

DEPARTMENT OF FISH AND GAME

1300 COLLEGE ROAD
FAIRBANKS, ALASKA 99701

October 14, 1985

Ann Rappoport
U.S.F.&W.S (PSS/RS)
1011 East Tudor Road
Anchorage, Alaska 99503

RE: Draft Kaktovik Caribou Harvest Report, 1983-84 and
General Subsistence Land Use in the Kaktovik Area

Dear Ann:

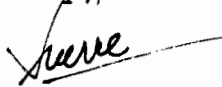
I am pleased that we can submit this report for inclusion in your 1002 report to Congress. As we discussed over the phone today, this is a final draft which still needs a few corrections taken care of before it is officially distributed. The matters needing attention are minor,, however, and do not affect the data presented or conclusions reached. So, I see no need for you to worry much about using the report in its entirety. Should you have any questions on the caribou material, please give me a call.

With a bit of luck, I should be able to send you a final draft of our subsistence land use baseline report for Kaktovik (Technical Report No. 109) next week. It contains a detailed discussion of land use by resource category as well as information and maps on Native allotments and local place names, which I know will be of use to you in analyzing potential impact of oil and gas leasing on subsistence land use in the 1002 area.

I will be happy to meet with you, or someone on the ANWR staff, to discuss the delineation of sensitive subsistence areas in the Kaktovik area. I have some relevant information on caribou, sheep, fish, and whales as well as travel routes that may be useful in this connection.

Again, thank you for the opportunity to have our material included in the final 1002 report.

Sincerely,



Sverre Pedersen
Resource Specialist II
Division of Subsistence
North Slope Area

*Final
Draft*

**CARIBOU HUNTING: LAND USE DIMENSIONS,
HARVEST LEVEL AND SELECTED ASPECTS OF THE HUNT
DURING REGULATORY YEAR 1983-84 IN KAKTOVIK, ALASKA**

by
Michael Coffing
Sverre Pedersen

Technical Paper No. 120

Alaska Department of Fish and Game
Division of Subsistence
Fairbanks, Alaska

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ABSTRACT

This report presents information on caribou hunting by Kaktovik residents during the 1983-84 regulatory year. Specific areas of investigation include location of the harvest sites, timing of harvest, level of harvest, sex composition of the harvest, transportation methods used to access harvest sites, identification of harvest work groups, and reasons why some households did not harvest caribou.

A community-wide survey of all resident households was undertaken. Harvest sites were identified by reference to specific place-name locations or were indicated on a map of the study area. Household information was coded to ensure confidentiality and is presented at the community level.

All harvest sites utilized during 1983-84 were contained within an area previously designated as being the community caribou hunting area since 1923. Six new harvest sites were identified, including a harvest location well inside Game Management Subunit 26B and outside the intensively used caribou hunting area previously defined by the community.

During the 1983-84 season, 102 caribou were harvested by Kaktovik residents. This figure is lower than the 1982-83 harvest but higher than the three-year average of 85 caribou from July 1981 through June 1984. The community caribou harvest is estimated to have been equally derived from both the Porcupine and Central Arctic Caribou herds.

During the 1983-84 season, 78 percent (80) of the community harvest took place at coastal sites and 22 percent (22) at inland sites on the

coastal plain or near the foothills and mountain regions south of Kaktovik. Approximately 58 percent (59) of all caribou harvested were male. The harvest occurred in a seven-month period with the majority of the harvest taking place during July (28 percent), August (26 percent), and April (23 percent).

Methods used to transport hunters were largely a function of season. Transportation modes included boats, snowmachines, and three-wheelers.

Caribou were harvested by 24 hunting groups during the 1983-84 regulatory year, drawing members from 18 households. Individual hunting groups drew hunters from one to four households, and certain households contributed hunters to as many as five different hunting groups. Employment and absence from the community were major reasons why some households did not harvest caribou the year of the study.

