There are limitations on its precision and management decisions should take into account the uncertainties associated with biological field data, and the significant unknowns of total herd-wide harvest totals or sex ratio. We need to continue to improve the information and this model to better assist us with determining the impacts of different management scenarios.

IX. Historical and Future Population Trends under current harvesting numbers.

Acknowledging there are limitations in using a model (see discussed above), based on historical information on productivity and natural mortality the model predicts that if harvest continues at current levels, the herd will decline to under 50,000 caribou by 2020 (11 years). The model uses the status quo for harvest (4000 caribou of which 40% are bulls and 60% are cows) and a 19% natural adult cow mortality, excluding harvest. The adult cow mortality during the increasing phase (1985-1989) was 15% and during the decreasing phase (1989-2001) it was 17%. A value of 19% is used on future projections to reflect the anticipated effects of climate change and increased disturbances due to development. This is consistent with the precautionary principle, our obligations under the land claims agreements to ensure conservation, optimum long term productivity of the herd, sustainability of the herd, and a sustainable harvest. This is also consistent with direction from the co-management workshop held in Inuvik in 2007.

Doing nothing or continuing with the status quo is inconsistent with the definition of conservation, the precautionary principle and the Yukon Government's management goal for the Porcupine Caribou Herd (PCH): to respect conservation principles, ensure sustainability and productivity, stop the decline and promote recovery of the herd.

Status Quo



What is the reason for the decline?

Biologists are not absolutely sure of the reasons for the decline, but they likely include a combination of factors. Climate has been changing, especially related to warmer temperatures during spring. Although this may be beneficial during late spring by exposing fresh green vegetation early, it is not good for the caribou early in spring as they try to migrate north to their calving grounds. Since the herd had been declining there has been a doubling of the number of days on spring migration that the herd was exposed to freezing and thawing of the snowpack. This freezing and thawing leads to icing conditions which make feeding and traveling more difficult for the herd. This may be why for the past 4 years in a row the herd has not calved on its' tradition calving grounds in Alaska.

The harvesting of adult females has undoubtedly contributed to the decline. See discussion below on harvesting.

Predation is also a factor. The Yukon Government has studied the effects of wolf predation on the herd and has estimated that 16% -18% of herd is taken by wolves each year. Bears and eagles are known to prey on the herd, especially the calves.

How productive is the herd?

The PCH is the least productive of the large migratory caribou herds in North America. During its increase phase, the PCH growth rate was 4%, half as much as the next lowest herd. For example if we compare the PCH with the Western Arctic Herd (WAH) in Alaska and the George River Herd (GRH) in Ungava we know that:

- all three herds were at the same population level (~100,000 animals) in the early 1970s;
- in 1989 when the PCH peaked at 178,000, the GRH had increased to ~ 680,000 animals and the WAH was at ~400,000; and
- after the PCH started to decline, the GRH continued to increase until at least 1993 (peaked at 780,000) and the WAH continued to increase until at least 2003 (peaked at 490,000).

The definition of conservation in the land claim agreements is based on “long term optimum productivity”. Productivity refers to the recruitment (fertility, calf and yearling survival). Given that the PCH has the lowest productivity rate of all the herds in North America it would be prudent to reduce harvesting on this herd, especially during a prolonged decline. Again, this is consistent with the precautionary principle.

U.S. Geological Survey studies on the PCH have found several factors were associated with enhanced survival of individual calves, 1983-1994 (n = 345 calves). Survival was greater (10.8%, P = 0.004) if the calf was born in a high density concentrated calving area rather than in the low density peripheral portion of the calving ground; greater (11.0%, P = 0.008) if born near the median calving date rather than being born early or late in the calving season; greater (11.2%, P = 0.006) if born on the coastal plain with lower suspected density of wolves, eagles and bears; and greater (8.3%, P = 0.026) if born in the 1002 Area. These results suggest a lower productivity rate may be

experienced by the herd if calving is delayed or spread out over the Alaskan and Yukon North Slope, which has been the case in recent years.

What is the natural mortality of adult females and how important is the female segment of the PCH?

Biologists monitor the mortality of adult cows using the fate of radio-collared animals. During the period when the herd was increasing, 15% of cows died each year. During the decreasing phase, the rate rose to 17% dying each year. Adult females are the most important component on the herd. It was calculated that even as little as a 2-3% increase in adult cow mortality would have halted the increase in the PCH during the 1970s and 1980s.

When using collars to calculate mortality rates it is important to put collars on different individuals each year to alleviate a potential source of error through an aging collar sample. This was done on the PCH. As well, mortality was calculated for each phase rather than each year – thus any problems with smaller annual sample sizes are alleviated by combining a number of years.

The importance of adult female survival on population growth cannot be overemphasised. This parameter is shown to have the greatest influence on population growth rate for large mammals and that even small changes have a significant effect on the population. Ultimately, by increasing the mortality rate of adult females (because we assume harvest mortality is additive) during the decline, through harvest, we are exacerbating the rate of decline possibly beyond the range of natural variability.

To illustrate the importance of cows, if a hunter took 10 bulls a year for the next 10 years instead of 10 cows, there would be 230 more caribou in 10 years. To put this in perspective if we assume that the present harvest level is about 4,000 animals and that 60% are females, by totally eliminating all adult female harvest we would have 50,000 more caribou in the PCH by 2020 and the harvest would still be 4,000 bulls a year.

Don't caribou cycle normally so won't the herd just recover naturally?

Yes, from available surveys and knowledge of elders, caribou go through periods of abundance and scarcity. The period seems to be about 40 years. All migratory caribou herds in North America were low in the late 1960s and grew through the 1970s and 1980s. As mentioned earlier the PCH was one of the first herds to start to decline and indications are they are still declining. If the PCH herd continues to follow the historic cycles, it should reach the low point in the cycle around 2010-2015. We cannot count on the herd bottoming out in the near future and then start to increase.

What is different during this period of scarcity, as opposed to historical times, is that: there is access to much of the migration and wintering areas (Dempster Highway completed in 1979); increased access leads to many more humans on the range of this herd; hunters have better and faster equipment; hunting pressure is increasing as adjacent herds have crashed and harvest restrictions are put in place; and there are more development projects (current and anticipated) within the range of the herd. As well, the climate is changing with warmer temperatures in the spring. This has caused icing conditions along the spring migration route, resulting in a slower migration. This is the fourth year (2009) in a row that the PCH has not reached parts of its traditional calving grounds in Alaska. Instead they have only calved on the Yukon portion of their

traditional calving range. Climate change may have been a factor in half of the Eagle Plains burning in the early to mid 2000's. The result is critical lichen has been removed from part of the herds range. More development, more efficient hunters and a changing climate may be implicated in the present decline and may result in deeper declines and a longer period for the herd to increase compared to the previous declines.

The implications of management decisions are often long-term. While the rise and fall of migratory caribou herds is pronounced, delay in management actions can exacerbate fluctuations in wildlife populations. There is no clear consensus, yet, on what sets the upper bound on these populations. Evidence is accumulating, however, (particularly from the George River and smaller Newfoundland herds) that summer forage is regulating. This is demonstrated by recent reductions in calf weights, poorer nutrition, diminished adult body size, fewer male antler points, and changes in migration leading to less time on the summer and calving range. These are parameters that should be monitored in the PCH to get a clearer picture of what affect habitat has on the herd, especially during this period of decline.

Admittedly, it is difficult to predict the impacts of these cumulative human pressures on the PCH, however, by assuming there will be negative effects that will likely disrupt the historical natural cycle, we are following the precautionary principle.

Could the decline in the PCH be accounted for by emigration of individuals to more westerly herds?

Biologists have two ways to keep track of the loyalty of individuals to remain in their herd: 1) by monitoring the movements of radio-collared animals (generally cows), and 2) examining the genetic "distance" between the herds. Radio-collars have been used for many years (approximately 1800 collars between 1985 and 2009) and to date we've seen only two instances that may have been herd exchanges. One cow from the Central Arctic Herd (CAH) moved into PCH range but died shortly after so we could not tell if the move was permanent. Last year, two PCH animals that hadn't been located for a while were found on CAH calving range so a satellite collar was deployed on one caribou to see if it returns to more typical PCH range.

