

**CARIBOU HUNTING: LAND USE DIMENSIONS,
HARVEST LEVEL, AND SELECTED ASPECTS OF
THE HUNT DURING REGULATORY YEAR 1987-88
IN KAKTOVIK, ALASKA**

by

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Technical Paper Number 172

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Fairbanks, Alaska

May 1990

**This research was partially supported by ANILCA Federal Aid Funds,
Administered through the U.S. Fish and Wildlife Service, Anchorage, Alaska,
SG-1-8 and SG-1-9**

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ACKNOWLEDGEMENTS

My sincere thanks to all Kaktovik household members for once again allowing me to peer into the privacy of their annual round of caribou hunting. I am especially indebted to Jane Thompson for technical assistance in the community, George Akootchook for fine accomodations during my stay in Kaktovik, and Nolan Solomon, Isaac Akootchook, and Archie Brower for their unwavering support of the project.

I also acknowledge the technical assistance received from the following Division staff: Terry Haynes reviewed the data analysis and provided editorial assistance, Cheryl Scott reviewed the quantitative results and analysis, and Robert Wolfe carried out final editing of the report.

INTRODUCTION

As rapid industrialization continues on the central Arctic Slope of Alaska, land use associated with oil and gas production is gradually moving eastward from the Prudhoe Bay area. Marginal oil fields near the northwestern boundary of the Arctic National Wildlife Refuge (ANWR) await production until additional finds in the area justify costly pipelines and roads. State and federal leasing of offshore areas from Prudhoe Bay eastward to the Canadian border, limited exploration on Arctic Slope Regional Corporation lands near Kaktovik, seismic exploration near-shore of ANWR as well as within the 1002 area, and the current Congressional discussion of oil and gas leasing within the ANWR 1002 area are all prefaces to expanded industrial development on the eastern Arctic Slope of Alaska.

The eastward movement of industrial activities is increasingly occurring within the traditional subsistence harvesting area of one Alaskan community, Kaktovik (Figs. 1 and 2), and may adversely affect availability of and access to fish and wildlife resources in the area. Particular concern has been noted for the future status of caribou, the most economically significant terrestrial resource harvested by Kaktovik residents (Alaska Consultants, Inc. 1984; Jacobson and Wentworth 1982; North Slope Borough 1979; Pedersen 1988; Stoker 1983; U.S. Dept. of Interior 1974).

Two caribou herds are found within Kaktovik's resource use area. The Central Arctic Herd (CAH), numbering an estimated 13,000 animals in 1987 (Whitten 1988), generally occupies the range from the Colville River east to the vicinity of Kaktovik and south to the Brooks Range (Fig. 3). These caribou are found year-round in the central and eastern Arctic. The second herd, the Porcupine Caribou Herd (PCH), is found within as far west as the area between the Canning and Shaviovik rivers. During much of the 1980s, within ANWR, the herd rarely went east of the Sadlerochit River, and were present primarily in summer and early fall. This herd numbered about 165,000 animals in 1987 (Whitten 1988). During winter, PCH caribou migrate to areas south of the Brooks Range and British Mountains, with very few animals found in the northern foothills within range of Kaktovik hunters.

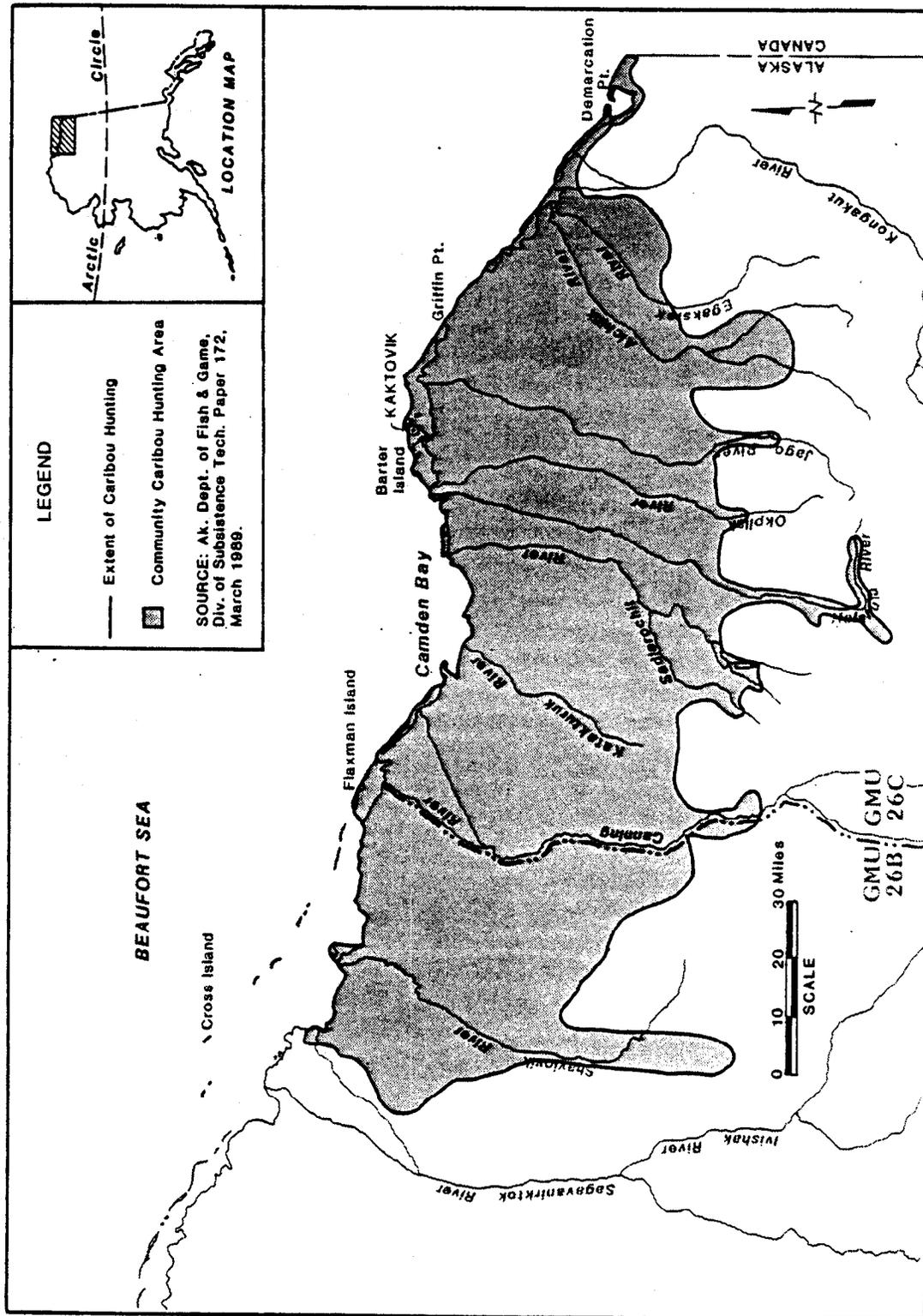


Fig. 1. Location of Kaktovik and community caribou hunting area.

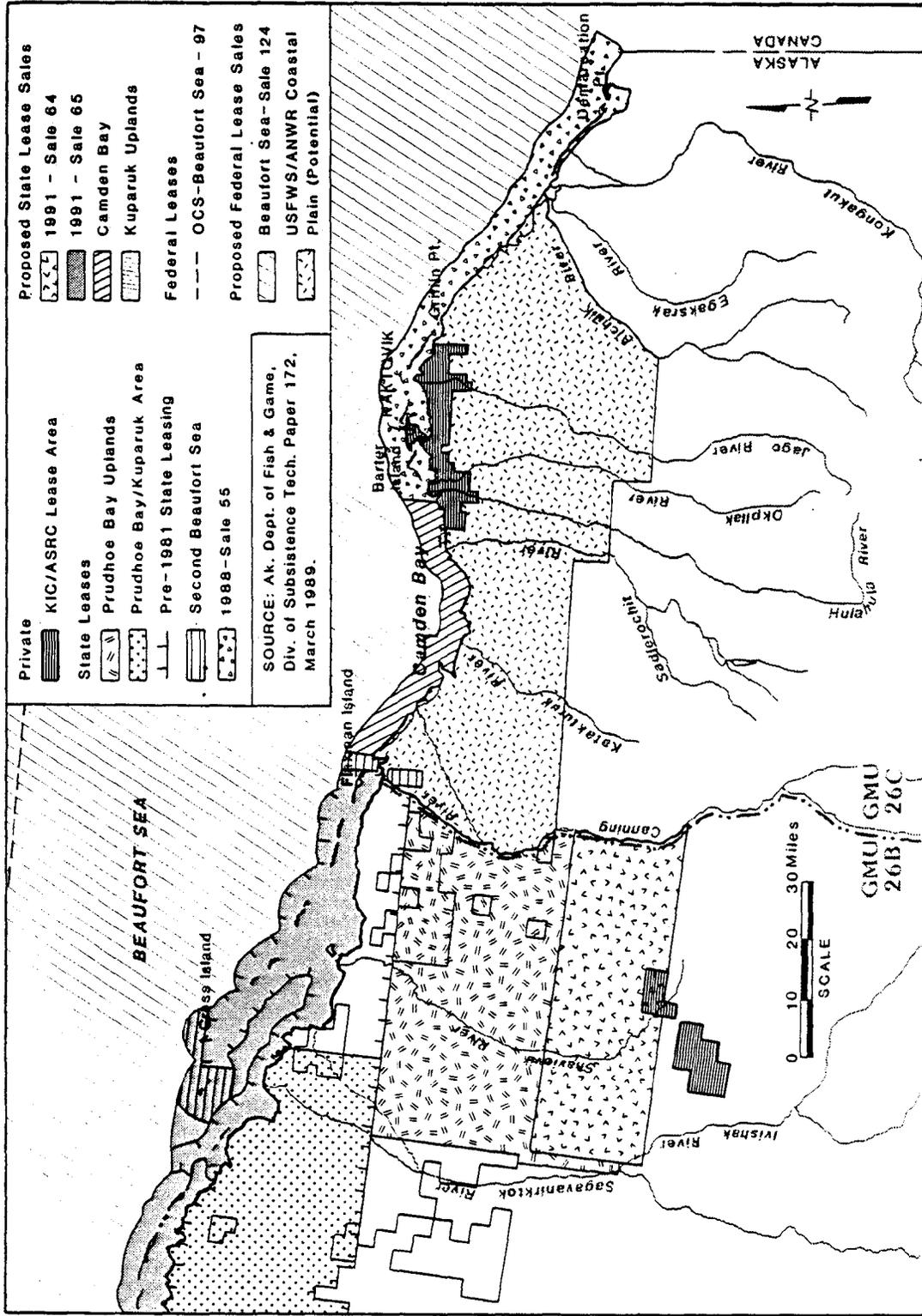


Fig. 2. 1989 Leasing Status in the Central and Eastern Arctic.