The majority of the caribou harvested by residents of Kaktovik are derived from land within the Arctic National Wildlife Refuge including an area ^{on which an oil and gas exploration program and baseline} ~~which has been designated for possible~~ oil and gas ^{and wildlife} exploration. Continued access to harvest areas within the Refuge, access through the Refuge to utilize additional harvest areas, and the continued viability of the Porcupine and Central Arctic herds are factors which could impact the harvest levels and the local resource-based economy of Kaktovik.

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ACKNOWLEDGEMENTS

This report is the result of a study conducted in Kaktovik, Alaska during 1984. Although this report presents and summarizes information collected during portions of August and September of 1984, the cornerstone of the project was laid during the spring of 1982 when the Division of Subsistence began collecting caribou harvest data from Kaktovik caribou hunters. Since that time, residents of Kaktovik have participated in an annual caribou harvest survey, patiently taking the time to listen and respond to many questions regarding caribou hunting, and have caringly taken the authors to the field, providing them a clearer understanding of the community's caribou harvesting activities than could be gained through interviews alone. Our heartfelt thanks goes out to all of the fine people of Kaktovik for their continued interest, cooperation, support, and hospitality.

As with most studies of this type, certain individuals provided support beyond what was anticipated. Residents of Kaktovik who are members of the Eastern Arctic Fish and Game Advisory Committee, specifically: Herman Aishanna, Isaac Akootchook, Walt Audi, Archie Brower, and Nolan Solomon reviewed drafts of the research design and provided helpful suggestions while the research was being carried out. Richard Stern and Bob Wolfe reviewed drafts of the research design and the report. Both provided constructive comments which resulted in an appropriate and clear presentation of the data. Their editorial assistance is appreciated. Vickie Leffingwell, Ruth Southern and Karen Thompson are thanked for patiently typing the various drafts of the report. Renee Patten artfully drafted the figures.

INTRODUCTION

The central and eastern Arctic Slope of Alaska is undergoing rapid industrialization. Land use activity associated with oil and gas production is now expanding extensively from Prudhoe Bay. The area most intensively involved ranges from Mukluk Island, located northwest of the Colville River delta, to Flaxman Island in the east, and from Cross Island, located north of Prudhoe Bay, southward to the Kuparuk uplands. During early winter 1983, this expansion continued eastward as industry was allowed to begin seismic work on a portion of the coastal plain east of the Canning River within the Arctic National Wildlife Refuge.

Many unique arctic wildlife species inhabit the refuge area, including two caribou herds. Located on the coastal plain within the refuge are the calving and summering grounds of the Porcupine Caribou Herd as well as a portion of the range of the Central Arctic Herd (Fig. 1). Although the ranges of these two herds appear to overlap, generally speaking, Porcupine Herd animals tend to be concentrated within the eastern half of the refuge while Central Arctic Herd animals are more closely associated with the western portion of the refuge. The Porcupine Caribou Herd, an international herd, ranges in portions of both the United States and Canada, whereas the Central Arctic Herd appears to range only in Alaska. Both herds are utilized by sport and subsistence hunters.

Among the subsistence hunters utilizing both herds are residents of Kaktovik, Alaska. Located on Barter Island approximately 90 miles west of the U.S. and Canadian Border, Kaktovik is the easternmost community in