In the NWT, some Beverly Caribou Herd collared cows are now calving on the nearby Ahiak herd calving range. These herds share a large portion of their winter ranges. Given our current convention of defining herds as having unique calving ranges, some conclude that there has been emigration from the Beverly to the Ahiak herd however the severely depressed population size of the Beverly Herd confounds this situation.

In the 1990's, there were two separate studies of caribou genetics comparing 1) PCH and NWT barren-ground herds and 2) PCH and Yukon woodland caribou herds. Both studies found that the herds do share some genetic material which indicates the herds either have a common ancestor or there is some level of inter-breeding over the long term. It is possible to have some genetic similarities between herds without affecting the demographics of the populations. If caribou from different herds are in the right place at the right time, there is no reason why they could not interbreed. The Central Arctic caribou have not been analysed in comparison to the Porcupine Herd.

Again, faced with some uncertainty around the level and rate of interbreeding between herds we have used the precautionary principle to assume the PCH decline has not

been the result of mass movement into adjacent herds. There is no evidence to suggest significant movement from the PCH to any of the adjacent herds.

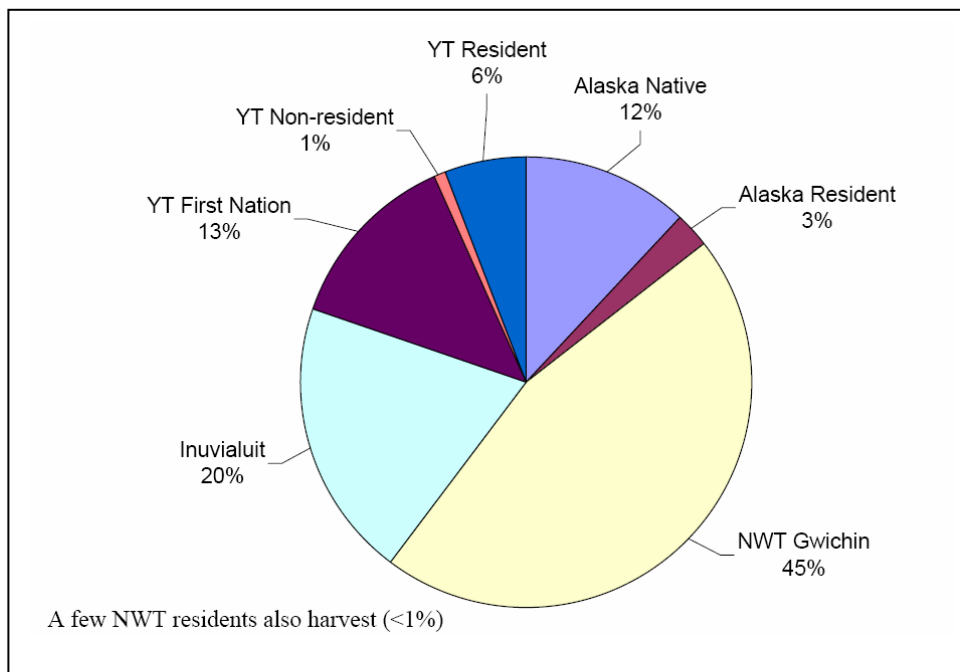
Harvest Information

Harvest data have not been readily available from aboriginal harvesters; however there are three years where data are available from all user groups (1992, 1993 and 1994). The biggest harvest was about 6,000 caribou and, in general, we assume that an average of 4,000 caribou is taken each year. Yukon Government acknowledges that managing a herd on outdated harvest information is problematic. Accurate up-to-date information is essential.

The sex ratio of reported harvest data shows an average of 58% cows (range 46 to 70%) however there are many missing years and user groups in the data. There's also a seasonal component with hunters selecting for bulls in the fall and cows in the spring. If caribou are not available in a particular season, there's a large effect on the ratio for that year.

Good harvest information is needed every year if we are to assess harvest impacts on the herd.

Average Portion of Harvest of Porcupine Caribou Herd (based on data from 1992, 1993, 1994)



What is the impact of harvesting and predation on the population dynamics of the PCH?

At population highs, predation and harvest have a relatively reduced effect on the population trend; however as populations decline naturally, the impact of harvest and predation becomes much more important. Harvest and predation can be a very significant proximate factor which could shape the rate of decline and the rate of recovery.

It is interesting to note that the PCH declined by 3% per year between 1989 and 2001 and assuming an annual harvest of 4,000 caribou, the harvest rate approximates the rate of decline i.e. 2.3% in 1989 with a population estimate of 178,000 and 3.3% in 2001 with a population estimate of 123,000 caribou. If hunting is additive, which is the assumption in our model, then it is reasonable to conclude that harvest is a significant factor in determining the size of this herd; and therefore, by extension a significant factor in its recovery.

An unfettered harvest during a decline in the population, regardless of the cause of the decline, is inconsistent with the management objective for this herd. The effects of hunting and predation become increasingly more significant as the population declines. This is because both humans and predators (wolves, bears and eagles) are very effective at hunting caribou. They are so effective that the numbers of caribou killed will not immediately decline proportionately to the decline in the caribou. The result is an increasing negative effect as the herd declines. For example if 3,000 caribou were harvested annually when the herd numbered 178,000 in 1989, that is 1.7% of the herd. If the same harvest of 3,000 caribou occurred at the current estimate of 100,000, that is 3% of the herd, or almost double the rate.

Similarly, predation effects may increase as the caribou population decreases. The Yukon Government estimates that when the herd was at 178,000 caribou, wolves killed between 16% and 18% of the herd annually. Wolf predation rates are responsive to prey availability over time, however this is a complicated relationship that needs to consider availability of other prey species, competition with other predators, and lag effects. If we assume a slow response from wolves, then like hunting the effects of predation will be magnified as caribou numbers decrease.

Continuing to allow the herd to decline, thus increasing the effects of hunting and predation, is clearly inconsistent with the definition of conservation in the land claim agreements. Realistically the only factor which we have some control over is hunting. The proposed management actions do not address predation as Yukon Government believes that it is not logistically, financially, or ethically feasible to control predator numbers over any part of the herds range. The management actions and expectations of herd recovery will occur within the natural limits of predation.

What is the sustainable harvest of the PCH?

The effects of hunting on any wildlife population will always be negative (additive mortality) unless only the growth component of the population is harvested, or the growth of the population being harvested is limited by some other factor that will compensate for hunting. The best example of compensation is when a population cannot grow because there isn't enough food to support the growth. Under these circumstances removing individuals increases the amount of resources available for survival and reproduction for other individuals (compensatory mortality).

Evidence from body condition studies and pregnancy rates suggests that the PCH are not limited by food, or any other factor that hunting could compensate for. If hunting is to have no effect on the population, hunting must be equal to or less than the growth of the population. In other words, the population must be growing in order for hunting to not have a negative effect. This is the sustainable yield of a population.

It would be prudent to acknowledge there is very little evidence that has quantified compensatory versus additive hunting mortality for any wildlife population. The assumption, however, is crucial. If harvesting is totally additive, then there is no

sustainable harvest for the PCH given the population has been in a steady decline since 1992. Hunting would merely accentuate the rate of decline. However, if for example summer food is regulatory, then hunting mortality is likely to be at least partially compensatory. If so, the population projections for the PCH are likely pessimistic. It is fair to say that there is insufficient evidence to adjudicate on the issue of additive or compensatory mortality. It remains a source of uncertainty, however in keeping with the precautionary principle we have assumed hunting is additive.

The Organisation for Economic Co-operation and Development Glossary of Statistical Terms defines sustainable yield as: “the sustainable yield of renewable natural resources is traditionally defined as the extraction level of the resource which does not exceed the growth.” In forestry it is the amount of wood that has grown in a particular year, within a given patch of forest.