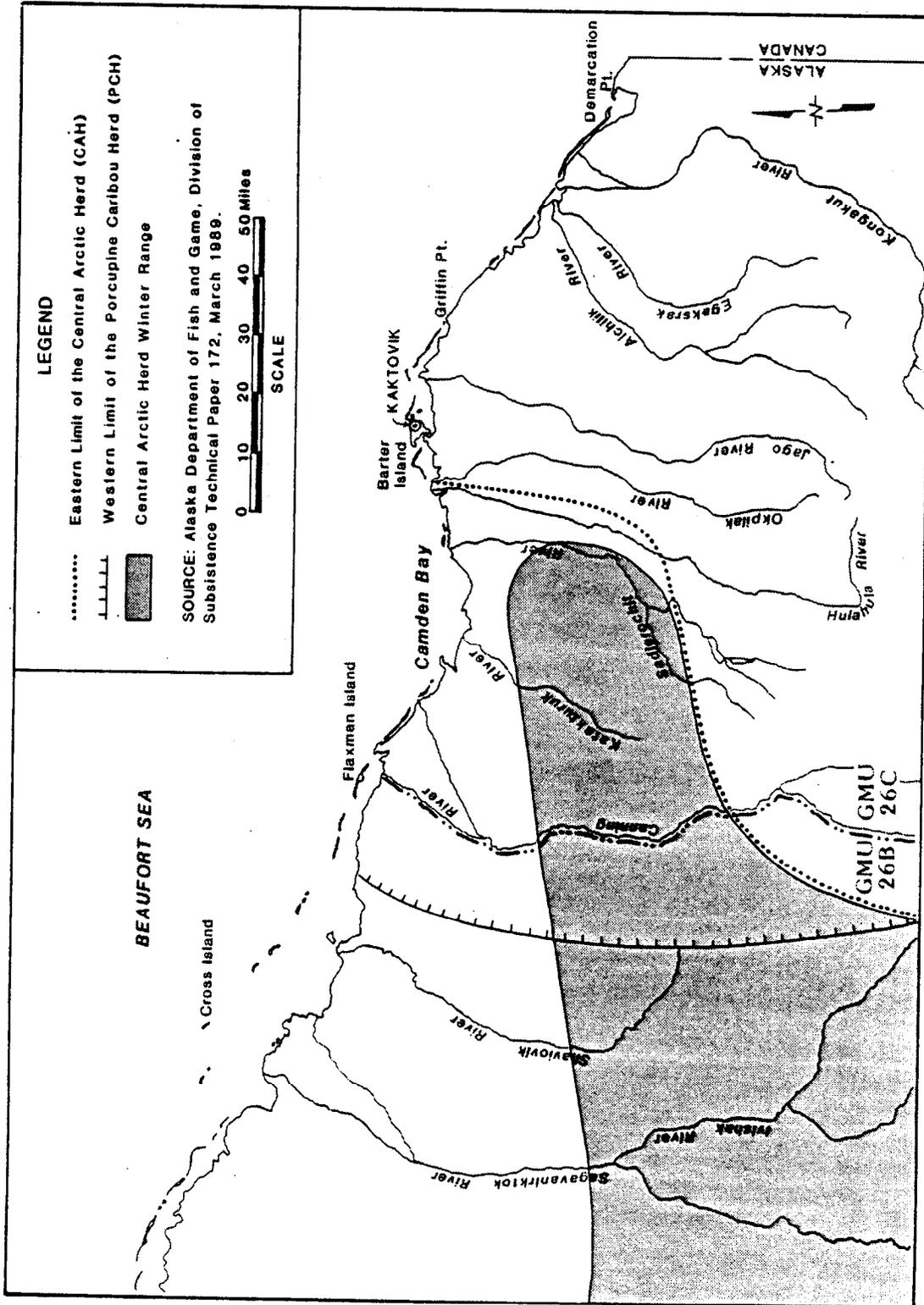


Fig. 3. Caribou Ranges in Northeast Alaska.

Purpose

This study was undertaken to assess land use dimensions and to monitor the harvest of caribou by residents of Kaktovik during State regulatory year 1988 (July 1, 1987 through June 30, 1988).

This study was designed to:

- (1) delineate land areas used by successful village caribou hunters in regulatory year 1987-88;
- (2) describe the community caribou harvest in terms of its temporal distribution;
- (3) document the total number of caribou reported harvested, including the sex composition, and estimate total community harvest;
- (4) delineate the portion of the overall village harvest derived from the Porcupine and Central Arctic caribou herds;
- (5) discuss methods used in accessing caribou hunting areas;
- (6) describe work groups involved in caribou hunting; and
- (7) explain why some households did not harvest caribou during the study period.

The need for this monitoring project was established in 1981 (Pedersen and Coffing 1984).

Data collection has since been carried out annually, with the exception of 1984-85.

The quality of management decisions affecting land use and other resource use activities depends on the quality of information available to those agencies and individuals involved in formulating management policies. Knowledge which reflects current use of land and local resources by Kaktovik residents can contribute to better management of the resources and may lessen potential conflicts between various types of resource users.

Rationale and Literature Review

Two caribou herds, the PCH and the CAH, range within Kaktovik's caribou hunting area (Pedersen and Caulfield 1981; Pedersen and Coffing 1984; Coffing and Pedersen 1985), as shown in Figure 3. Both herds are considered to be slowly increasing in numbers. Recent harvest estimates

indicate that 100 to 300 caribou were taken annually by Kaktovik hunters in the 1970's (Department of State 1980). An average of 75 caribou was harvested annually between 1962 and 1982 (Alaska Consultants, Inc. 1984), and an estimated 80 were taken in 1980 (Jacobson and Wentworth 1982).

More recent studies have placed the community's reported annual harvest between 43 and 172 (Pedersen 1988). A 1984 study determined that the Kaktovik caribou hunting range covered about 7,600 square miles (Pedersen and Coffing 1984). Both studies (Pedersen 1988; Pedersen and Coffing 1984) also noted that all of the confirmed 1981-87 harvest sites fell within the area depicted as the community's caribou hunting range (Fig. 4). No harvest sites were identified west of the Canning River outside Game Management Unit (GMU) 26C in 1981-83 and 1985-87, despite information indicating that both caribou and hunters frequented the area. One harvest site in GMU 26B was documented in the 1983-84 study.

About 72 percent of the 1981-87 reported caribou harvest occurred in the coastal plain near the coast, while 25 percent were harvested in the foothills and mountain region. During 1981-87, an average of about 69 percent of the reported caribou harvest came from the CAH and 31 percent from the PCH, although the contributions of each herd varied substantially from year to year (Table 1; Pedersen 1988).

Data from a 1983-84 harvest study revealed that 24 hunting groups from 18 households took caribou that year (Coffing and Pedersen 1985). Individual hunting groups drew hunters from one to four households, and certain households contributed hunters to as many as five different hunting groups. Households which did not harvest caribou during the 1983-84 season gave employment and absence from the community as the major reasons for their lack of success or failure to hunt caribou that year.

METHODOLOGY

Caribou harvest information was collected through a survey of Kaktovik households. The survey examined caribou hunting, harvesting and sharing by Kaktovik households for the year

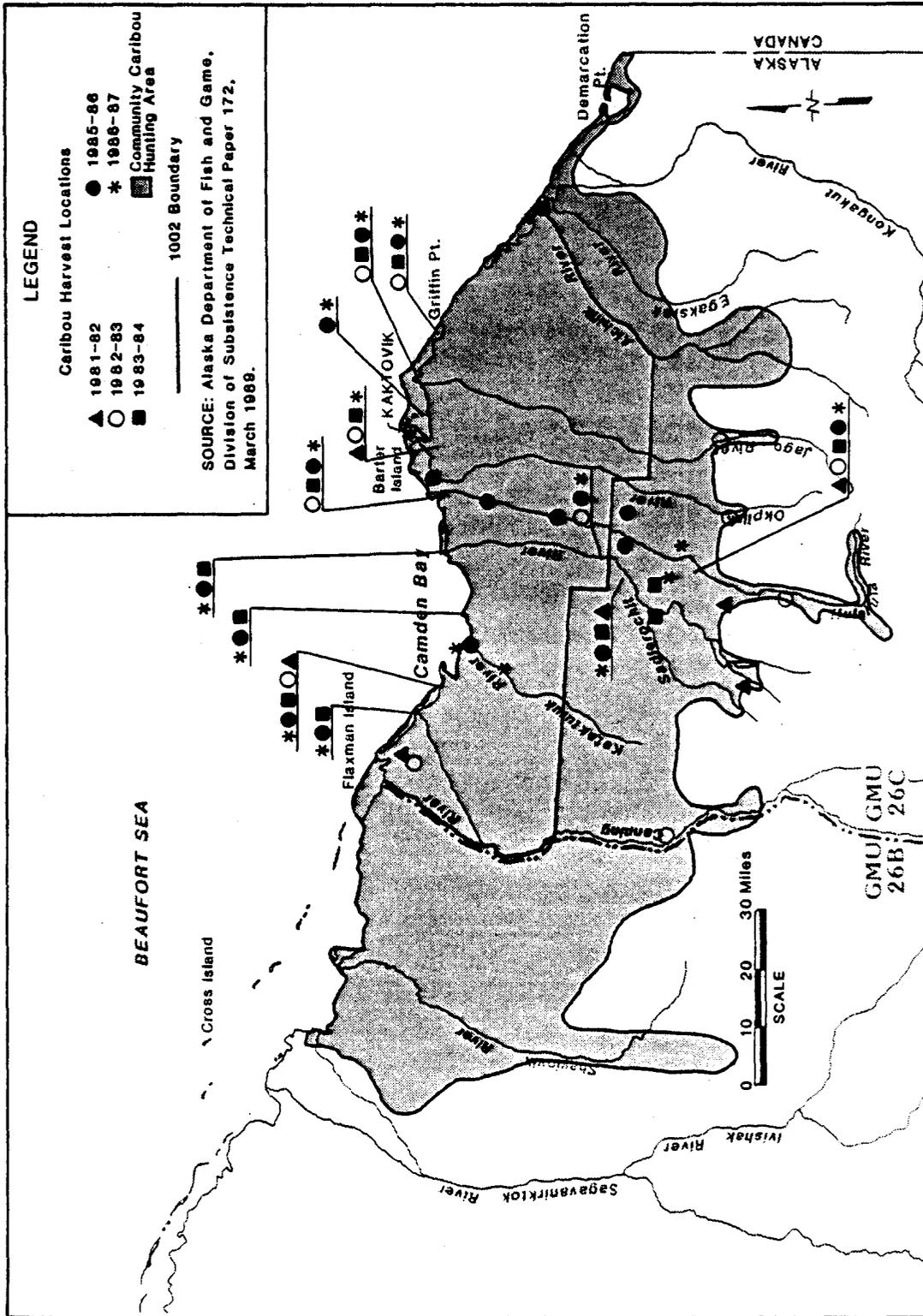


Fig. 4. 1981-87 Kaktovik Caribou Harvest Locations.