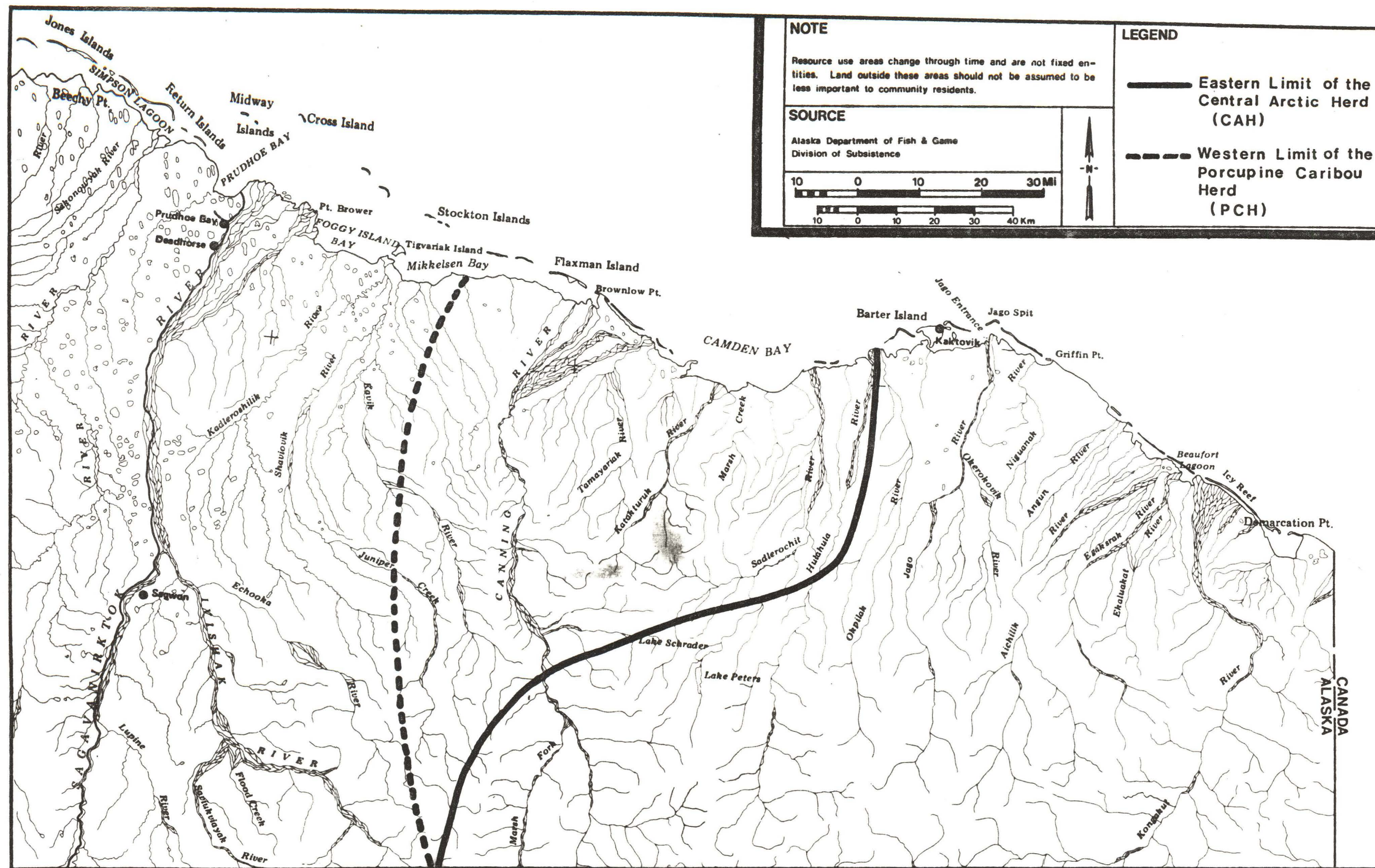


Fig. 1. Caribou ranges in northeast Alaska.

the North Slope Borough. The community population numbered 185 persons in 46 households in April, 1983, 83 percent of whom are Inupiat Eskimo (Pedersen, Coffing, and Thompson 1985). A large portion of the community's subsistence land use area lies within the Arctic National Wildlife Refuge; however, areas west of the Canning River and adjacent to Prudhoe Bay are also utilized (Pedersen, Coffing, and Thompson 1985). A variety of locally available resources is harvested in these areas by subsistence hunters. Recent studies in Kaktovik have found caribou to be the main terrestrial big game species harvested by village hunters (Alaska Consultants Inc. with Stephen Braund and Associates 1984; Coffing 1983; Jacobson and Wentworth 1982; Pedersen 1982; North Slope Borough 1979; U.S. Dept. of Interior 1974).

