PORCUPINE CARIBOU HARVEST BY CANADIAN USERS

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INTRODUCTION

Wildlife managers are expected to optimize the human use of wildlife and to minimize the impact of land-use activities, so that we can guarantee the present and future health of wildlife populations. To carry out these mandates requires an understanding of a species' biology , where it lives, what limits its growth or jeopardizes its survival, and how individuals interact with each other and other elements of their environment.

Hunting can significantly and directly influence, in particular, population dynamics and, occasionally, distribution and movement patterns. Harvest data can therefore play an important role in the understanding of an animal population and is often a prerequisite to sound management decisions.

There is also the broad area of social and economic concerns which provides an impetus to collect harvest data.

These concerns stem from:

a) land claims negotiations, which have often focused on the demand and value of a resource and its habitat;
b) the question of compensation for loss or degradation of the resource;
c) a need to challenge land alienation and development; and
d) a concern for equitable resource partitioning among different users.

In addition to providing a link in our understanding of population dynamics, kill information can indicate centers of animal habitation and can also indicate the general age and sex composition of the hunted population. Such indices are often indicative of growth, decline, or stability in a population. Further, harvest data can provide indications of animal health or reproductive performance. Harvest data can also infer the susceptibility of particular geographic areas or age cohorts to hunting, thereby allowing protective measures to be taken in response.

It is unfortunate that harvest data has often been perceived as a means for government to act as a regulatory body by shortening or closing seasons, restricting bag limits, or setting quotas. These actions are often the only viable method to arrest a population decline, and are legislated not to thwart hunting but rather to enhance future hunting opportunities. It is very difficult to even measure a population decline, much less understand the reasons for such a decline. Regulations are often the only course of action, given the narrow information base from which managers must respond.

Without harvest data, managers are far less informed about population distribution, the processes that cause populations to grow or decline, and the status of the population. These information gaps may result in haphazard management, and often drastic and seemingly harsh responses to frequently poorly perceived problems.

Harvest pressure on the Porcupine caribou herd deserves special attention. The herd ranges across an international boundary, and over at least four jurisdictional boundaries. Further, the herd is utilized by people from over a dozen northern communties, and there is a likelihood of increased hunting pressure in the future as a spin-off to moose population declines in the southern Yukon.

The winter range of the Porcupine caribou herd straddles the Dempster Highway. The highway undoubtably influences the herd through facilitation of hunting in the region. The few cases where roads have penetrated caribou range have led to increased hunting pressure and hunter success, and often declines in caribou numbers. The net change, however, in either hunting effort or success associated with the construction of the Dempster Highway has not been measured. This information is desirable if we are to reliably predict the consequences of facilitated human hunting through road construction. At the very least, data is necessary to establish the harvest rate in relation to existing access, to act as a baseline against which increased access can be measured.

The objectives of this study are:

1. Estimate the number of Porcupine caribou harvested by all Canadian users.
2. Describe the characteristics of the kill by sex and broad age class.

3. Determine the distribution of the kill by community and by month.
4. Determine the distribution of the kill along the Dempster Highway, with respect to kilometre post and distance away from the road.

PROCEDURES

With the cooperation of the N.W.T. Wildlife Service, harvest statistics were gathered from all Canadian users of the herd. This involved a variety of methods, depending on the user group.

Subsistence harvest is estimated through voluntary recall surveys following a procedure adopted by the N.W.T. Wildlife Service in the Central Arctic. Community field workers contacted bona fide hunters on a monthly basis and requested the species and number of animals killed, the general hunting area, as well as the sex and broad age class (adult, yearling or calf) of the kill.

Hunting effort in relation to the Dempster Highway was monitored with check stations at the north and south ends of the highway. The southern station, located at the Klondike Camp, Mile 40, was in operation from October 4 to December 4, 1985 (41 days total, an average of 8 hours/day of operation), while the northern one, situated at James Creek near the Yukon/N.W.T. border, was active from early February to late March 1986. Participation in the game check stations was voluntary - hunters were encouraged to report, but were not obligated to do so. In addition to the information collected in the communities, hunters stopping at a

check station were asked for the kill date and the location of the kill in relation to the road.

In addition to information obtained in the field, the Yukon Resident Hunter Questionnaire provided an indication of days effort and hunter success. The sport hunting demand can be gauged by the volume of species tags sales.

The non-resident harvest is determined by compulsory outfitter declaration forms.

RESULTS

The 1985-86 Porcupine caribou herd harvest is summarized in the following tables. Information from all sources was not available for all time periods. Many of the results are based on estimates made by local Conservation Officers and biologists, based on their personal knowledge of the area. All estimates should be considered minimal, as wounding losses and meat used in field camps are largely not accounted for.

Table 1. Estimate of the Canadian Harvest of the Porcupine Caribou Herd.

Location	1985	1986
Old Crow	174, 500[1]	581[2]
Dempster Highway	525[3]	-
Ft. McPherson/Aklavik	1200[4]	870[5]
Non-resident	10[6]	-
Total (approximately)	2400	

[1] 174 animals from August to December only, based on community field worker reports; 500 is an estimate based on 1986 information.

[2] January to September only, based on community field worker reports.

[3] Minimum estimate based on check station reports, hunter questionnaire information and extrapolations for periods when the check station was not operating. See Appendix I for calculations.