The land claim agreements refer to a “total allowable harvest” which is defined as the total number or level of animals which are deemed not to be required for conservation. The IFA defines it further in 12.(41)(b) “ in determining the total allowable harvest, conservation shall be the only consideration...”. The term “total allowable harvest” can therefore be used interchangeably with “sustainable yield”

Strictly from a biological perspective, there is no sustainable harvest for the PCH given the population has been in a steady decline since 1992. However, wildlife management policies must take into consideration both biological and sociological perspectives, and values. Policies may allow a population to be over harvested if there is a strong sociological reason to do so, and as long as it doesn't compromise the long term viability of the herd. This is not the same thing as a sustained yield or a total allowable harvest. Such an overharvest would be more appropriately referred to as a “managed harvest”.

Applying the concept of sustainable harvest to populations that cycle over 40 years is a management challenge. One option is to use one harvest rate throughout the entire cycle, i.e. average the rate of increase, during the increasing phase, with the rate of decline during the declining years. Another would be to progressively reduce the number of animals harvested throughout the declining phase, that is use a fixed % (perhaps 2%). Uncontrolled harvest at the bottom of the cycle is inconsistent with the definition of conservation and the Yukon Governments goal. Continuing to harvest at the bottom of the cycle will likely drive the herd lower thus creating a slower recovery.

Relying on natural ecological forces to turn the population around is risky and not consistent with the precautionary principle. Hope is not a “strategy”.

Other potential threats to the herd

Are there potential future developments on the range of the PCH that we should be addressing in our management practices today?

Presently there are two potential developments that may affect the future productivity of the PCH.

1. Mackenzie Gas Pipeline: Within a year a decision will be made whether to build a Mackenzie Valley pipeline linking gas fields of the delta to southern markets. This will be a huge economic boom to the region. The PCMB identified the following potential Mackenzie Gas Pipeline-related impacts on the herd:

- Increased levels of traffic resulting in direct loss of caribou due to road kills and injuries, and indirect loss due to displacement of caribou from roads
 - Increased recreational activity
 - Increased harvesting interests along the Dempster Highway
 - Increased risk of wildfire
 - Increased risk of invasive species introduced along the road
 - Increased pressure on co-management bodies, and
 - Increase cumulative effects
2. ANWR: 1002 Land Development: By far the most significant risk to the future productivity of the PCH is the potential development on their calving grounds in Alaska. Numerous reviews and studies have determined that the project would have significant adverse impacts on the herd.

These possible projects therefore need to be considered when managing the population today. In all likelihood these projects, if they do occur will not happen for another 5-10 years, a time when the herd should be increasing if natural cycles are as predicted. It is important therefore that the management of the herd should focus on ensuring that populations are high enough to recover in a timely manner. Right now harvest management is our most effective tool.

Another consideration is that if we assume that the herd range will shrink as the herd size goes down, it will be more difficult to make convincing arguments to protect the habitat as caribou will no longer use some areas. In other words, with fewer caribou using the landscape, especially the 1002 lands, it will become more difficult to protect these areas.

Population Projections

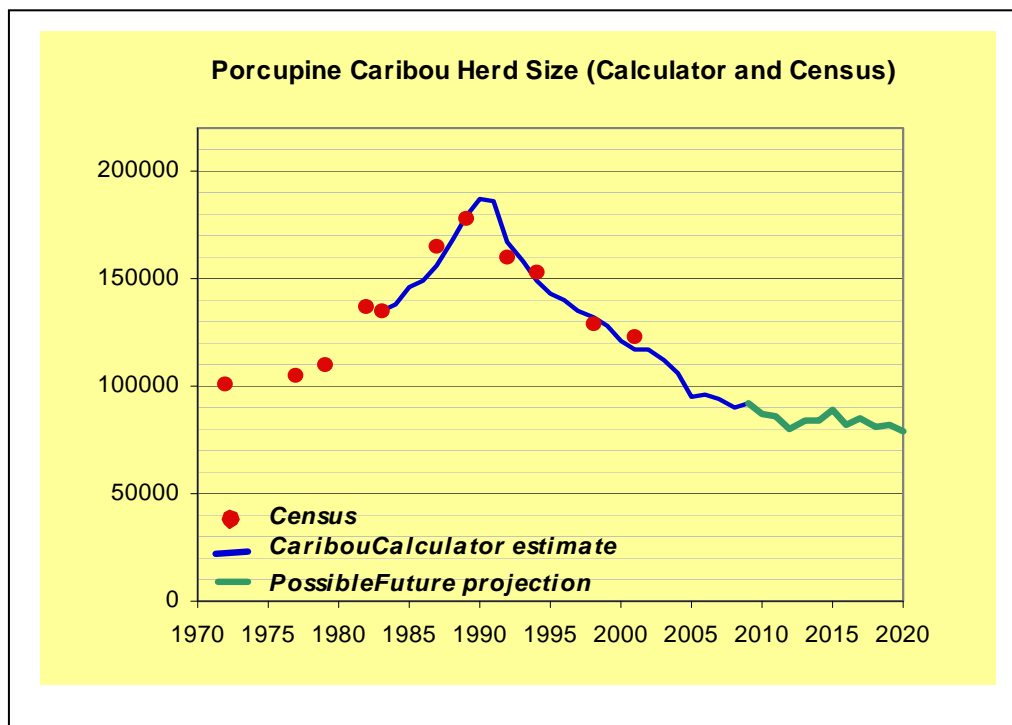
Keeping in mind the cautionary note about this model (page 13), we present three different management scenarios. All three scenarios use a 19% adult cow mortality rate. The annual adult cow mortality observed during the increasing phase, from the early 1970s to 1989, was 15%; and during the decreasing phase, from 1992 to 2001, was 17%. For our projections a rate of 19% was used to reflect increased development and increased adverse impacts of climate change in the future. Another reason for using the higher mortality rate is that presumably the average age of cows has been increasing, if recruitment has been poor. However, there is no difference for birth rate, early calf survival and late winter calf ratio during the increase phase versus the decrease phase. The higher rate was accepted by the attendees to the Inuvik harvest planning workshop held in 2007. This is appropriate as it is consistent with the precautionary principle.

Projections were also based on a harvest composition of either 60% cows (status quo) or 5% cows (not 0% cows). This was done to account for an incidental cow harvest due to old hunting practices.

Management Scenario 1:

If we reduce the harvest to 2,000 caribou (50% of current levels), with a composition of 40% bulls: 60% cows, the herd will still decline into the future. This scenario is inconsistent with the definition of conservation, long term optimum productivity, the precautionary principle, and the Yukon Government's management goal for the PCH: to respect conservation principles, ensure sustainability and productivity, stop the decline and promote recovery of the herd.

This scenario would be more complicated to implement in the short term as it would invoke a TAH provision under the land claim agreements, requiring a more lengthy consultation process.