TABLE 1. PROVISIONAL HERD ASSIGNMENTS OF KAKTOVIK CARIBOU HARVESTS, 1981-87^a

Caribou herd	Regulatory Year										5-year average	
	81-82		82-83		83-84		85-86		86-87			
Porcupine	1	(3%)	77	(70%)	53	(52%)	17	(10%)	35	(21%)	37	(31%)
Central												
Arctic	36	(97%)	33	(30%)	49	(48%)	157	(90%)	134	(79%)	82	(69%)
Total	37	(100%)	110	(100%)	102	(100%)	174	(100%)	169	(100%)	119	(100%)

^aOnly caribou for which month and location of harvest was reported were classified.

Source: Pedersen 1988.

beginning July 1, 1987. Although the period of early June through July was the optimal time to collect 1987-88 caribou harvest information, the October-November period was deliberately selected as the second window of opportunity. Harvesting activities taper off in late fall and remain at a low level until late February or early March because of limited daylight, inclement weather and temperatures, and several holidays. Although some caribou hunting occurred during the survey period, most hunters were absent from the community only for a short time and were contacted upon their return.

The goal was to survey all Kaktovik households resident in the community during the period July 1, 1987, to June 30, 1988, in order to be consistent with previous surveys. Resident households were defined as those present in the community for more than six months. fifty-seven households, excluding five schoolteacher households, fulfilled this requirement during the study period, 49 of which were interviewed. Five households were out of town and could not be reached, and three households declined to participate in the survey. Thus, the participation rate was 86 percent based on the total number of eligible households and 94 percent based on available households in the community during fieldwork.

The five households associated with the Kaktovik school were excluded because teacher households are generally not integrated into the community, are not year-round residents, and did not

actively participate in the local subsistence economy. Informal interviews with these households revealed that none had harvested caribou during the study period. If any had, this information was expected to appear in a review of harvest tickets issued and harvest reports received from hunters taking caribou in GMU 26C.

The principal investigator presented the study rationale, research plan, and survey instrument to the North Slope Borough Fish and Game Management Committee, the Kaktovik City Council, and Eastern Arctic Fish and Game Advisory Committee members for their approval prior to initiation of fieldwork. Local officials supported the proposed project and did not recommend any changes from the draft plan.

Formal interviews using a standard survey instrument (Appendix 1) were conducted with all community households that consented to participate in the study. Detailed harvest information was collected from those households which reported harvesting caribou during the study period. Individual harvest locations were marked on special survey maps appended to each questionnaire. Information collected from individual households was coded to ensure confidentiality of the data provided. All survey responses were entered on the questionnaire, and additional contextual information was recorded in field notebooks. Information on the harvest by school teachers was obtained during informal discussions with them and through a review of caribou harvest reports for GMU 26C, which also yielded information on local participation in the present harvest reporting system.

Assignment of the 1987-88 caribou harvest to either the PCH or CAH was not an easy matter. In this report caribou harvested east of Sadlerochit River in summer are assigned to the PCH, all other harvested caribou are attributed to the CAH. For a more detailed discussion of the assignment procedure, refer to Pedersen and Coffing 1984, pages 38-41.

Individual household survey data were coded by the author and entered on microcomputers with the assistance of a Fish and Game Technician III. Tabulation of the 1987-88 community caribou harvest and socioeconomic data was performed by the Division's Data Management staff utilizing SPSS PC+ software.

Conversion factors used in estimating the total pounds of harvested caribou are shown in Appendix 2. Local live weight and utilized weight data of caribou harvested by Kaktovik hunters are not available. Caribou from other parts of the Alaskan Arctic are assumed to be comparable in both live and utilizeable weight.

RESULTS

Household Characteristics

The 49 surveyed households contained 181 persons, with 75 females (41 percent) and 106 males (59 percent). The average household size was 3.7 persons. Based on these figures, the estimated year-round population in Kaktovik during the study period was 211 persons in 57 households. An additional five teacher households contained 9 persons (5 males and 4 females), bringing the total estimated community population to 220 persons in 62 households. However, all estimates calculated in this report are based on the 57 year-round households.

More than half of the community residents (55 percent) were born and raised in Kaktovik. Another 15 percent were born in Barrow, and 15 percent were born in various locations in northern Alaska or northwestern Canada. Data are missing on 3 percent, and the remainder (13 percent) were born in other parts of Alaska or in the continental United States.

Fifty-six percent of Kaktovik residents have lived there since birth and 70 percent for more than 20 years. Data were missing for four percent. The length of residency for the remaining 26 percent is distributed rather evenly over the past 20 years. Thirty-seven percent of household heads in Kaktovik were born there, and more than 74 percent had been in the village over 20 years. Of household heads not born in Kaktovik, 25 percent came to the community from Barrow and another 18 percent from other North Slope communities or northwestern Canada. Six percent of the household heads came from other towns in Alaska and eight percent from the continental United States. Information on previous residence was missing for only two percent of household heads. Forty-one

percent responded that they had lived in Kaktovik all their life. Ninety percent of Kaktovik household heads had a relative living in or near the community before they settled there, four percent did not, and information was missing for six percent.

In terms of cultural heritage, Kaktovik remains predominantly Inupiat (91 percent), with Caucasian (8 percent) and Yup'ik (1 percent) also represented. A full 80 percent of the population speaks Inupiaq fluently.

Caribou Harvests and Household Participation

According to the household survey, during 1987-88, 56 community households (98 percent) used locally harvested wild resources. Fifty-two households (92 percent) reported having harvested wild resources in the same time-frame.

During 1987-88, 37 community households (65 percent) hunted caribou during the year and 33 community households (57 percent) reported successfully harvesting one or more caribou. Of households who attempted to take caribou, 89 percent were successful. Reasons for not being successful are shown in Table 2. Reasons given for not hunting caribou are summarized in Table 3.

TABLE 2. HOUSEHOLD HUNTING STATUS AND REASONS GIVEN FOR NOT HUNTING CARIBOU DURING 1987-88

Status-Reason	Numbers of households	
Hunted	37	(65.3%)
Did not hunt	19	(34.7%)
Working/no time	10	(18.4%)
Other reason	9	(16.3%)
Totals	56	(100.0%)
		19 (34.7%)

TABLE 3. HOUSEHOLD HUNTING STATUS AND REASONS GIVEN FOR NOT HARVESTING CARIBOU DURING 1987-88

Status-Reason	Numbers of households	
Harvested	33	(57.1%)
Did not harvest	24	(42.8%)
Did not see any	2	(4.1%)
Not lucky	1	(2.0%)
Other reason	1	(2.0%)
Did not hunt	20	(34.7%)
Total	57	(100.0%)
		24 (42.8%)

Kaktovik hunters harvested an estimated 189 caribou during the study period. Twice as many bulls (121) as cows (62) were taken. The sex was not known for 3 percent (6 animals). Table 4 shows the total number of caribou harvested, the mean harvest per successful household, and the mean harvest per total number of households in the community.

Caribou were harvested in 18 known locations on 69 separate occasions, principally along the coast from Griffen Point to the Canning River, and in the Sadlerochit and Hulahula river drainages (Fig. 5). Table 5 summarizes the 1987-88 caribou harvest by location and number of hunting events at that location. As can be seen, 42 percent of all caribou were harvested at two locations (Kekiktuk Creek and Konganevik) in 1987-88. The remaining 48 percent were harvested in 16 other places. Sex composition of the harvest by location is shown in Tables 6 and 7. Again, most bulls (48.2 percent) were taken at Kekiktuk Creek and Konganevik. However, most cows were taken at three locations: Kekiktuk Creek, Opilak River, and Schrader Lake. The caribou of unknown sex were taken at Sanniksaluk and the Hulahula River mouth.

TABLE 4. CARIBOU HARVESTS BY KAKTOVIK HOUSEHOLDS, 1987-88

Caribou harvested	Total community harvest ^a	Mean harvest per successful household ^b	Mean harvest per total households ^c
Bulls	121 (64.0%)	3.8	2.1
Cows	63 (33.3%)	1.9	1.1
Sex unknown	5 (2.6%)	0.1	0.1
Total	189 (100.0%)	5.8	3.3

^aExpanded from sampled households

^bN = 33 households

^cN = 57 households

Harvest occurred in all months except May, June, and December (Table 8). Most households harvested caribou during July, August, and April. Each harvesting household harvested an average of 5.8 caribou. Distribution of the number and percent of caribou harvested by successful harvest event is shown in Table 9. As shown in Table 9, 30.5 percent of successful harvest events produced one caribou (an additional 5.1 percent reported .5 caribou). Also, 30.6 percent of successful harvest events resulted in four or more caribou. The most caribou harvested in a single successful event was 9, but most harvest events produced 3 to 4 caribou (accounting for 37 percent of the total harvest).

Most caribou were taken in July, August, and April at locations such as Uqsruqtalik (Griffin Point), Hulahula River mouth, Konganevik, Canning River mouth, Jago River, and Opilak River. As shown in Table 4, successful households harvested an average of nearly three caribou per successful hunting event, for an average household harvest of close to six caribou for the study period.