[4] October to December only, based on estimates by the N.W.T. Wildlife Service.

[5] Early February to the end of March based on the James Creek check station and estimates by the N.W.T. Wildlife Service.

[6] Trophy hunting only. Current information is unavailable, estimates based on the historic harvest.

Table 2. Characteristics of the harvest, by sex and broad age class (averages of all available information).

Location	Sample Size	Bulls	Cows	Calves
Old Crow (1985-86)	755	76%	24%	0
Dempster Highway (Oct.-Nov.)	193	75%	25%	0
Ft. McPherson/ Aklavik (Jan.-March)	661	28%	62%	10%
Non-resident[1]	?	100%	0	0

[1]Trophy hunting only.

Table 3. Distribution of the harvest, by community and month.

Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Old Crow 1985[1]								83	73	-	6	12
Old Crow 1986[1]	26	35	21	-	93	73						
Dempster Hwy 1985[2]									145	350	30	
Ft.McPherson/ Aklavik 1985[3]	210	85	175	30					--------700-------			
Ft.McPherson/ Aklavik 1986[4]	120	350	400									

[1]Information from community field worker.

[2]Estimates from the hunter check station and Yukon Resident Hunter Questionnaire.

[3]Information based on community field workers and N.W.T. Wildlife Service estimates.

[4]Information based on community field workers, hunter check station and N.W.T. Wildlife Service estimates.

Table 4. Distribution of the harvest along the Dempster Highway, with respect to the distance from the road[1].

Location	Animals killed		Mean distance from the Highway (km)
	Number	Percent	
km 80 to km 99	18	7.4	1.61
km 100 to km 119	35	14.3	2.06
km 120 to km 139	79	32.4	1.96
km 140 to km 159	5	2.0	0.67
km 160 to km 179	52	21.3	1.72
km 180 to km 199	16	6.6	0.58
km 200 to km 219	30	12.3	0.90
km 220 and beyond	9	3.7	1.00

[1]Includes only those kills for which full information is available.

Table 5. Distribution of the Dempster Highway harvest, by the hunter's residence[1].

Community	Hunters		Animals killed	
	Number	Percent	Number	Percent
Carmacks	1	1	1	0.6
Dawson City	28	26	40	25.2
Elsa	1	1	2	1.2
Keno	1	1	1	0.6
Mayo	1	1	2	1.2
Pelly Crossing	2	2	3	1.9
Whitehorse	72	68	110	69.2
Total	106		159	

[1]Includes only hunters for which information is available.

DISCUSSION

With the reduction of the no-hunting corridor along the Dempster Highway from 8 km to 1 km either side of the road, an increased interest in the Porcupine caribou herd by resident sport hunters was noted. Last year, to compound the hunting interest, the herd reached the highway in great numbers earlier than "usual". Due to a variety of factors, the check station was not in operation for approximately two weeks of probably the greatest harvest pressure. It is unfortunate that the southern and northern check stations were not manned concurrently.

Increased hunting interest along the Dempster necessitates an increased enforcement presence. In 1985, Conservation Officers patrolled the highway six days in September and thirteen days in October with one to three officers in attendance at any one time. Eight charges and eight written warnings were issued by the officers during that time. As well as enforcing the applicable laws, Conservation Officers could also increase the public's awareness of the harvest study and perhaps promote participation.

It is evident from the locations given for the kills (Table 4) that all hunting is not restricted to beyond the corridor boundary. Subsistence hunters are not bound to observe the corridor, thus many of the distances recorded fall within the one kilometre range, decreasing the average distance.

Distribution of the harvest over the year throughout the herd's range is obviously dependent upon the herd's migration routes and wintering areas, and will vary from year to year. The sex distribution (Table 2) is largely a reflection of the sampling period. Taken over an entire year, the Ft. McPherson/Aklavik harvest would likely reflect the same proportions of bulls and cows as in the other areas.

The results of the 1985-86 program indicate a need for a more coordinated, concentrated effort to collect information and minimize the number of assumptions and estimates required to determine the harvest level.

Appendix I. Estimate of the Dempster Highway caribou count.

The estimate of the southern Dempster Highway harvest was derived using the following assumptions and procedures.

- Assume traffic volume outside the hours of operation was negligible.
- 58% of the vehicles did not stop at the check station during its hours of operation. These vehicles did not include transport trucks, local traffic, government vehicles or those vehicles bearing N.W.T. licence plates.
- Arbitrarily say that half, or 29% of the non-stopping vehicles were hunters. This is believed to be a conservative estimate.
- Assume that those that did not stop had the same success rate as reported on the Yukon Hunter Questionnaire (70%).
- Therefore, add 20.3% to the total number of caribou recorded at the check station. This gives a daily total.
- Again using the Yukon Hunter Questionnaire, determine the percent of the monthly total killed per day.
- Calculate the number that percent represents for each month, to give an average number per day.
- Multiply the average number per day by the number of days the check station was not operating, and add to the total.
- For September, when the check station was not operating, a ratio of the October and November kill (as reported on the questionnaire) to the total number estimated was used to determine a multiplication factor for the September questionnaire results.

This estimate must be considered a minimum number because it does not account for wounding loss, variation in the number of hunters per vehicle, nor for the number of natives hunting, which could affect the number of caribou per hunter.