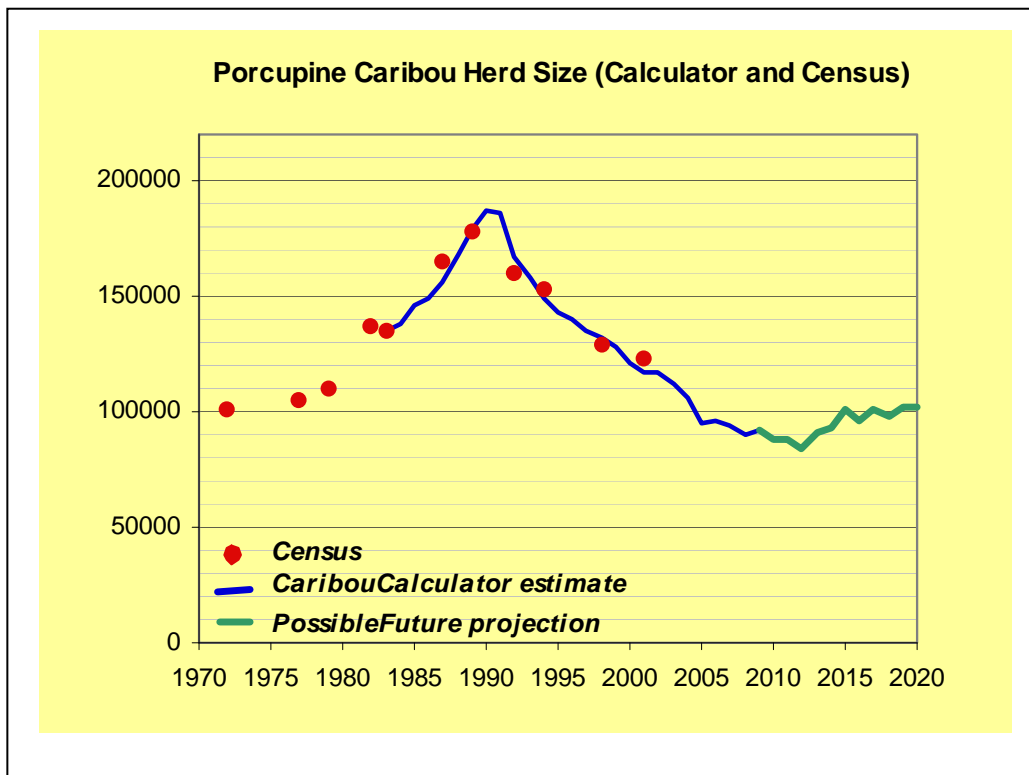
Management Scenario 2:

If we reduce the harvest to 2,000 caribou (50% of current levels), with a composition of 5% cows, the decline stops and the population increases.

This scenario is consistent with the definition of conservation, long term optimum productivity, the precautionary principle, and the Yukon Government's management goal.

This scenario would be more complicated to implement in the short term as it would invoke a TAH provision under the land claim agreements, requiring a more lengthy consultation process.

This is the scenario the Yukon Government will be striving to achieve in the future.

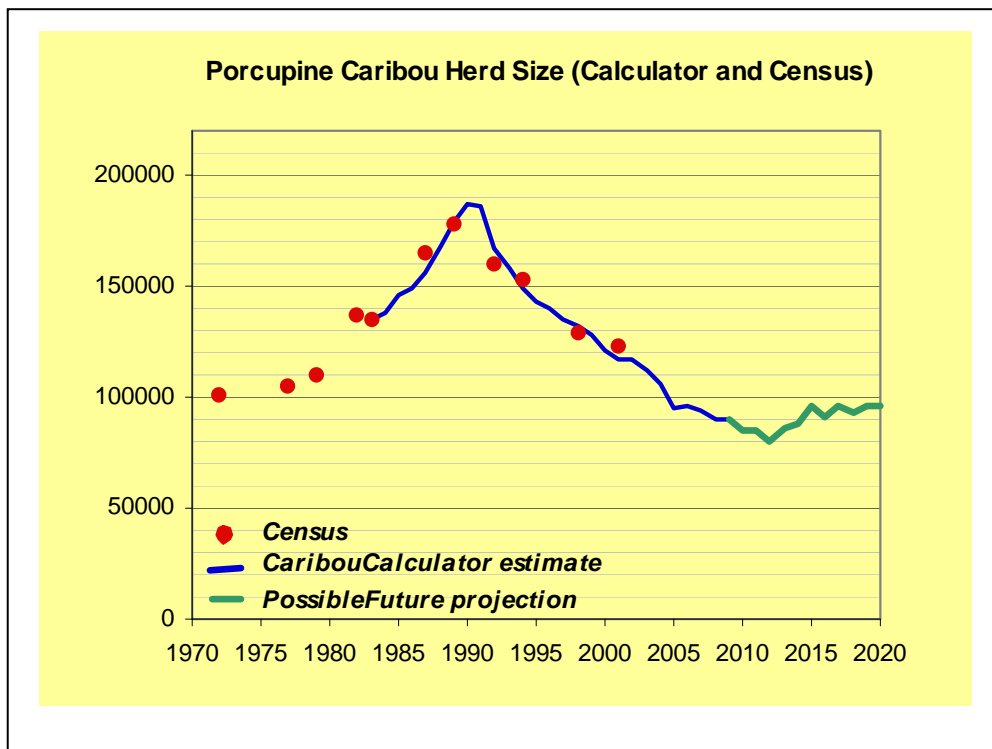


Management Scenario 3: Yukon Governments proposed interim measures

If we continue to harvest at the current rate of 4,000 caribou, with a composition of 5% cows, the decline stops and the population increases.

This scenario is consistent with the definition of conservation, long term optimum productivity, the precautionary principle, and the Yukon Government's management goal.

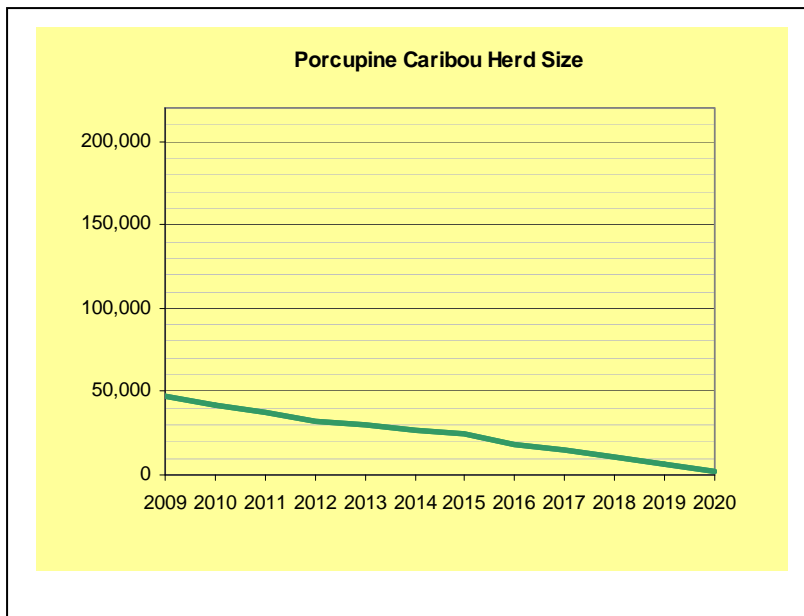
This is the least intrusive of the three scenarios on subsistent harvesters as it does not require a reduction in the number of caribou harvested, only the sex.



Worst Case / Recovery Scenario with a population of 50,000 caribou

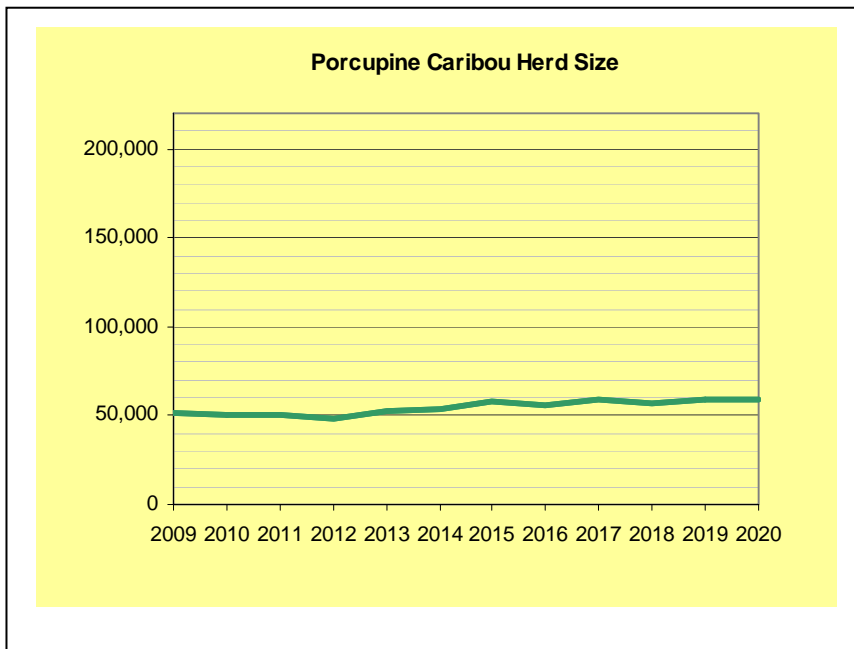
Example 1 Assumes:

- Population of 50,000 caribou and harvesting as usual.(4,000/year).
- Future 19% adult cow natural mortality.
- **The herd would disappear in 12 years.**



Example 2 Assumes:

- Population of 50,000 caribou and no harvest.
- Future 19% adult cow natural mortality.
- The herd remains stable at this low number then begins to grow very slowly. It would take decades to bring the herd back to 100,000 caribou



Other Considerations

Will harvesting too many males affect reproduction?