The need for a study of subsistence caribou hunting was established in 1981. Based on numerous requests from both state and federal resource management agencies (notably Game Division, Alaska Department of Fish and Game, Arctic National Wildlife Refuge, U.S. Fish and Wildlife Service) the Subsistence Division began collecting caribou harvest data and land use information from residents of Kaktovik in 1981. This information is needed to meet both national and international management and planning obligations. Some data needs are legally required by the Alaska National Interest Lands Conservation Act (refer to Sec.'s 306, 810, 1001, 1002, and 1005), while others emanate from efforts to consider management of the Porcupine Caribou Herd as an international resource of considerable esthetic and practical value of northern Alaska as well as the Yukon and Northwest Territories in Canada.

PURPOSE OF STUDY

The purpose of this study was to document for the 1983-84 regulatory year:

- (1) land areas used by successful Kaktovik caribou hunters;
- (2) the seasonality of the community caribou harvest;
- (3) the total number of caribou harvested by the community;
- (4) the sex composition of the harvest;
- (5) the portion of the overall community harvest from the Porcupine Caribou Herd and the Central Arctic Herd;
- (6) the composition of work groups involved in harvesting caribou;
and
- (7) reasons why some households did not harvest caribou.

PREVIOUS RESEARCH

Two caribou herds, the Porcupine Herd and the Central Arctic Herd, range within Kaktovik's caribou hunting area (Pedersen and Caulfield 1981; Pedersen and Coffing 1984). Recent population estimates place the Porcupine Herd at approximately 145,000 to 148,000 in 1983 and the Central Herd at approximately 12,500 in 1983 (Ken Whitten pers. comm., 1984). Both herds are considered to be slowly increasing in numbers. Prior to 1981, no systematic caribou harvest surveys had been conducted at Kaktovik. Several authorities had estimated caribou harvests through relatively unsystematic methods. The Interior Department estimated that 100 to 300 caribou were taken annually by Kaktovik hunters

the caribou harvest at 75 animals annually between 1962 and 1982 (Alaska Consultants Inc. with Stephen Braund and Associates 1984). An estimated 80 caribou were taken in 1980 (Jacobson and Wentworth 1982). More recently, a systematic survey of caribou hunting households estimated the community's 1981-82 harvest at 43 animals and the 1982-83 harvest at 110 animals (Pedersen and Coffing 1984). During that study, it was determined that Kaktovik's caribou hunting range covered about 7,600 square miles. The study also noted that all of the 1981-83 harvest sites fell within the community's caribou hunting range (Fig. 2). No harvest sites were identified west of the Canning River despite information indicating that both caribou and hunters frequent the area. Seventy percent of the 1981-82, 1982-83 total harvest occurred on the coastal plain near the coast, and 30 percent in the foothills and mountain region combined. Results indicated that about half of the annual caribou harvest came from each of the Porcupine and Central Arctic herds.

Caribou harvest data were also collected for a portion of July 1983. Based on participant observations and informal interviews, it was determined that 29 caribou were harvested at three coastal harvest locations during the first three weeks of July 1983.

METHODOLOGY

Research Design

This study utilized a descriptive, community-focused research design. Quantitative data were gathered through two community surveys.