The condition of caribou harvested in 1987-88 was judged as "good" by 82 percent, "not good" by 14 percent, and was not reported by 4 percent of successful harvesters. Of successful caribou

TABLE 5. TOTAL NUMBER AND PERCENTAGE OF CARIBOU HARVEST BY LOCATION, 1987-88

Location of harvest	Harvest	Mean harvest at location	Successful hunting occasions
Kekituk Creek	34 (17.9%)	4.1	8 (11.9%)
Konganevik	45 (24.0%)	3.5	13 (18.6%)
Jago River	8 (4.0%)	1.0	7 (10.2%)
Tapkaurak	7 (3.7%)	3.0	2 (3.4%)
Hulahula, 2nd FH	8 (4.0%)	1.6	5 (6.8%)
Canning River, mouth	13 (7.1%)	1.9	7 (10.2%)
Sanniksaluk	11 (6.2%)	3.3	3 (5.1%)
Hulahula, 3rd FH	1 (0.6%)	1.0	1 (1.7%)
Opilak River	13 (6.8%)	3.7	3 (5.1%)
Schrader Lake	16 (8.7%)	4.7	3 (5.1%)
Sadlerochit Springs	6 (3.1%)	1.3	5 (6.8%)
Uqsruktalik (Griffen Point)	9 (4.9%)	4.0	2 (3.4%)
Pukak	2 (1.2%)	2.0	1 (1.7%)
Pow-D	6 (3.1%)	5.0	1 (1.7%)
Hulahula, 1st FH	1 (0.6%)	1.0	1 (1.7%)
Hulahula River, mouth	4 (1.9%)	1.5	2 (3.4%)
Drum Island (Manning Point)	4 (1.9%)	3.0	1 (1.7%)
Sadlerochit River (Arctic Camp)	1 (0.3%)	0.5	1 (1.7%)
Total	189 (100.0%)	2.7	69 (100.0%)

hunting households, 34 percent reported that the 1987-88 harvest was "about the same" as previous years, 32 percent reported it was "less", and 4 percent reported it was "more." Twenty-nine percent of the successful harvesters chose not to make this assessment. Eleven percent of households reporting a decreased harvest from previous years indicated observing fewer caribou. Thirty-two percent gave other reasons for the change, including stating that, because they already had enough other meat, the need was not as great as in previous years.

Fifty-two percent of caribou hunters utilized snowmachines and 46 percent utilized boats to access hunting areas during the study period. Two percent of the community households did not provide information on transportation .

In 75 percent of the cases, the head of household did the hunting, and in 25 percent of the cases another household member (or members) did the hunting. Heads of households hunted alone 14 percent of the time, with other household members 10 percent of the time, with members of other

TABLE 6. NUMBER OF BULL CARIBOU HARVESTED BY LOCATION, 1987-88

Location of harvest	Harvest	Mean harvest at location
Kekitik Creek	13.9 (11.6%)	1.7
Konganevik	44.2 (36.6%)	3.5
Jago River	5.8 (4.8%)	0.8
Tapkaurak	5.8 (4.8%)	2.5
Hulahula, 2nd FH	2.3 (1.9%)	0.5
Canning River, mouth	11.0 (9.2%)	1.6
Sanniksaluk	9.3 (7.7%)	2.7
Hulahula, 3rd FH	1.2 (1.0%)	1.0
Opilak River	0.0 (0.0%)	0.0
Schrader Lake	8.5 (7.0%)	2.4
Sadlerochit Springs	3.5 (2.8%)	0.75
Uqsruktalik (Griffen Point)	4.7 (3.9%)	2.0
Pukak	2.3 (1.9%)	2.0
Pow-D	2.3 (1.9%)	2.0
Hulahula, 1st FH	1.2 (1.0%)	1.0
Hulahula River, mouth	1.2 (1.0%)	0.5
Drum Island (Manning Point)	3.5 (2.9%)	3.0
Sadlerochit River (Arctic Camp)	0.0 (0.0%)	0.0
Total	120.7 (100.0%)	1.8

households 56 percent of the time, and with both other household members and members of other households 19 percent of the time. Information on this variable was missing for only one household.

Caribou hunting households reported hunting alone 24 percent of the time. Forty-one percent of the hunts were with one other household, 19 percent with two other households, and in 15 percent of the cases, three or four hunters from other households participated. Information was missing for only one hunting event (2 percent). Hunting parties consisted of relatives (39 percent of all hunting events), friends (14 percent), and both relatives and friends (20 percent). Hunters hunted alone 24 percent of the time.

Among successful harvesting groups, caribou were almost always divided in equal shares among the hunters. This was reported 95 percent of the time. Eighty-six percent of successful caribou

TABLE 7. NUMBER OF COW CARIBOU HARVESTED BY LOCATION, 1987-88

Location of harvest	Harvest	Mean harvest at location
Kekituk Creek	19.8 (31.4%)	2.4
Konganevik	1.1 (1.9%)	0.1
Jago River	1.8 (2.7%)	0.3
Tapkaurak	1.2 (1.9%)	0.5
Hulahula, 2nd FH	5.2 (8.3%)	1.1
Canning River, mouth	2.3 (3.7%)	0.3
Sanniksaluk	0.0 (0.0%)	0.0
Hulahula, 3rd FH	0.0 (0.0%)	0.0
Opilak River	12.8 (20.3%)	3.7
Schrader Lake	7.8 (12.4%)	2.2
Sadlerochit Springs	2.3 (3.7%)	0.5
Uqsruktalik (Griffen Point%)	4.7 (7.5%)	2.0
Pukak	0.0 (0.0%)	0.0
Pow-D	3.5 (5.6%)	3.0
Hulahula, 1st FH	0.0 (0.0%)	0.0
Hulahula River, mouth	0.0 (0.0%)	0.0
Drum Island (Manning Point)	0.0 (0.0%)	0.0
Sadlerochit River (Arctic Camp)	0.6 (1.0%)	0.5
Total	63.0 (100.0%)	0.9

hunters reported sharing their catch with other households in the community, and 36 percent shared their catch with households outside Kaktovik as well. Relatives and friends in Fairbanks, Barrow, and Anchorage were mentioned as the recipients of caribou meat shared outside the community. Respondents were asked to make a general estimate of the amounts of caribou shared with other households. Most respondents estimated they shared "some" or "half" of the catch (Table 10).

In 1987-88, 84 percent of households in Kaktovik reported receiving caribou from another household in the community; 14 percent reported not receiving any caribou and 2 percent of households did not answer this question. In addition, 51 percent of households reported they received caribou from relatives and friends residing in other North Slope communities. Shares of caribou were received from Anaktuvuk Pass (72 percent), Barrow (25 percent), and Nuiqsut (3 percent).

TABLE 8. NUMBER OF HOUSEHOLDS
SUCCESSFULLY HARVESTING
CARIBOU BY MONTH, 1987-88

Month of harvest	Number of households	
July (1987)	17	(25.4%)
August	16	(23.7%)
September	1	(1.7%)
October	6	(8.5%)
November	3	(5.1%)
December	0	(0.0%)
January	2	(3.4%)
February	2	(3.4%)
March	5	(6.8%)
April	15	(22.0%)
May	0	(0.0%)
June (1988)	0	(0.0%)
Total	67	(100.0%)

DISCUSSION

An estimated 189 caribou were harvested by Kaktovik households in 1987-88, somewhat below the 1985-86 and 1986-87 harvest levels, but still above the 6-year average of 156 caribou (Table 11). Hunters stated that caribou had not been as readily available in 1987-88 as in the two preceding years. Fully 65 percent of Kaktovik households attempted to harvest caribou; of these, 89 percent successfully harvested caribou on at least one occasion. Although the community did not land any whales during the 1987 season, there did not appear to be any effort to compensate the community resource harvests by taking additional caribou. Most households informally reported little change in their caribou harvest pattern comparing 1987-88 to the previous year. In 1986-87 the community landed 3 whales, yet the caribou harvest level was only slightly higher than in 1987-88. In 1985-86 the community landed no whales but the estimated caribou harvest for that year was only 45 caribou higher than in this study period (that is, less than one caribou more per household). Hence, there may not be a strong

TABLE 9. NUMBER OF SUCCESSFUL CARIBOU HARVEST EVENTS BY
KAKTOVIK HOUSEHOLDS, 1987-88

Caribou harvested	Number of events			
	Bull caribou	Cow caribou	Unknown	All Caribou
0.5	-	3 (5.1%)	-	3 (5.1%)
1.0	17 (25.4%)	12 (16.9%)	-	21 (30.5%)
1.3	1 (1.7%)	-	-	1 (1.7%)
1.5	5 (6.8%)	-	-	5 (6.8%)
1.7	-	1 (1.7%)	-	1 (1.7%)
2.0	12 (16.9%)	2 (3.4%)	2 (3.4%)	15 (16.9%)
3.0	6 (8.5%)	1 (1.7%)	-	6 (8.5%)
4.0	3 (5.1%)	6 (8.5%)	-	7 (10.2%)
5.0	2 (3.4%)	1 (1.7%)	-	3 (6.8%)
5.5	1 (1.7%)	-	-	1 (1.7%)
6.0	2 (3.4%)	-	-	2 (3.4%)
7.0	1 (1.7%)	-	-	1 (1.7%)
8.0	1 (1.7%)	-	-	1 (1.7%)
9.0	-	1 (1.7%)	-	1 (1.7%)
Total events				68 (100.0%)

TABLE 10. AMOUNT OF CARIBOU
HARVEST REPORTED SHARED BY
KAKTOVIK HOUSEHOLDS, 1987-1988

Amount of caribou harvest shared	Number of households
None	5 (17%)
Very little	1 (3%)
Some	13 (43%)
Half of catch	10 (33%)
Nearly all of catch	1 (3%)

TABLE 11. ESTIMATED KAKTOVIK CARIBOU HARVEST AND SEX COMPOSITION, 1981-88

Regulatory year	Reported harvest	Estimated harvest	Percentage of reported harvest		
			Bulls	Cows	Sex unknown
1981-82	43	43	89%	11%	0%
1982-83	110	160	75%	25%	0%
1983-84	102	107	58%	40%	2%
1985-86	186	235	53%	32%	15%
1986-87	172	201	56%	35%	9%
1987-88	162	189	64%	35%	3%
6-year annual average	129	156	66%	29%	5%

association between the number of whales landed and the number of caribou harvested in the same year. Perhaps the deciding factor is related more to caribou distribution, abundance, and availability within the community caribou hunting area than other factors. This should be examined more carefully in future field studies.

The sex composition of the 1987-88 caribou harvest estimate (bulls 64 percent, cows 33 percent, unknown 3 percent) closely approximates that of previous years and is very near the 6-year average (bulls 66 percent, cows 29 percent, unknown 5 percent) (Table 11). The harvest decline in 1987-88 does not appear to have been significant enough for hunters to compromise on their preference for cows during the spring. Had that been the case, bulls would have comprised a much higher percentage of the spring 1988 harvest.