A bull-only harvest strategy has often been used in the management of ungulates. Because of the polygynous breeding systems for these species (where one male can inseminate many females), a larger sustainable harvest should be realizable. One potential draw back to a male-only harvest is reduced productivity should males become limiting to otherwise reproductive females. If this were to happen it may lead to a failure to breed or delayed breeding, leading to delayed births and, ultimately, lower recruitment. In Newfoundland, a sex ratio (adult males to adult females) as low as 20 males to 100 females had no affect on recruitment. While there were increases in rutting group size, in the proportion of medium-sized stags and in time-during courtship, there

was no apparent decrease in pregnancy. Only once the sex ratio became even lower (1:12; on a small island population) did the proportion of males appear insufficient for mating all females.

It should be noted here that some studies have shown that a sustainable hunt depends more on the total harvest than on a male only harvest. Ideally, both strategies should be used to stop the decline in the PCH,

Adaptive management

It is recommended that whatever management actions are taken, they are implemented in the framework of adaptive management. That is, they need to be monitored for their effectiveness with focused, scientific studies. In addition to harvest estimates, such monitoring should include the condition, age, and size of adult females, calf recruitment and adult sex ratio. The response of the PCH will be the ultimate gauge of conservation success.

Reasons for wanting to keep the Porcupine Caribou Herd large

Faster numerical recovery

Simply put the expected time for this herd to double will be decades after it starts to recover, assuming that there is near zero harvest. If the herd drops to 50,000 it will take years to get to 100,000. The lower we let the herd go the less actual number of caribou there are even after doubling. The lower we let the herd go the more years it will take to increase to over 100,000 and the more hardship on families who depend on the caribou.

It is hard to protect habitats that caribou no longer use

If we assume that the herd range will shrink as the herd size goes down, it will be more difficult to make convincing arguments to protect the habitat as caribou will no longer use some areas. It is already hard enough to make the case to set aside lands. The herd has not calved in Alaska's 1002 Lands for three years now. If this continues arguments to stop drilling there become weaker.

It is hard to hunt Porcupine caribou when they are not near the Dempster Highway

If we assume that the caribou will spend less time near this highway as the herd size drops then the number available to hunters will drop. Since 70% of the Canadian harvest is off the highway, reduced numbers near the highway would cause hardship to many families. This argument does not hold if the herd continues to migrate south in the Richardsons, and ruts/winters in the Blackstone Uplands near the Highway.

X. Conclusion

- We have presented our rationale, both biological and sociological, for immediate conservation measures on the PCH.
- The Yukon Government's management goal is to respect conservation principles, ensure sustainability and productivity, stop the decline and promote recovery of the herd.
- Conservation and the precautionary principle guided our management recommendations.
- The overriding principle is conservation. Obligations under the land claim agreements are first and foremost to ensure conservation and wise use of the resource, followed by protecting aboriginal preferential harvest rights while recognizing the sharing principle in the land claim agreements.
- Both the land claim agreements and the scientific literature define conservation in terms of ensuring the quality, diversity, and long-term optimum productivity of the herd. These definitions were used to develop the YG's management goal.
- The YG's proposed interim measures are consistent with the above stated management goal.
- To continue to harvest the PCH at the current rate of 4000 caribou/year with a significant cow harvest, while the herd is declining at a rate of 3 to 4% per year, is inconsistent the above principles and management goal.
- The interim conservation measures being proposed are likely the least intrusive, of the three proposed, to the users.
- The conservation measures being proposed call for no change in the number of caribou harvested but a significant reduction in the number of cows taken. Under this scenario the decline stops and the population increases. This is consistent with the definition of conservation, long term optimum productivity, the precautionary principle and the Yukon Government's management goal.
- Harvest is a significant factor which could shape the rate of decline and the rate of recovery.
- The herd has declined by 31% between the high of 178,000 in 1989 and 123,000 in 2001, for a loss of 55,000 caribou.
- Population modeling predicts the herd to continue to decline, potentially to 50,000 caribou in 11 years if nothing is done.
- Other considerations:
 - If the herd continues to decline, and the range they use shrinks, it will be more difficult to make convincing arguments to protect the land the caribou have currently abandoned.
 - The PCH is the least productive of the large migratory caribou herds in North America. This needs to be taken into consideration when defining conservation and the need for conservation measures.

- If the herd continues to decline, the herd may not continue to winter along the Dempster Highway, leading to less access for families who rely on the caribou for food.
- We can't expect the historical cycles to continue because of increased and unprecedented cumulative effects. In the past the herd was not affected by humans; however that has changed with the construction of the Dempster Highway. The highway has increased access to the herd resulting in significant harvests and disturbance during migrations and on the wintering grounds. In addition, climate change is predicted to have a negative effect on the herd. With the potential building of the Mackenzie Valley pipeline the herd may face even further pressures.
- Harvest information is incomplete but imperative if we are to manage this herd responsibly.
- Worst case scenario if the population drops to 50,000 it will take decades to recover.

APPENDICES

Appendix A: Land claim references to Public Governments responsibility for conservation

Porcupine Caribou Management Agreement

No specific references.

Tr'ondëk Hwëch'in, Na-Cho Nyak Dun and Vuntut Gwitchin Final Agreements

16.3.0 General

16.3.1 This chapter sets out powers and responsibilities of Government and Yukon First Nations for the management of Fish and Wildlife and their habitats, while, subject to 16.5.1.1, 16.5.1.2 and 16.5.1.3, respecting the Minister's ultimate jurisdiction, consistent with this chapter, for the management of Fish and Wildlife and their habitats.

Gwich'in Comprehensive Land Claim Agreement

Appendix C: Yukon Transboundary Agreement

Main Agreement

12.2.1 This chapter sets out powers and responsibilities of government and the Tetlit Gwich'in for the management of fish and wildlife and their habitats, while respecting the Minister's ultimate jurisdiction, consistent with this chapter, for the management of fish and wildlife.

Appendix B: Land claim references to aboriginal harvesting rights

Porcupine Caribou Management Agreement

A. Definitions

12. "Preferential Right" means the right to harvest Porcupine Caribou for subsistence usage and to be allocated, subject to conservation and the terms of this Agreement, quantities of Porcupine Caribou sufficient to fulfill the native users requirements for subsistence usage before there is any allocation for other purposes, such right of allocation being provided for by the establishment, when necessary, of the allocation hereinafter referred to as the "native user allocation."

B. Objectives of the Parties

3. To recognize and protect certain priority harvesting rights in the Porcupine Caribou Herd for native users, while acknowledging that other users may also share the harvest;

J. Allocations of Annual Allowable Harvest in Canada

8. The parties recognize the special dependence of all native users on the Porcupine Caribou and in particular, the unique dependence of the native users of Old Crow on the Porcupine Caribou.

Tr'ondëk Hwëch'in, Na-cho Nyak Dun and Vuntut Gwitchin Final Agreements

16.4.0 Yukon Indian People

- 16.4.2 Yukon Indian People shall have the right to harvest for Subsistence within their Traditional Territory, and with the consent of another Yukon First Nation in that Yukon First Nation's Traditional Territory, all species of Fish and Wildlife for themselves and their families at all seasons of the year and in any numbers on Settlement Land and on Crown Land to which they have a right of access pursuant to 6.2.0, subject only to limitations prescribed pursuant to Settlement Agreements.