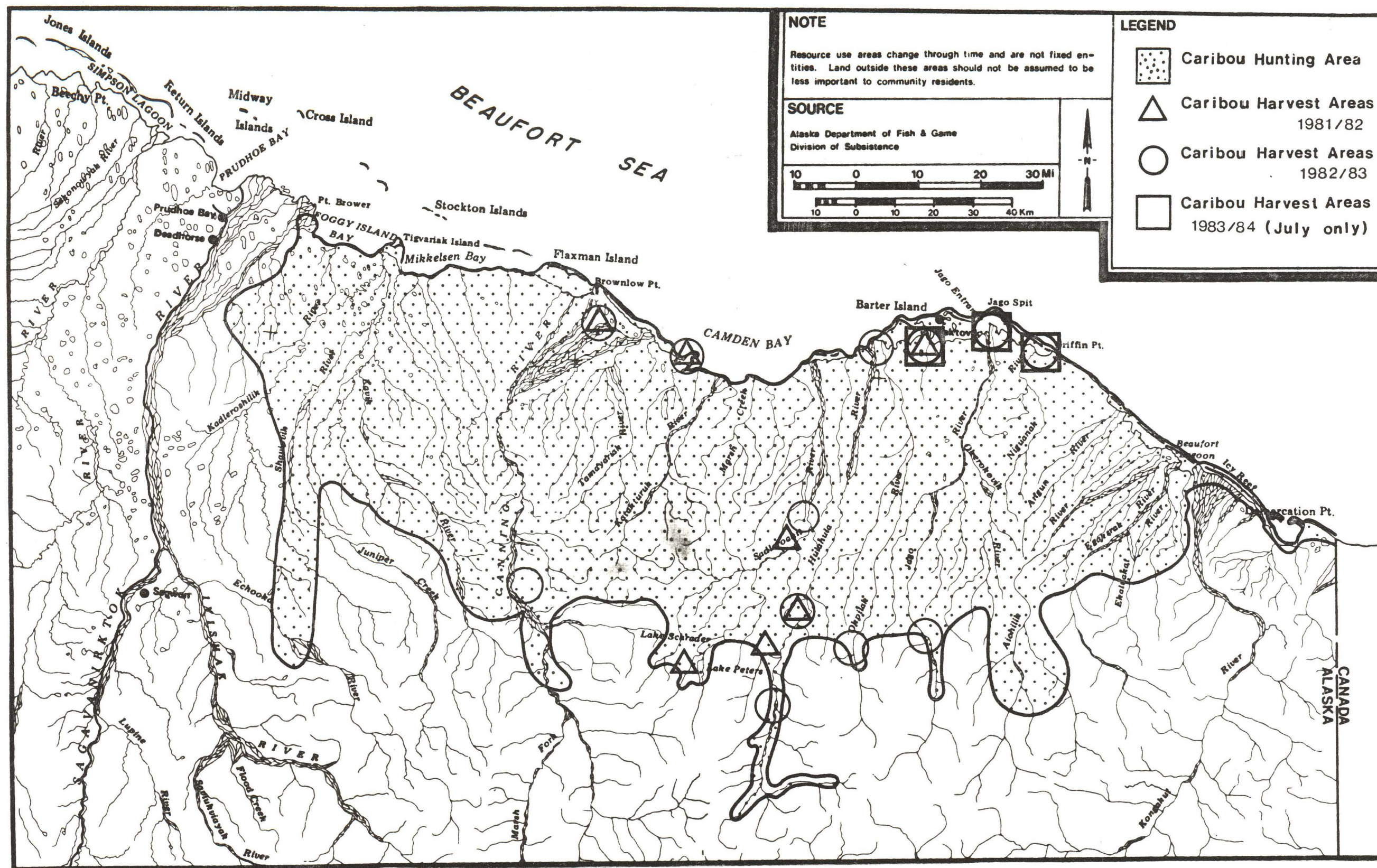


Fig. 2. Extent of Kaktovik's caribou hunting range used from 1923 to 1983 and location of harvest sites used from July 1981 through mid-July 1983.

The surveys were designed to answer specific research questions pertaining to caribou hunting and harvesting by Kaktovik hunters.