Caribou were harvested in 18 named places (16 of which are distinct and two of which lie very close together) during the 1987-88 season, all located in GMU 26C, and within the general caribou harvest area defined for the community. Seventeen of 18 known harvest places were located within the

previously defined "intensively used caribou hunting area" (Fig. 6) (Pedersen and Coffing 1984) and account for 98 percent of the reported harvest. It is remarkable how well Kaktovik caribou hunters defined the "intensively used caribou hunting area" and how, year after year, since being defined, the harvest continues to be concentrated in this area (Pedersen and Coffing 1984; Coffing and Pedersen 1985; Pedersen 1988).

Of the 16 distinct hunting places, half were located on the coast and half were located inland. Coastal sites accounted for 58 percent of the harvest and inland sites accounted for 42 percent. The inland sites accounted for somewhat greater percentage of caribou than the six-year average of 29 percent (Table 12). In terms of coastal harvests, about 28 percent came from three locations east of the community, whereas the remainder were harvested at five locations west of the community. The reason for this difference is not clear, although in recent years respondents repeatedly stated that access to caribou has gradually decreased east of the community during the summer months. When informally asked about this situation, hunters often replied that a combination of recent intensive aerial caribou survey efforts carried out by the FWS and ADF&G in early July, at the peak of coastal presence of PCH animals, made the area less attractive as a hunting area, and that the caribou were not as predictably accessible as they had been in the past along the coast in the summer. PCH animals have, in the last few years, spent little time in Alaska before returning to areas in northern Yukon Territory.

In comparing 1987-88 harvest sites with those of previous years (Fig. 7), considerable overlap is noted. This is not a count of the number of times a particular location was accessed each year, but merely a convention for noting that a particular location was used. Table 5 provides a count of how many times households accessed a particular location while also successfully harvesting caribou there. The 1987-88 harvest locations are, with two exceptions, located precisely where previous years' harvest had been noted in previous years. Many locations have been used during three and four previous survey periods and are clearly productive areas over time. Five of these locations occur on the coast, but two such locations are also found inland.

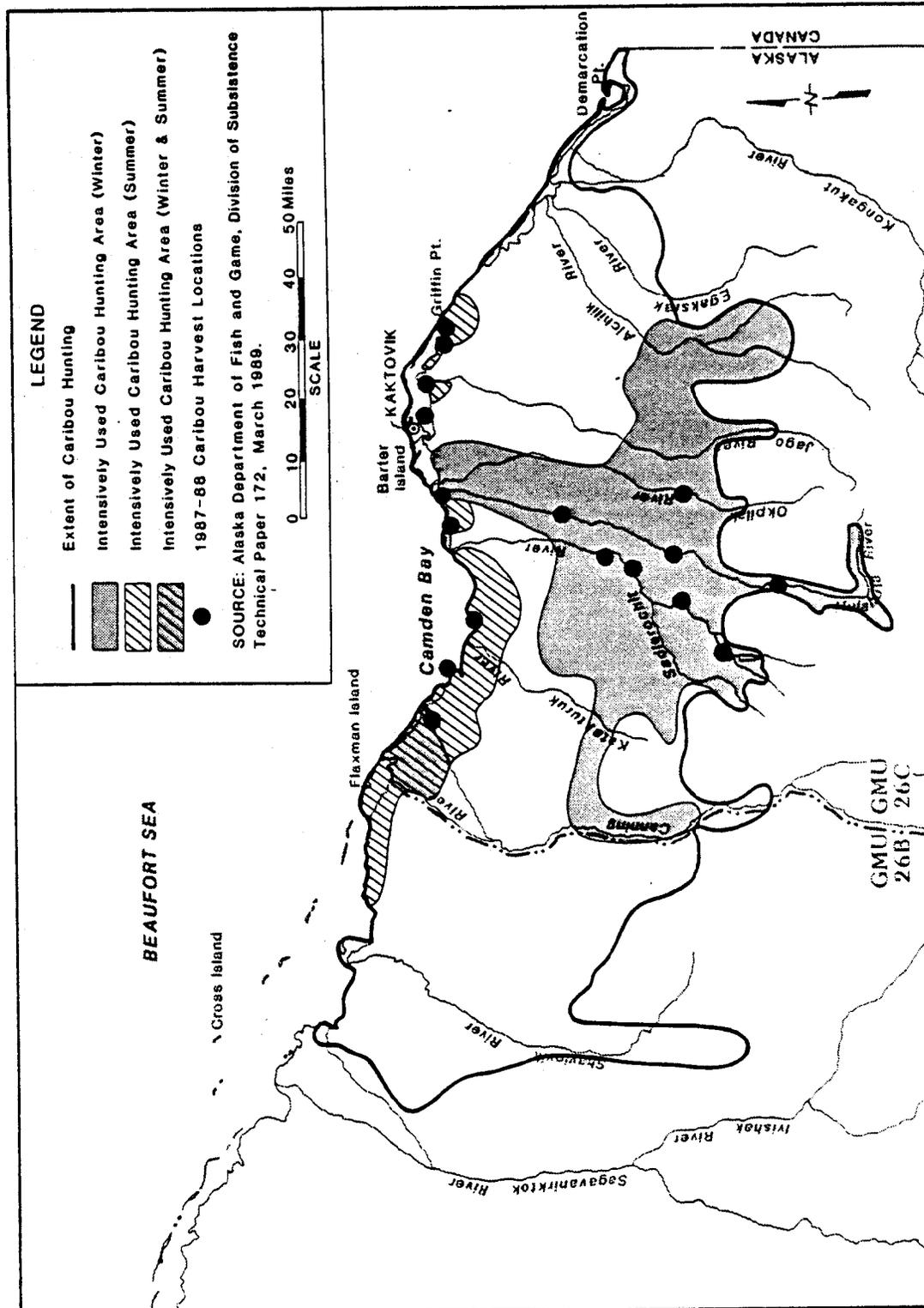


Fig. 6. Kaktovik's Historical Caribou Harvest Area and 1987-88 Harvest Locations.

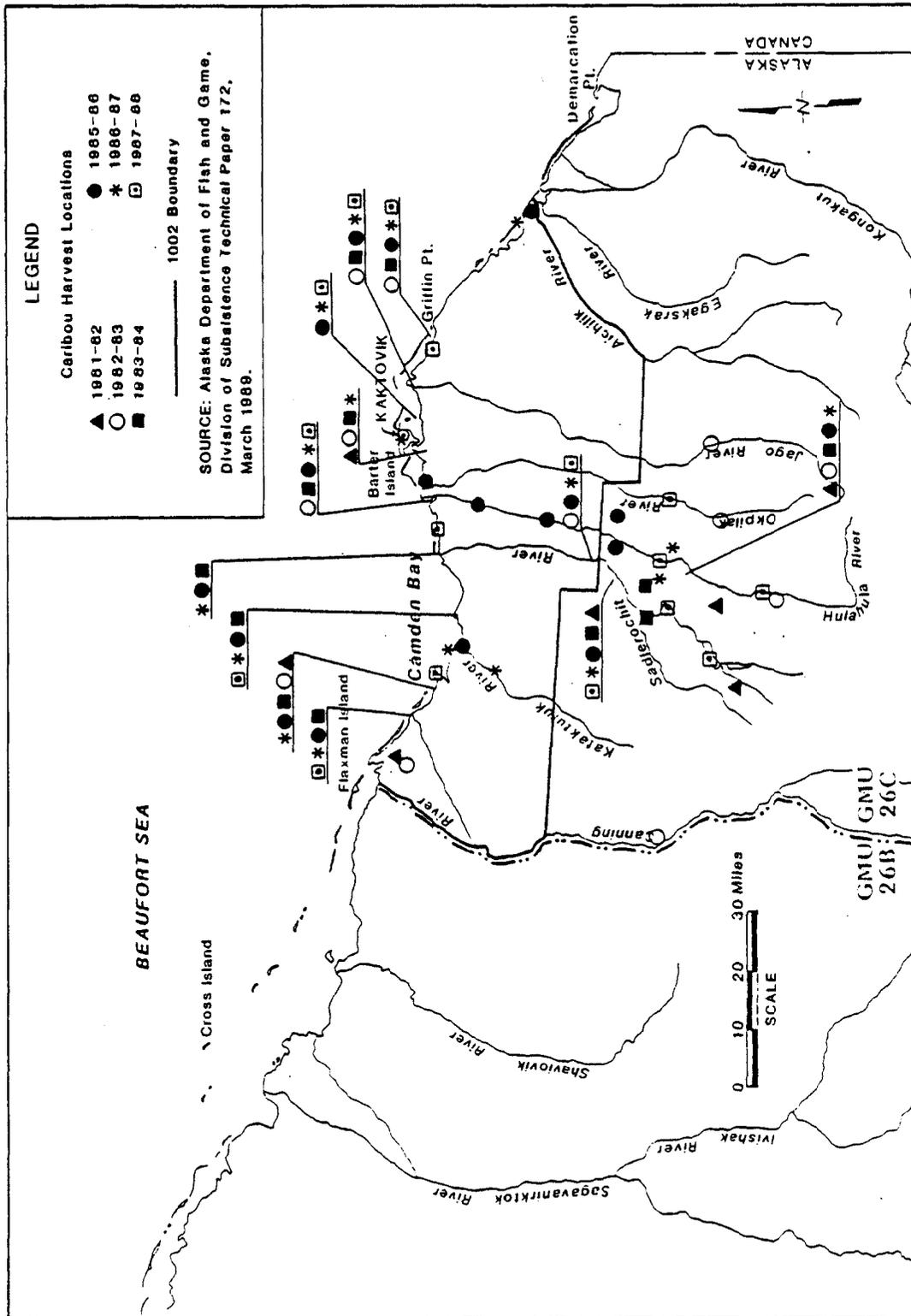


Fig. 7. 1981-88 Caribou Harvest Locations, by Year, with Respect to 1002 Area.

TABLE 12. REPORTED NUMBERS AND PERCENTAGES OF THE KAKTOVIK CARIBOU HARVEST TAKEN FROM COASTAL AND INLAND HARVEST SITES, 1981-88

Regulatory year	Coastal sites	Inland sites	Unknown sites	Totals
1981-82	22 (51%)	15 (35%)	6 (14%)	43
1982-83	86 (78%)	24 (22%)	0 (0%)	110
1983-84	80 (78%)	22 (22%)	0 (0%)	102
1985-86	137 (74%)	39 (21%)	10 (5%)	186
1986-87	117 (68%)	55 (32%)	0 (0%)	172
1987-88	94 (58%)	68 (42%)	0 (0%)	162
6-year annual average	89 (69%)	37 (29%)	3 (2%)	129

Figure 7 also shows harvest locations in relation to the 1002 administrative boundary within ANWR, which is the area designated by the Department of the Interior for possible oil and gas exploration. Ten of 16 caribou harvest locations of Kaktovik hunters are found within the 1002 area, and yielded 62 percent of the Kaktovik caribou harvest in 1987-88. Development in and near important caribou hunting locations has caused concern for continued local hunter access and longterm presence of caribou in the area.