Gwich'in Comprehensive Land Claim Agreement

Appendix C: Yukon Transboundary Agreement

- 12.3.1 (a) Subject to the provisions of this agreement the Tetlit Gwich'in have the exclusive right to harvest wildlife and fish on Tetlit Gwich'in Yukon land and in waters overlying such lands.
- (b) A Tetlit Gwich'in shall have the right to harvest for subsistence, within the primary use area, the secondary use area and those areas of the traditional territory of the First Nation of Na'cho N'y'ak Dun which are not subject to overlap with the traditional territory of another Yukon First Nation, all species of fish and wildlife for themselves and their families at all seasons of the year and in any numbers on Crown land within such

areas to which they have a general right of access pursuant to 4.2, subject to any limitations prescribed pursuant to this appendix.

12.3.5 The right of the Tetlit Gwich'in to harvest pursuant to 12.3.1(b) in any area other than the primary use area

- (a) is subject to regulation by a Yukon First Nation to the final agreement of that First Nation, and
- (b) shall be exercised within any basic needs level or subsistence needs established for the Yukon First Nation in whose traditional territory the right is exercised.

Inuvialuit Final Agreement

12.(24) Subject to the laws of general application respecting public safety and conservation, the Inuvialuit right to harvest on the Yukon North Slope includes:

- (a) subject to the collective harvesting rights in favour of all native peoples under the Porcupine Caribou Management Agreement referred to in Annex L, the preferential right to harvest all species of wildlife, except migratory non-game birds and migratory insectivorous birds, for subsistence usage throughout the Yukon North Slope;

Appendix C: Land claim references to limitations of aboriginal harvesting rights and consultation obligations

Porcupine Caribou Management Agreement

K. The Rights of Native Users

I. The rights of native users as set out in this Agreement are subject to laws of general application with regard to conservation and public safety.

Tr'ondëk Hwëch'in, Na-cho Nyak Dun and Vuntut Gwitchin Final Agreements

16.3.3 The exercise of rights under this chapter is subject to limitations provided for elsewhere in Settlement Agreements and to limitations provided in Legislation enacted for the purposes of Conservation, public health and public safety.

16.3.3.1 Any limitations provided for in Legislation pursuant to 16.3.3 must be consistent with this chapter, reasonably required to achieve those purposes and may only limit those purposes to the extent necessary to achieve those purposes.

16.3.3.2 Government shall consult with the affected Yukon First Nation before imposing a limitation pursuant to 16.3.3.

16.5.4 Government shall Consult with a Yukon First Nation prior to taking any action on Fish or Wildlife matters which may affect the First Nation's management responsibilities or the exercise of Harvesting rights under a Settlement Agreement of Yukon Indian People enrolled under that Yukon First Nation Final Agreement.

Gwich'in Comprehensive Land Claim Agreement

Appendix C: Yukon Transboundary Agreement

12.2.3 (a) The exercise of rights under this chapter is subject to limitations provided for elsewhere in this appendix and to limitations provided in legislation enacted for the purposes of conservation, public health and public safety.

(b) Any limitation provided for in legislation pursuant to 12.2.3 must be consistent with this chapter, reasonably required to achieve those purposes and may only limit those rights to the extent necessary to achieve those purposes.

(c) Government shall consult with the Tetlit Gwich'in before imposing a limitation pursuant to 12.2.3.

12.3 Harvesting Rights

12.3.1 (a) Subject to the provisions of this agreement the Tetlit Gwich'in have the exclusive right to harvest wildlife and fish on Tetlit Gwich'in Yukon Land and in waters overlying such lands.

(b) A Tetlit Gwich'in shall have the right to harvest for subsistence, within the primary use area, the secondary use are and those areas of the traditional territory of the First Nation of Na'cho N'y'ak Dun which are not subject to any overlap with the traditional territory of another Yukon First Nation, all species of fish and wildlife for themselves and their families at all seasons

of the year and in any numbers on Crown land within such areas to which they have a right of access pursuant to 4.2, subject only to limitations prescribed pursuant to this appendix.

12.4 Special Harvesting Opportunities

12.4.1 in 12.4,

“special harvesting opportunity” means the basic needs level established for a species according to 12.4.4 or, in the absence of a basic needs level, the harvesting allocation pursuant to 12.4.2.

12.4.2 When opportunities to harvest freshwater fish or wildlife are limited for conservation, public health or public safety, the total allowable harvest shall be allocated to give priority in the primary use area to the subsistence needs of the Tetlit Gwich'in while providing for the reasonable needs of other harvesters.

12.6.2 Government shall consult with the Tetlit Gwich'in prior to taking any action on fish or wildlife matters which may affect the exercise of harvesting rights of the Tetlit Gwich'in under this appendix.

Inuvialuit Final Agreement

“preferential right to harvest”, with respect to the Inuvialuit, includes the right to harvest wildlife for subsistence usage and to be allocated, subject to conservation, quantities of wildlife sufficient to fulfill Inuvialuit requirements for subsistence usage before there is any allocation for other purposes in areas where the Inuvialuit will have harvesting rights;

7.(56) Where Inuvialuit lands are expropriated, the exclusive harvesting rights set out in paragraph 14(6)(d) shall continue to apply. For greater certainty, the exercise of such rights by the Inuvialuit is subject to the laws of general application respecting public safety and conservation.

12.(24) Subject to the laws of general application respecting public safety and conservation, the Inuvialuit right to harvest on the Yukon North Slope includes:

- 12(41) Within their respective jurisdictions, governments shall determine the harvestable quotas for wildlife species based on the principles of conservation and the following procedures:
- (a) the Wildlife Management Advisory Council (North Slope) established by subsection (46) shall determine the total allowable harvest for game according to conservation criteria and such other factors as it considers appropriate. The Council shall make its recommendations to the appropriate minister, who shall, if he differs in opinion with the Council, set forth to the Council his reasons and afford the Council a further consideration of the matter;
 - (b) in determining the total allowable harvest, conservation shall be the only consideration. For greater certainty, where the Inuvialuit have

the exclusive right to harvest, they shall be entitled to harvest the total allowable harvest;

(c) for the purposes of management and in order to protect the interest of the Inuvialuit harvesters, subsistence quotas for the wildlife referred to in paragraph (24)(a) shall be jointly established by the Inuvialuit and the governments having jurisdiction over species or species groups of subsistence value, as follows:

(i) within the total allowable harvest for game, the Wildlife Management Advisory Council (North Slope) shall determine the subsistence quotas according to the criteria and factors it considers appropriate in addition to those referred to in subparagraph (ii). The Council shall make its recommendations to the appropriate minister, who shall, if he differs in opinion from the Council, set forth to the Council his reasons and afford the Council further consideration of the matter, and

(ii) in determining the subsistence quota, the following criteria shall be taken into account by the Council or, where appropriate, by the Porcupine Caribou Management Board, and the appropriate minister:

(A) the food and clothing requirements of the Inuvialuit,

(B) the usage patterns and levels of harvest of the Inuvialuit,

(C) the requirements for particular wildlife species for subsistence usage,

(D) the availability of wildlife populations to meet subsistence usage requirements including the availability of species from time to time,

(E) the projections for changes in wildlife populations, and

(F) the national and international obligations of Canada with respect to migratory game birds;

(F) as amended January 15, 1987

(d) the allocation of the Inuvialuit quotas amongst themselves shall be the responsibility of the Inuvialuit.

14(3) It is recognized that in the future it may be desirable to apply special protective measures under laws, from time to time in force, to lands determined to be important from the standpoint of wildlife, research or harvesting. The appropriate ministers shall consult with the Inuvialuit Game council from time to time on the application of such legislation.