Sample

It was the aim of this study to contact every household in Kaktovik when doing the community surveys. A list of households at Kaktovik during regulatory year 1983-84 was created with the aid of long-time community residents. This list identified 50 households in the community; however, three of these households had since moved away, at least on a temporary basis, and were not available when the two surveys were carried out. The remaining 47 households represented the community during the survey dates. The majority of these households (74 percent) had all Native members, 15 percent had all non-Native members, and 11 percent had both Native and non-Native members. Most of the non-Natives were teachers, had lived in the community for several years, and some had accompanied Native residents on hunting trips. Household sizes in Kaktovik range from 1 to 11 individuals, with a mean size of 4 persons (Pedersen, Coffing, and Thompson 1985). As all households were included in the "sample," biases injected into the data due to sample selection methods are minimal. Due to the seasonal residency of teachers, some reasons given why these households do not harvest caribou may be representative of only this group of non-Native households.

Instrumentation

Systematic interviews were conducted with Kaktovik residents on a household by household basis. Detailed harvesting information was collected from those households which indicated that they harvested caribou during the study period. Survey questions asked were consistent from household to household and followed a written protocol referred to during each interview. Questions presented during each household interview were structured to acquire answers to the following questions:

- (1) Did anyone in your household harvest caribou since the ice went out last year, up to when the ice went out this year?
- (2) If your household did not harvest any caribou during that time, why?
- (3) If your household did harvest caribou during that time period, where were the caribou harvested?
- (4) How many bulls and cows did your household harvest at each location?
- (5) When did your household harvest caribou at each location?
- (6) How did you get to each harvest location?
- (7) What other households accompanied you while harvesting caribou?

Interview data were recorded in a field notebook. Harvest sites were indicated on a map of the study area and some harvest sites were indicated by their association to a particular place-name site. Each household was assigned a numerical code which was used to key the interview notes and ensure confidentiality of harvest data.

Procedures

The procedures of the research project were as follows:

- (1) April 1. Presented the study concept to and received comments from the North Slope Borough Fish and Game Management Committee.
- (2) June 20-24. Informal field assessment of 1983-84 caribou harvest level in Kaktovik.
- (3) June 26. Contacted Kaktovik's mayor and Kaktovik Inupiat Corporation president and introduced the concept of the study to them.
- (4) July 20 to August 10. Reviewed available literature relevant to the study and drafted the research design.
- (5) August 16. Mailed the research design to the mayor of Kaktovik, chairman of the North Slope Borough Fish and Game Management Committee, chairman of the Eastern Arctic Fish and Game Advisory Committee, and Kaktovik Inupiat Corporation president for review.
- (6) August 20 to 26. Conducted household surveys.
- (7) August 21. Met with Kaktovik City Council, reviewed study and answered questions.
- (8) September 17 to 19. Conducted household surveys.
- (9) October 19 to November 2. Report drafted.

Data Analysis

The community survey data were compiled to portray the overall community caribou harvest for regulatory year 1983-84. Harvest data are

presented in terms of harvest site locations, timing of harvest, and sex compositions. The distribution of 1983-84 harvest sites is discussed with reference to harvest site distribution in 1981-82 and 1982-83. Harvest sites used during 1983-84 are superimposed on the community's overall and "intensive caribou hunting area" for comparison of recent harvest areas with perceived intensively used areas. Data on methods used to access harvest areas are tabulated and discussed with regard to harvest timing, harvest locations, and degree of use. Stated reasons why certain households did not harvest caribou are presented and discussed on a community basis. Size and number of work groups are indicated.

RESULTS

Harvest Levels

All 47 identified community households were contacted for the caribou harvest survey. Forty-five (96 percent) of the 47 households in Kaktovik consented to participate in the study. Two households chose not to participate. Of the 45 households participating, 18 households reported harvesting 102 caribou during regulatory year 1983-84 (July 1 to June 30). Twenty-seven households reported not harvesting caribou during the study period. Reasons why they did not harvest caribou are listed in Table 1.