The general seasonal caribou harvest pattern, documented in previous study years, remained relatively unchanged in the study period (Table 13), with most harvest occurring in July and August, and two lesser harvest peaks observed in January and April. Forty-six percent of the harvest occurred during "winter" (October through May) and 54 percent during the ice-free and snow-free period from June through September.

Seasonal sex selection of harvested caribou also was similar to previous years. There were preferences noted for bulls from July through September, cows from October through February and March, and no preference indicated for the remainder of the year.

TABLE 13. CARIBOU HARVEST BY MONTH AS REPORTED BY KAKTOVIK RESIDENTS,
JULY 1981-JUNE 1988

Year	J	A	S	O	N	D	J	F	M	A	M	J	Total
1981-82	3	14.0	0	1	0	0	0	0	9	6.0	4	0	37
1982-83	82	4.0	1	4	0	0	0	0	0	17.0	2	0	110
1983-84	29	27.0	0	3	10	0	0	0	9	23.0	1	0	102
1985-86	39	30.0	8	39	26	1	3	2	7	11.0	6	0	172
1986-87	41	32.0	2	20	4	4	10	5	7	45.0	1	0	171
1987-88	40	46.5	1	13	9	0	11	4	10	27.5	0	0	162
6-year annual average	39	26.0	2	13	8	1	4	2	7	22.0	2	0	126
Percentage average	32	21.0	1	10	6	1	3	1	6	18.0	1	0	100%

Confident assignment of harvested caribou to either of the two caribou herds present within the Kaktovik resource area (CAH or PCH, Fig. 3) is difficult, principally due to the lack of precise weekly, or even monthly, herd distribution information. In addition, caribou from either herd are physically indistinguishable to Kaktovik hunters and biologists alike. For purposes of this study, certain assumptions (supported by biologists working on caribou in the area) are made about herd distribution over time.

Although caribou from the PCH were found farther west in the summer of 1987 than in previous intensively studied years, they still did not go far enough west nor did they spend enough time there to justify a modification to the assignment procedure. Based on the known month and harvest location information for the 1987-88 caribou harvest, more Central Arctic caribou (88 percent) appear to have been harvested than caribou from the PCH (Table 14). This situation approximates the 6-year

TABLE 14. PROVISIONAL HERD ASSIGNMENTS OF KAKTOVIK CARIBOU HARVESTS, 1981-88^a

Herd	1981-82	1982-83	1983-84	1985-86	1986-87	1987-88	6-year annual average
Porcupine Caribou	1	77	53	17	35	20	34 (27%)
Central Arctic Caribou	36	33	49	157	134	142	92 (73%)
Average annual harvest with known locational and month information							126 (100%)

^aOnly caribou for which month and location of harvest was reported were classified.

average, though there have been years when the harvest has favored the PCH (1982-83) or was distributed equally between the two herds (1983-84).

It is important to note the relative higher harvest from the CAH for two reasons. First, should oil and gas exploration and development occur within the 1002 area, considerable attention should be given to ensuring hunter access to the area and to minimizing population effects of industrial activity on the CAH. This is the herd the community presently appears to depend on most heavily. As part of the proposed potential oil and gas development within ANWR, hunter access restrictions have been proposed. Stipulation No. 21 in the Coastal Resource Assessment plan proposes to close to hunting, trapping, and the discharge of firearms an area 5 miles on either side of any development and associated infrastructure (U.S.D.I. 1986:146). Figures 8 and 9 depict the impact of this proposed stipulation on Kaktovik caribou harvest locations in 1987-88, and 1981-87 given the hypothetical development presented by the U.S.D.I. The net result from this stipulation is that productive caribou harvest locations to the east, west, and south of the community would be closed to hunting and, unless compensated for in some manner, may reduce the annual caribou harvest level substantially. Harvest areas for caribou from both herds would be affected, but the greatest numerical loss probably would be from the CAH under the current harvesting regime.

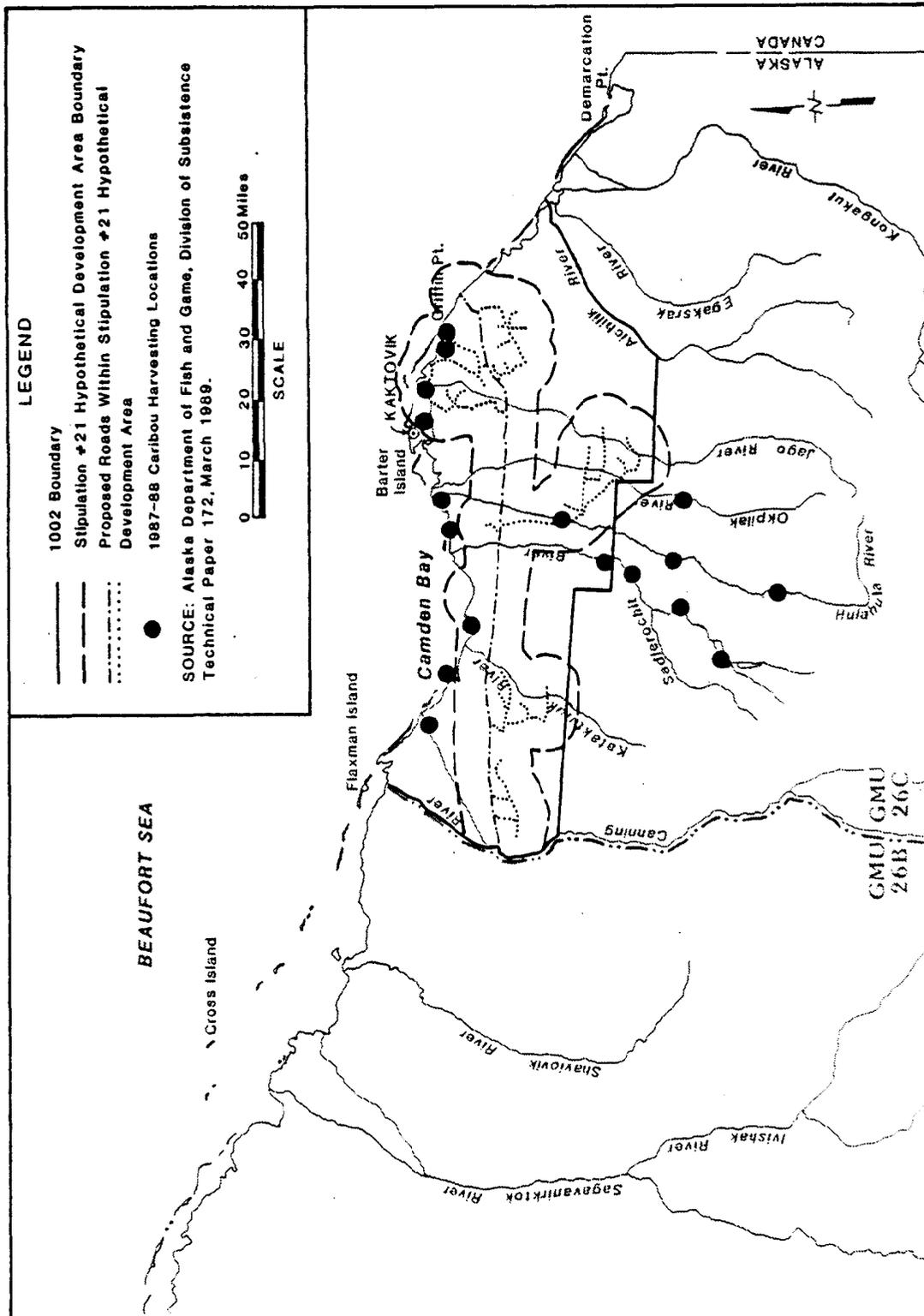


Fig. 8. Kaktovik Caribou Harvest Locations 1987-88 with Respect to Hypothetical 1002 Development Area.

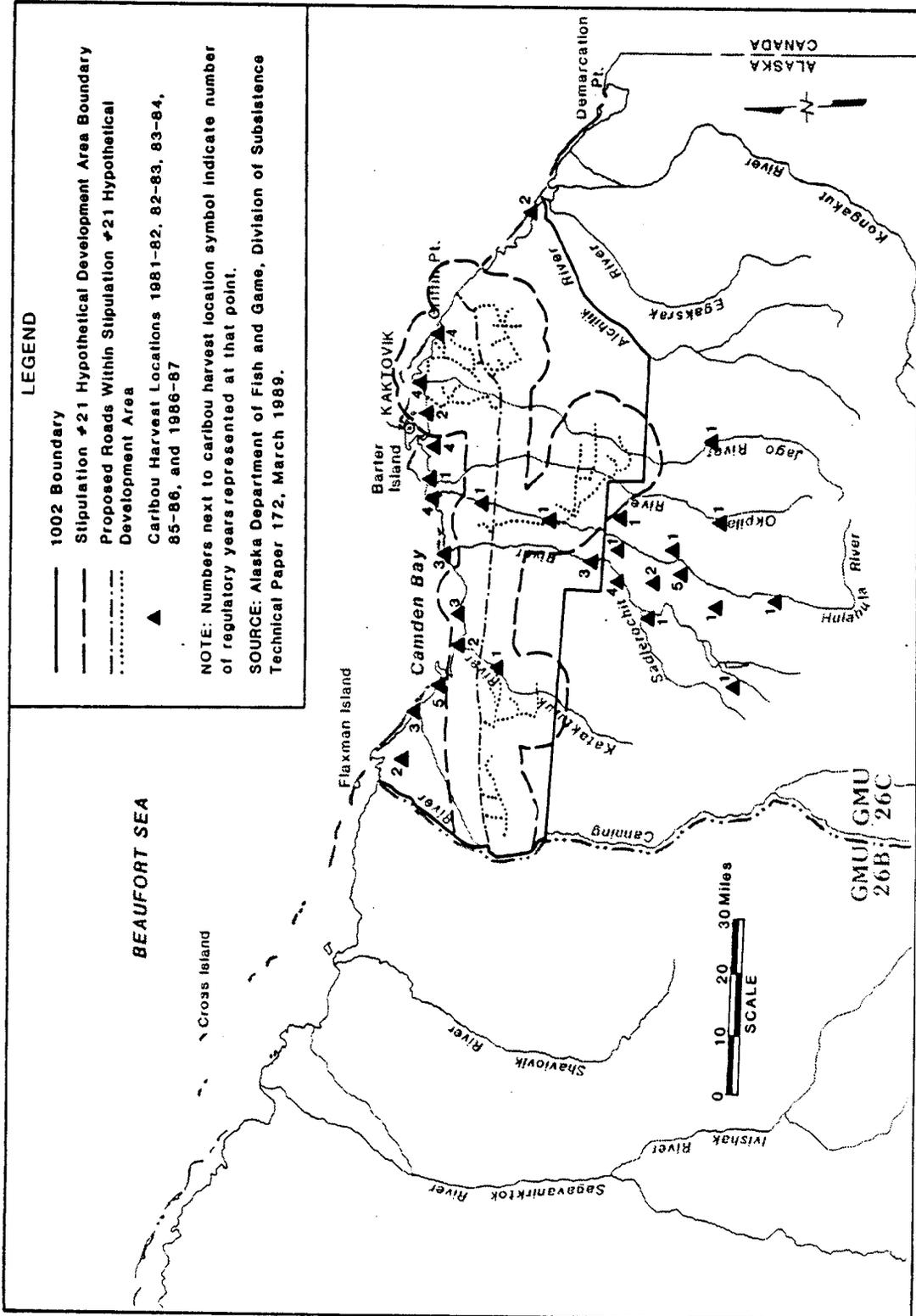


Fig. 9. Kaktovik Caribou Harvest Locations 1981-87 with Respect to Hypothetical 1002 Development Area.