12(57) The Council shall provide advice to the appropriate ministers on all matters relating to wildlife policy and the management, regulation and administration for wildlife, habitat and harvesting for the Yukon North Slope and, without restricting the generality for the foregoing, the Council shall:

(a) provide advice on issues pertaining to the Yukon North Slope to the Porcupine Caribou Management Board... and other appropriate groups;

Appendix D: Land claim references to the paramountcy of the *Porcupine Caribou Management Agreement*

Porcupine Caribou Management Agreement

No specific reference

Tr'ondëk Hwëch'in, Na-cho Nyak Dun and Vuntut Gwitchin Final Agreements

16.3.11 Notwithstanding anything in this chapter, where there is a conflict between this chapter and the 1987 Canada-USA Agreement on the Conservation of the Porcupine Caribou Herd, the 1985 Porcupine Caribou Management Agreement, or the Treaty between the Government of Canada and the Government of the United States of America concerning Pacific Salmon, those agreements and the Treaty shall prevail to the extent of the conflict. Any amendments to those agreements or the Treaty shall not be construed to diminish or adversely affect the rights of Yukon First Nations or Yukon Indian People under this chapter and Yukon First Nation Final Agreements.

Gwich'in Comprehensive Land Claim Agreement

Main Agreement

12.6.4 The provisions of the *Porcupine Caribou Management Agreement* and any management agreement established with respect to the Bluenose caribou herd shall apply to the herds named therein, notwithstanding any provisions of this agreement which may be inconsistent with such agreements.

Inuvialuit Final Agreement

Inuvialuit Harvesting Rights

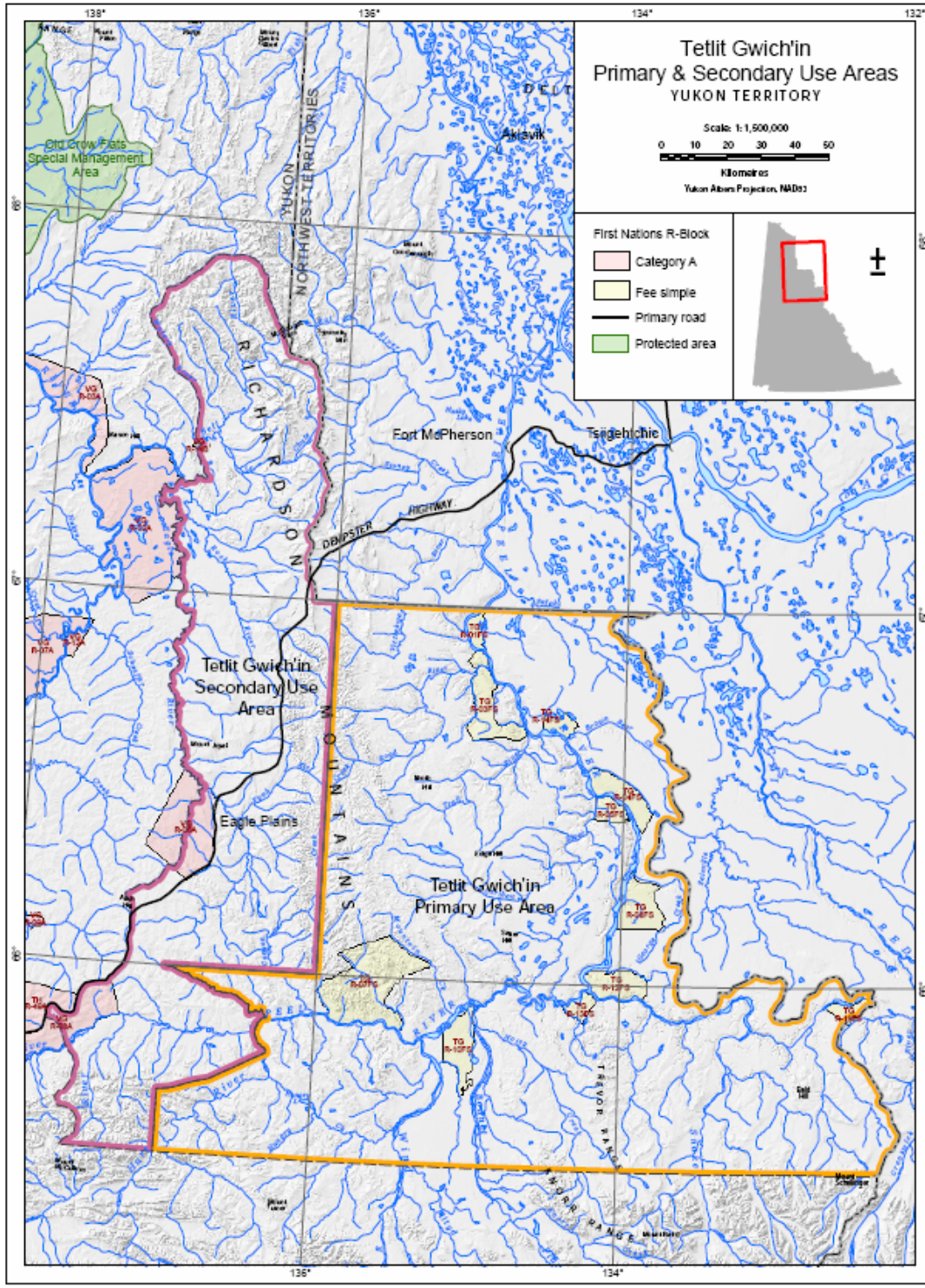
12(24) Subject to the laws of general application respecting public safety and conservation, the Inuvialuit right to harvest on the Yukon North Slope includes:

- (a) subject to the collective harvesting rights in favour of all native peoples under the *Porcupine Caribou Management Agreement* referred to in Annex L, the preferential right to harvest all species of wildlife, except migratory non-game birds and migratory insectivorous birds, for subsistence usage throughout the Yukon North Slope;

12(56) The (Wildlife Management Advisory) Council [(North Slope)] shall provide advice to the appropriate minister on all matters relating to wildlife policy and the management, regulation and administration of wildlife, habitat and harvesting for the Yukon North Slope and, without restricting the generality of the foregoing, the Council shall:

- (a) provide advice on issues pertaining to the Yukon North Slope to the Porcupine Caribou Management Board, the Yukon Land Use Planning Commission, the Review Board and other appropriate groups;

Appendix E: Primary and secondary use areas under the *Gwich'in* Comprehensive Land Claim Agreement



Appendix F: Land Claim reference to sharing the harvest.

Porcupine Caribou Management Agreement

“Preferential Right” means the right to harvest Porcupine Caribou for subsistence usage and to be allocated, subject to conservation and the terms of this Agreement, quantities of Porcupine Caribou sufficient to fulfill the native users requirements for subsistence usage before there is any allocation for other purposes, such right of allocation being provided for by the establishment, when necessary, of the allocation hereinafter referred to as the “native user allocation.”

B. Objectives of the Parties

3. To recognize and protect certain priority harvesting rights in the Porcupine Caribou Herd for native users, while acknowledging that other users may also share the harvest;

J. Allocations of Annual Allowable Harvest in Canada 4. Taking into consideration the interests of other users, the territorial Government shall allocate as they see fit from that portion of the annual allowable harvest not allocated under paragraph

3(b) of this Part, which shall consist of no fewer than two hundred and fifty (250) Porcupine Caribou, and shall regulate harvesting pursuant to their respective legislative authorities.

Tr’ondëk Hwëch’in, Na-cho Nyak Dun and Vuntut Gwitchin Final Agreements

Chapter 1. Definitions

"Long Term Optimum Productivity" means the productivity required to ensure the long term continuation of a species or population while providing for the needs of Yukon Indian People and other harvesters and non-consumptive users of Fish and Wildlife in the short term.

16.9.0 Fish and Wildlife Harvests

16.9.1 Each Yukon First Nation Final Agreement shall set out the manner in which the Total Allowable Harvest shall be shared between Yukon Indian People and other harvesters.

16.9.1.1 When opportunities to harvest Freshwater Fish or Wildlife are limited for Conservation, public health or public safety, the Total Allowable Harvest shall be allocated to give priority to the Subsistence needs of Yukon Indian People while providing for the reasonable needs of other harvesters.