Harvest Locations

Overall, the community harvest took place at 15 harvest sites (Fig. 3). Nine of these sites (60 percent) were located near the coast while the remaining six (40 percent) were situated inland. Coastal harvest sites were located as far west as the Canning River delta and as far east as Griffin Point, representing about 70 miles of coastline.

TABLE 1. STATED REASONS WHY SOME KAKTOVIK HOUSEHOLDS DID NOT HARVEST CARIBOU DURING THE 1983-84 REGULATORY YEAR.

Reason Stated	Number of Households	Percent of households
Others hunt for household	5	19
Working - Not enough time due to employment	14	52
Equipment problems	2	7
Not in community when caribou were nearby	10	37
Equipment used by others	1	4
Season was closed when at spring camp	1	4
No specific reason	5	19
Do not prefer caribou	1	4

Note: Data represents combined responses of 27 households reported to have not harvested caribou during the 1983-84 regulatory year. Total number of households is greater than 27 because some households stated multiple reasons for not harvesting caribou.

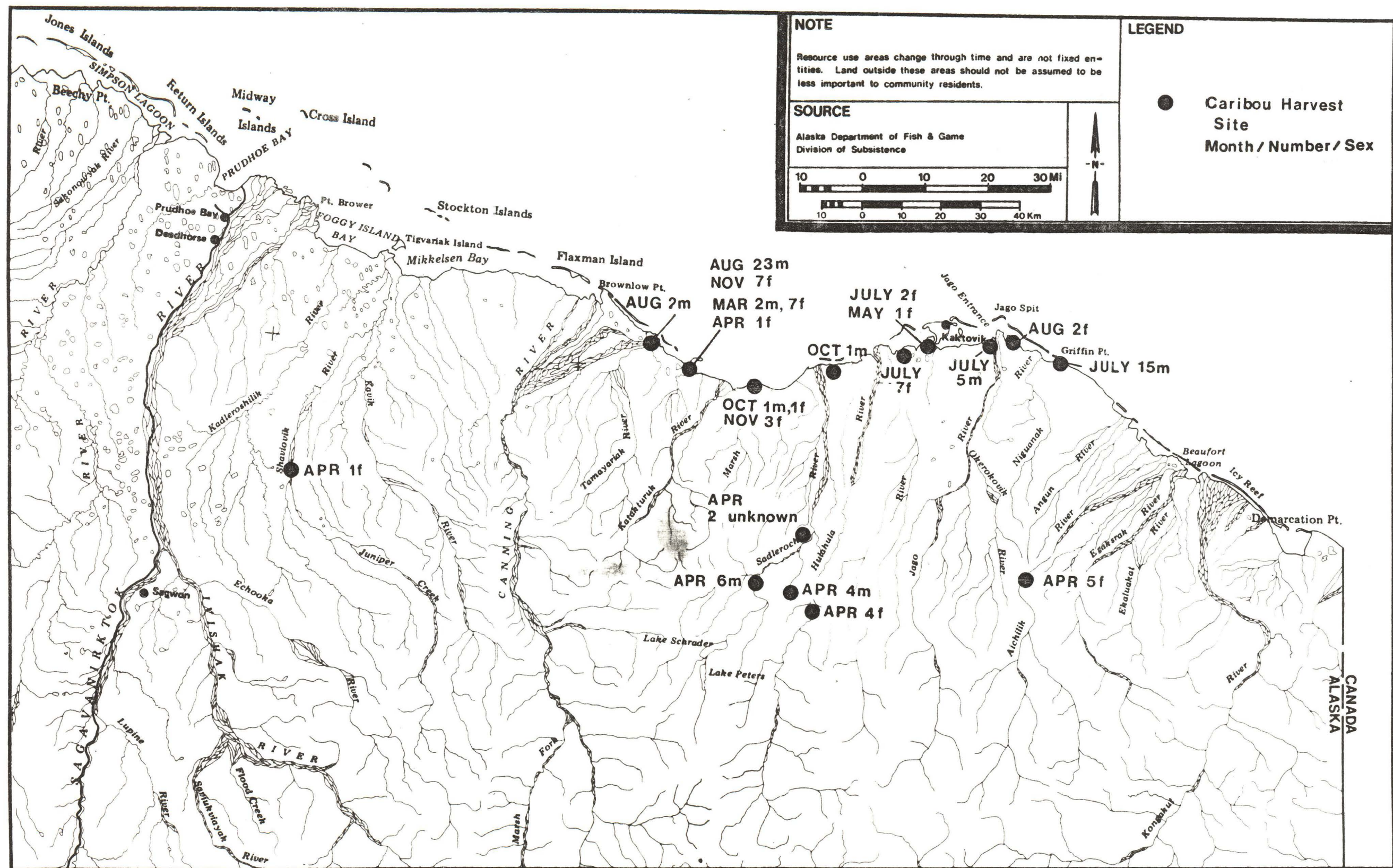


Fig. 3. Approximate harvest location, month of harvest, and sex of caribou harvested by Kaktovik residents from July 1983 through June 1984.

These coastal harvest sites accounted for 80 caribou or 78 percent of the community's harvest for the regulatory year. Forty caribou were harvested at a single coastal site.

Inland harvest of caribou occurred at six sites. Four of the sites were located relatively close to one another near the foothills region of the Hulahula River and Sadlerochit Springs area. The most easterly harvest site was located on the Aichilik River while the most westerly harvest location was situated on the Shaviovik River, over 100 miles west of Kaktovik. Collectively, these inland sites contributed 22 caribou to the total community caribou harvest. Sixteen (73 percent) of the caribou harvested inland were taken from the four centrally located harvest sites in the foothills region.

Timing of Harvest