Furthermore, since the advent of the Trans-Alaska Pipeline System (TAPS), Kaktovik caribou hunters have observed a gradual decrease in the presence of the Porcupine caribou within their traditional hunting area. Deep concern over further eastward displacement of this herd exists in the community. Although hunters currently obtain most of their caribou from the CAH, respondents repeatedly emphasized this as a recent phenomenon. Prior to the TAPS construction, hunters say most caribou were harvested to the east of the community both in winter and summer. These animals probably were from the PCH.

Access to coastal caribou hunting areas and locations typically involves snowmachines in the periods of snow and ice (October to May) and boat transportation in the ice-free season (July through September). Hunters have now been observed carrying small, three-wheeled motorcycles in their boats to hunting locations. These vehicles are used for accessing near-coastal harvest sites and packing harvested caribou to the coast. Use of this all-terrain vehicle in support of 1987-88 caribou hunting was not investigated but could be addressed in future monitoring surveys.

Inland sites, accessed almost exclusively during the season of ice and snow, are reached predominantly by snowmachine at this time. However, hunters often refer to other access methods such as packing with dogs in the 1950s and before, as well as sporadic summer use of snowmachines, tracked vehicles, and airboats (used both summer and winter) which were utilized in the 1950s and later.

Snowmachines and small boats were used in 53 percent and 46 percent of the successful harvest events during 1987-88, respectively. In several of the summer harvest events, three-wheelers were used to support hunters in the field, and although their use was noted by the researcher, extent of their use was not quantified in this survey.

According to ADF&G records, only two individuals in Kaktovik (one Native and one Non-native) were issued harvest tickets during the 1987-88 caribou season. One person returned the harvest report stating that he had harvested no caribou during the year, and the second harvest report had not been returned at this writing. However, it is important to note that timely availability of caribou

harvest tickets for the beginning of each new harvest reporting year (beginning in July each year) has been a chronic problem, first noted when these surveys began in 1981.

Harvest reporting is not entirely rejected by community hunters, but they are confused by the lack of a consistent policy on what needs to be reported, and when, how and where they submit their reports. There is no reporting requirement on any marine mammals, migratory birds, shot or trapped furbearers, or small game. When fishing for their own use with nets, household members do not even need a license and are not required to report any of their harvest.

Clearly, the harvest reporting process needs to be made culturally relevant and standardized, not only in Kaktovik but also across the entire North Slope, before reliable management information can be derived from ADF&G harvest reports. At this time only caribou, whale, and some polar bear harvest information is being routinely collected in Kaktovik.

In 1985-86 the estimated caribou harvest contributed over 27,000 pounds to the community, and in 1986-87 this resource contributed close to 18,000 pounds of edible meat to the local resource economy (Table 15) (Pedersen 1988). Caribou contributed an estimated 45 percent of the entire subsistence harvest in Kaktovik and constituted about 78 percent of the terrestrial mammals harvest component for 1985-86. For the study year 1986-87, caribou supplied 21 percent of the entire community harvest, and nearly 71 percent of the terrestrial mammal harvest. In 1987-88 the local caribou harvest yielded an estimated 22,576 pounds of edible meat. Although few additional community harvest figures are available for the study period, it is well known that no whales were harvested (as in 1985-86) and that it was not a peculiar year with respect to the harvest of other resources. If we assume that the harvests for the three years (1985-86, 1986-87, and 1987-88) are comparable, caribou may have contributed up to 40 percent of the locally harvested resources in the community during 1987-88. Caribou was likely the single most important resource, in terms of pounds harvested, in the community economy in 1987-88, as it was in 1985-86, and undoubtedly always has been in years when few, or no, whale was harvested.

TABLE 15. SUBSISTENCE RESOURCE HARVEST, KAKTOVIK, ALASKA,
1985-86 AND 1986-87

Resource category	Estimated harvest	
	1985-86 (lbs)	1986-87 (lbs)
Fish	11,403 (19.00%)	6,950 (8.00%)
Birds	3,997 (7.00%)	2,382 (3.00%)
Marine mammals	10,762 (18.00%) ^a	49,719 (59.00%) ^b
Terrestrial mammals ^c	35,011 (57.00%)	24,908 (30.00%)
Plants/berries	13 (.02%)	58 (.06%)
Total	61,186 (100.00%)	84,017 (100.00%)
Total per capita	278 ^c	382 ^c

^aNo bowhead harvest.

^bBowhead harvest included.

^cCaribou harvests comprised 27,462 lbs. of the total in 1985-86 and 17,783 lbs. of the total in 1986-87.

Source: Pedersen, 1988.

This is one reason why the community consistently has argued for a careful approach to alternate land uses in their area of economic interest. Community leaders often ask visiting state, federal, and industry officials the rhetorical question, "Why should we trade our self-sufficiency which is based on local game, bird, and fish resources for dependence on an industry that is based on non-renewable resource extraction which, at the most, will last 10-15 years, and may displace and make inaccessible local renewable resources, while only providing a few jobs for local residents?"

SUMMARY

Kaktovik hunters harvested an estimated total of 189 caribou from the Porcupine and Central Arctic caribou herds in state regulatory year 1987-88. This harvest level is slightly higher than the 1981-88 average of 156 caribou, but below the maximum estimated annual harvest (1985-86) of 235 caribou. As in recent years, the harvest appears to be mainly drawn from the CAH.

Community harvest activities took place within the previously defined general community caribou harvest area. With one exception all harvest also occurred within the previously defined "intensively used caribou hunting area."

Harvest sites were equally divided between inland and coastal locations, and harvests were roughly equal between the two areas. There was a notable bias of both number of sites and caribou harvested to the west and south of the community. One-hundred seventeen caribou, 62 percent of the estimated harvest, came from within the ANWR 1002 area.

Caribou play a vital role in the local resource-based economy in Kaktovik. In 1987-88 this resource alone contributed an estimated 22,576 pounds of edible meat to the subsistence economy in the community. By weight this represents about 40 percent of the total annual community subsistence harvest, and nearly 80 percent of the terrestrial mammals harvest.

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APPENDIX 1

KAKTOVIK HOUSEHOLD CARIBOU HARVEST QUESTIONNAIRE
JULY 1987 THROUGH JUNE 1988

ALASKA DEPARTMENT OF FISH AND GAME, DIVISION OF SUBSISTENCE
1300 COLLEGE ROAD, FAIRBANKS, AK 99701

This information is collected to assist the Department of Fish and Game, and other agencies, to better care for the Porcupine and Central Arctic caribou herds and to protect your interest in the welfare, and your continued use, of these valuable resources. We believe that this information is extremely important for us to have, for one, because of possible oil and gas development activity in your hunting area. With current, reliable information on caribou harvests and harvesting areas we will be able to advise government and private land managers on how to proceed so as to ensure proper consideration of your need for continued access to the caribou and your traditional caribou harvesting areas.

Each household survey is confidential, and we will therefore not give out any of its content to anyone. You will note that your name is not on the survey-form, but there is a number. We use that number to make sure we do not ask the same household twice, and to keep track of how many we have talked to. Only the people carrying out the survey know which number stands for which household.

We will take your responses and combine them with all the others from Kaktovik to produce a report which talks about caribou use by the whole community. Your contribution to this effort is very valuable, because the more people we can include in the survey, the better the results will be. Over the years that we have done the caribou survey we have had excellent cooperation from households in the community. We are very proud of this, and will continue to do our best to produce high quality harvest information from Kaktovik and maintain good community relations while doing so.

YOUR ASSISTANCE IN THIS SURVEY IS VOLUNTARY, AND YOU NEED NOT ANSWER QUESTIONS YOU FEEL UNCOMFORTABLE WITH. WE DO ENCOURAGE EVERYONE TO BE AS COMPLETE AS POSSIBLE, FOR THE BETTER THE INFORMATION IS THAT WE GET FROM YOU, THE BETTER OUR RESULTS WILL BE.

IF YOU HAVE ANY QUESTIONS OR CONCERNS, PLEASE GIVE ME A CALL HERE IN KAKTOVIK AT 640-6612 OR 640-6526, OR IN FAIRBANKS AT 0-479-6211 (CALL COLLECT).

THANX, SVERRE PEDERSEN.

KAKTOVIK HOUSEHOLD RESOURCE USE QUESTIONNAIRE
 JULY 1987 THROUGH JUNE 1988

Ask questions 1-4 only if the household was not surveyed last year.

Ask question 4 only if we have noted a household summary change since last year.

If no need to ask questions 1-4 proceed to question 5.

1. When did the head of the household move to Kaktovik?
 Year: _____

2. Where did the head of the household live just before moving to Kaktovik? _____

3. Did you or anyone in your household or any relatives live in the Kaktovik area seasonally before moving there permanently? Yes? _____ No? _____

If yes, who, when, and where? _____

4. Household summary:

Member (ID #)*1	Male/ Female	Rel. to Head of Household	Year of Birth (Age)	Year of Birthplace*2	Length of Residency	Ethnicity*3 Speaks Inupiaq(Y/N)
-----------------	-----------------	---------------------------	---------------------	----------------------	---------------------	---------------------------------

- 1. _____ Head of HH _____
- 2. _____
- 3. _____
- 4. _____
- 5. _____
- 6. _____
- 7. _____
- 8. _____

*1. Place a * next to respondent.
 *2. Where was your mother living when you were born?
 *3. I=Inupiaq, W=White, O=Oriental, B=Black
 Kaktovik Survey 1987-88

Is there anyone who usually lives here, but is not living here now?
(Away for school, work training, military, jail, etc.?)