16.9.1.2 The priority in 16.9.1.1 is subject to provisions set out in Yukon First Nation Final Agreements pursuant to 16.9.1 or 16.9.10 and to provisions negotiated subsequently pursuant to 16.9.13.

16.9.2 The [Yukon fish and Wildlife Management] Board, pursuant to 16.7.12.4, and the [Renewable Resources] Council,

16.9.14 Where a Basic Needs Level is established pursuant to 16.9.10 or 16.9.13, the provisions of 16.9.0 shall apply to the determination and allocation of the Total Allowable Harvest to Yukon First Nations and to other harvesters.

Gwich'in Comprehensive Land Claim Agreement

Appendix C: Yukon Transboundary Agreement

12.3.1

- (a) Subject to the provisions of this agreement the Tetlit Gwich'in have the exclusive right to harvest wildlife and fish on Tetlit Gwich'in Yukon land and in waters overlying such lands.
- (b) A Tetlit Gwich'in shall have the right to harvest for subsistence, within the primary use area, the secondary use area and those areas of the traditional territory of the First Nation of Na'cho N'y'ak Dun which are not subject to overlap with the traditional territory of another Yukon First Nation, all species of fish and wildlife for themselves and their families at all seasons of the year and in any numbers on Crown land within such areas to which they have a general right of access pursuant to 4.2, subject to any limitations prescribed pursuant to this appendix.

Inuvialuit Final Agreement

"*preferential right to harvest*", with respect to the Inuvialuit, includes the right to harvest wildlife for subsistence usage and to be allocated, subject to conservation, quantities of wildlife sufficient to fulfill Inuvialuit requirements for subsistence usage before there is any allocation for other purposes in areas where the Inuvialuit will have harvesting rights;

Appendix G: Land claim references to the principle of conservation

Porcupine Caribou Management Agreement

A. Definitions

3. "Conservation" means the management and use of the Porcupine Caribou and its habitat which best ensures the long term productivity and usefulness of the Herd for present and future generations.

B. Objectives of the Parties

1. To co-operatively manage, as a herd, the Porcupine Caribou and its habitat within Canada so as to ensure the conservation of the Herd with a view to providing for the ongoing subsistence needs of native users;

Tr'ondëk Hwëch'in, Na-cho Nyak Dun and Vuntut Gwitchin Final Agreements

16.1.0 Objectives

16.1.1 The objectives of this chapter are as follows:

- 16.1.1.1 to ensure Conservation in the management of all Fish and Wildlife resources and their habitats;
- 16.1.1.7 to integrate the relevant knowledge and experience both of Yukon Indian People and of the scientific communities in order to achieve Conservation;
- 16.1.1.9 to honour the Harvesting and Fish and Wildlife management customs of Yukon Indian People and to provide for the Yukon Indian People's ongoing needs for Fish and Wildlife;
- 16.1.1.10 to deal fairly with all Yukon residents who use Fish and Wildlife resources in the Yukon;

16.2.0 Definitions

In this chapter, the following definitions shall apply.

"Conservation" means the management of Fish and Wildlife populations and habitats and the regulation of users to ensure the quality, diversity and Long Term Optimum Productivity of Fish and Wildlife populations, with the primary goal of ensuring a sustainable harvest and its proper utilization.

"Long Term Optimum Productivity" means the productivity required to ensure the long term continuation of a species or population while providing for the needs of Yukon Indian People and other harvesters and non-consumptive users of Fish and Wildlife in the short term.

"Total Allowable Harvest" means the total number of animals of a Freshwater Fish or Wildlife species which, in the manner established by this chapter, are deemed not to be required for Conservation.

16.3.0 General

16.3.1 This chapter sets out powers and responsibilities of Government and Yukon First Nations for the management of Fish and Wildlife and their habitats, while, subject to 16.5.1.1, 16.5.1.2 and 16.5.1.3, respecting the Minister's ultimate jurisdiction, consistent with this chapter, for the management of Fish and Wildlife and their habitats.

16.3.2 The management and Harvesting of Fish, Wildlife and their habitats shall be governed by the principle of Conservation.

16.7.0 Fish and Wildlife Management Board

16.7.12 Without restricting 16.7.11, the Board:

16.7.12.6 may make recommendations to the Minister on the need for, and on positions on, interjurisdictional agreements that affect the Conservation and Use of Fish and Wildlife resources in the Yukon;

16.7.12.7 after Consultation with the affected Councils, may recommend to the Minister restrictions on methods and practices of harvest for reasons of Conservation, public health, public safety and, in exceptional circumstances, for protection of the renewable resources economy associated with the Use of Fish or Wildlife resources;

Gwich'in Comprehensive Land Claim Agreement

Appendix C: Yukon Transboundary Agreement

12.2.2 The management and harvesting of fish, wildlife and their habitats shall be governed by the principle of conservation.

1.1.1 In this appendix,

“conservation” means the management of fish and wildlife populations and habitats and the regulation of users to ensure the quality, diversity and long term optimum productivity of fish and wildlife populations, with the primary goal of ensuring a sustainable harvest and its proper utilization;

“long term optimum productivity” means the productivity required to ensure long term continuation of a species or population while providing for the needs of Tetlit Gwich'in and other harvesters and non-consumptive users of fish and wildlife in the short term;

Main Agreement

12.1.1 In this chapter,

“total allowable harvest” means the total number or level of animals of a freshwater fish or wildlife species which, in the manner established in this chapter, are deemed not to be required for conservation;

12.2.1 This chapter sets out powers and responsibilities of government and the Tetlit Gwich'in for the management of fish and wildlife and their habitats, while respecting the Minister's ultimate jurisdiction, consistent with this chapter, for the management of fish and wildlife.

Inuvialuit Final Agreement

Principles

12.(2) The Yukon North Slope shall fall under a special conservation regime whose dominant purpose is the conservation of wildlife, habitat and traditional native use.

Definitions

In this Agreement “*conservation*” means the management of the wildlife populations and habitat to ensure the maintenance of the quality, including the long term optimum productivity, of these resources and to ensure the efficient utilization of the available harvest;

Section 12: Yukon North Slope

12.(1) For the purposes of this section, “*Yukon North Slope*” means all those lands between the jurisdictional boundaries of Alaska and the Yukon Territory and the Northwest Territories, north of the height of land dividing the watersheds of the Porcupine River and the Beaufort Sea, and including adjacent nearshore and offshore waters and islands.

Appendix H: PCMB Resolution 06-02 regarding conservation

Porcupine Caribou Management Board, Resolution 06-02

For the Conservation of the Porcupine Caribou Herd

WHEREAS the Porcupine Caribou Management Agreement (PCMA) was established to ensure the conservation of the Porcupine Caribou Herd with a view to protecting the harvesting rights and providing for the ongoing subsistence needs of native users while acknowledging that other users may also share the harvest;

AND WHEREAS the rights of native users as set out in the PCMA are subject to laws of general application with regard to conservation and public safety;

AND WHEREAS the size of the Porcupine Caribou Herd has declined steadily between 1989 and the most recent count in 2001;

AND WHEREAS there has been four unsuccessful attempts to do another count since 2003;

AND WHEREAS many barren ground herds in North America such as the Cape Bathurst and Bluenose-West caribou herds in the Northwest Territories are declining;

AND WHEREAS there is increased harvest pressure on the Porcupine Caribou Herd due to shifts in hunting pressure away from the NWT herds;

NOW THEREFORE BE IT RESOLVED that the PCMB believes that it is now necessary to take immediate steps to ensure the conservation of the Porcupine Caribou Herd;

AND FURTHER BE IT RESOLVED that the PCMB recommends that the Parties to the PCMA work with the PCMB to jointly undertake a comprehensive assessment of the status of the herd at the earliest opportunity;

AND FURTHER BE IT RESOLVED that the PCMB recommends that the Parties to the PCMA provide the necessary support to annually collect complete and accurate harvest data and to participate in the development and implementation of a Harvest Management Strategy.

Moved by Doug Larsen

Seconded by Steven Buyck

Passed Unanimously in Aklavik, NT, on November 5, 2006