Member (ID #)	Male/ Female	Rel. to Head of Household	Year of Birth (Age)	Birthplace*1	Length of Residency	Ethnicity Speaks Inupiaq
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						

(*1. Where was your mother living permanently when you were born?)

5. Did your household use wild fish, game, or plants in the
time from July 1987 through June 1988? Yes ___ No ___

6. Did anyone in your household harvest fish, game, or other natural
resources (including berries and vegetation) in the time
from July 1987 through June 1988? Yes ___ No ___

NOW, I WOULD LIKE TO TALK TO YOU ABOUT CARIBOU HUNTING DONE BY
YOUR HOUSEHOLD IN THE 12 MONTHS FROM JULY LAST YEAR THROUGH JUNE
THIS YEAR.

Kaktovik Survey 1987-88

7. Since the ice went out last year (July 1987) until end of June this year 1988, did you or anyone in your household hunt for caribou?

Yes ___ Go to question 9.

No ___ Go to question 8.

8. What is the reason no one from your household hunted caribou last year (1987-88)? (After reply go to question 25.)

Working, did not have time _____

Had enough other meat _____

Other _____

9. Did you or anyone in your household get/catch any caribou from July 1987 through June 1988?

Yes ___ Go to question 11.

No ___ Go to question 10.

10. What is the reason your household did not get /catch any caribou? (After reply, go to question 25)

Did not see any _____

Not lucky, saw some but could not catch them _____

Other _____

11. Where did your household get/catch caribou?
(Give place name and locate place on attached map)

Kaktovik Survey 1987-88

12. How many did your household get/catch at each hunting place?

13. How many were males? _____

Were any of these calves/young of the year? _____

14. How many were cows? _____

Were any of these calves/young of the year? _____

15. How many of those which you do not know the sex of were calves/ young of the year? _____

16. Was the condition of the caribou you got/caught any different this year from years past?

17. How did you get to each successful hunting area (by what means)? _____

Kaktovik Survey 1987-88

18. Each time this household successfully got/caught caribou -

Who in this household did the hunting? _____

Did that person hunt by him/herself? _____

With other household members? _____

With member(s) from other households? _____

How many other households were part of the hunt? _____

Can you share with us if the member(s) of these household(s) were relatives or friends? _____

19. If you hunted with another household, how did you divide the catch each time you went out? _____

20. Did you share any of the caribou you harvested with other household(s) in Kaktovik? (note househ. #)

Yes _____ No _____

21. Did you share any of the caribou you took back to town with other households outside Kaktovik? (which communities?)

Yes _____ No _____

22. Can you estimate how much caribou, that was your share, you gave away this last year?

None _____

Very little _____

Some _____

Half of what we got/caught _____

More than half of what we caught _____

Nearly all we got/caught _____

Kaktovik Survey 1987-88

23. Compared with last year, would you say that you caught more caribou this year than last?

More _____

Less _____

About the same _____

24. If there was a change since last year, what would you say the reason for the change might be?

Did you see less caribou this year _____

Did you not need as much meat from caribou this year

Other reason(s) _____

25. Did your household receive any caribou shares from

other households in Kaktovik? Yes _____ No _____

from households in other communities? Yes _____

Which _____ No _____

27. Do you have any questions or concerns regarding caribou hunting regulations in your area?

THANK YOU VERY MUCH, WE REALLY APPRECIATE YOUR TAKING THE TIME TO TALK TO US ABOUT YOUR USE OF CARIBOU IN THE KAKTOVIK AREA.

THIS INFORMATION WILL GO A LONG WAY TOWARDS MAKING PEOPLE IN GOVERNMENT, AND ELSEWHERE MORE AWARE OF THE IMPORTANCE OF LOCALLY HARVESTED CARIBOU TO KAKTOVIK RESIDENTS AND THE EXTENT OF THE LOCAL CARIBOU HUNTING AREA.

QUYANAQPUK!

(last ed 10-21-88)

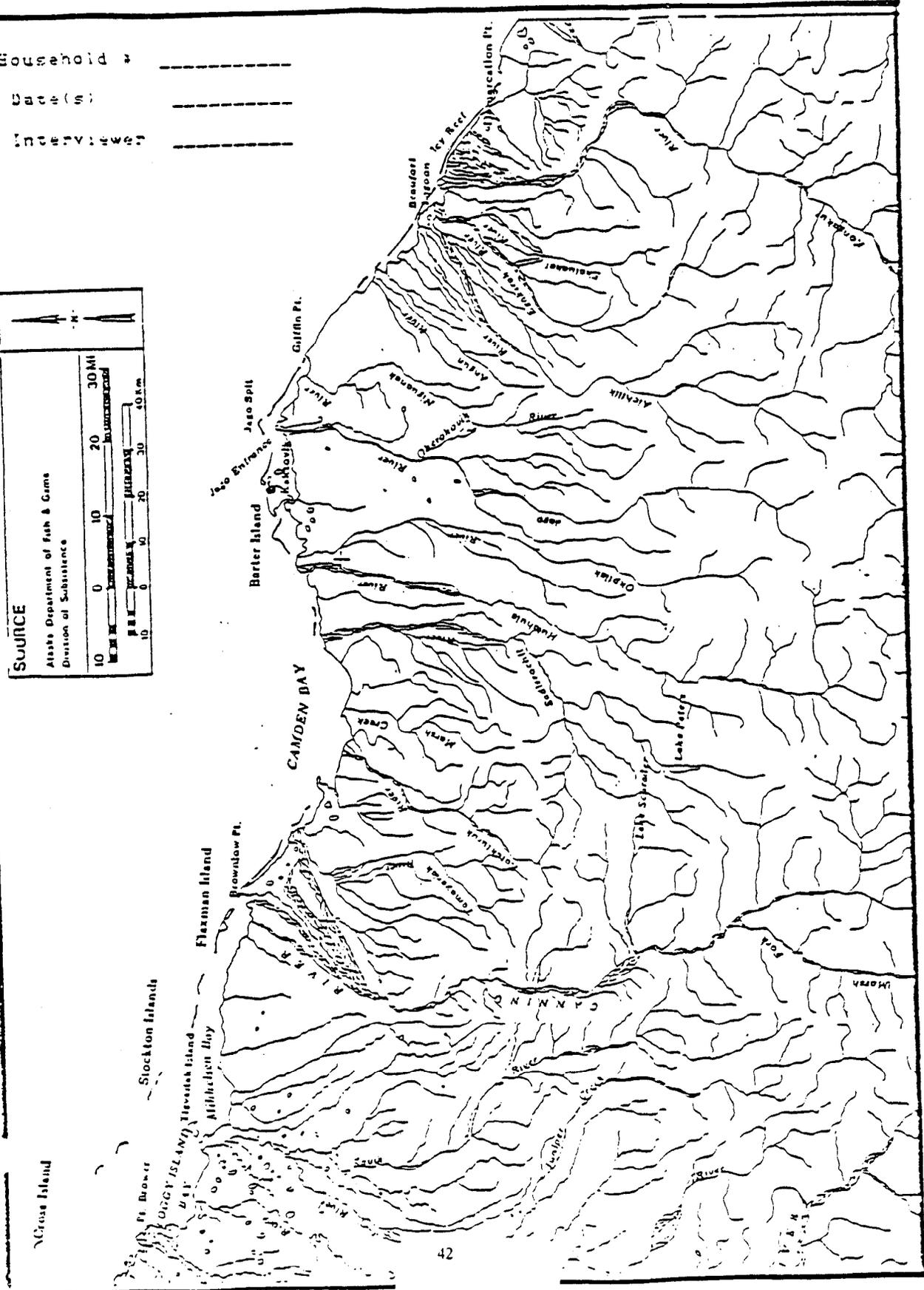
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SOURCE

Alaska Department of Fish & Game
 Division of Subsistence

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10 0 10 20 30 40 km
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APPENDIX 2. NORTH SLOPE HOUSEHOLD SURVEY CONVERSION FACTORS

<u>Code</u>	<u>Species Name</u>		<u>Conversion Factor</u>	<u>Source of Conversion</u>
<u>Wild Fowl</u>				
40	Canada Geese		4.5	Kaktovik Survey
41	Black Brant		3.0	Nuiqsut Survey
42	Snow Geese		4.5	Kaktovik Survey
43	Eider Ducks		1.5	Kaktovik Survey
44	Pintail		1.5	Kaktovik Survey
45	Oldsquaw		1.5	Kaktovik Survey
46	Ptarmigan		0.7	Kaktovik Survey
47	Eggs		0.15	Nuiqsut Survey
<u>Big Game</u>				
49	Caribou	Bull	127	Kaktovik Survey
		Cow	107	Kaktovik Survey
		Unknown	117	Kaktovik Survey
50	Sheep		99	Kaktovik Survey
51	Musk-Ox		593	Kaktovik Survey
52	Moose		500	Kaktovik Survey
53	Grizzly Bear		No Harvest	
<u>Furbearers</u>				
60	Ground Squirrel		0.41	Kaktovik Survey
61	Red Fox		Not eaten	
62	Arctic Fox		Not Eaten	
63	Wolverine		Not Eaten	
64	Wolf		Not Eaten	
65	Mink		Not Eaten	
66	Marmot		Not Eaten	
67	Weasel		Not Eaten	
<u>Marine Mammals</u>				
70	Spotted Seal		42	Nuiqsut Survey
71	Ringed Seal		42	Kaktovik Survey
72	Bearded Seal		176	Kaktovik Survey
73	Walrus		No Harvest	
74	Bowhead		No Household Level Data	
75	Polar Bear		496	Kaktovik Survey
76	Belukha		No Harvest	
<u>Fish</u>				
80	Arctic Char		2.8	Kaktovik Survey
81	Arctic Cisco		0.7	Kaktovik Survey
82	Grayling		0.9	Kaktovik Survey
83	Ling Cod		No Harvest	
84	Arctic Cod		0.07	P. C. Craig 1984
85	Lake Trout		4.0	Kaktovik Survey
86	Broad Whitefish		No Harvest	
<u>Plants</u>				
90	Berries (Qts)		1.0	Kaktovik Survey
91	Plants (Qts)		1.0	Kaktovik Survey