Caribou were harvested in 7 out of the 12 months during regulatory year 1983-84 (Table 2). The majority of the harvest occurred during the months of July, August, and April, with 29, 27, and 23 caribou harvested respectively. No harvest was reported during the months of September, December, January, February, and June. All but one animal were harvested during the regulatory season which, during the year of the study, was July 1 to April 30. Timing of harvest at coastal sites was distributed over a seven month period while all of the inland harvest took place during the month of April.

Sex Composition of Harvest

The 1983-84 caribou harvest was made up of 58 percent male, 40 percent female, and 2 percent caribou of unknown sex (Table 2). The majority of the males (76 percent) were taken during the months of July and August. Sixty-eight percent of the female harvest took place during November, March, and April. Forty-nine (61 percent) of the caribou harvested at coastal sites were male while 31 (39 percent) were female. Ten caribou (45 percent) harvested inland were males, 10 (45 percent) were females, and 2 (10 percent) were of undetermined sex.

TABLE 2. CARIBOU HARVESTED BY MONTH AND SEX
JULY 1983 THROUGH JUNE 1984 BY KAKTOVIK RESIDENTS

Sex	J	A	S	O	N	D	J	F	M	A	M	J	Total
Male	20	25	0	2	0	0	0	0	2	10	0	0	59
Female	9	2	0	1	10	0	0	0	7	11	1	0	41
Unknown	0	0	0	0	0	0	0	0	0	2	0	0	2
Total	29	27	0	3	10	0	0	0	9	23	1	0	102

Note: Data represents combined responses of 18 households reported to have harvested caribou during regulatory year 1983-84.

Travel Methods

Three transportation methods (boats, snowmachines, and three-wheelers) were identified with the community caribou harvest. Boats were used for the harvest of 54 caribou, snowmachines were utilized in

the harvest of 45 caribou, and three-wheelers were associated with the harvest of 1 caribou. In addition, the combination of boat and three-wheeler transportation was utilized in the harvest of 2 caribou (Table 3). All inland harvest sites as well as the most easterly and westerly sites were accessed by snowmachine. Boats were used to access 7 of the coastal harvest sites; snowmachines were used to access 9 harvest sites, 6 inland and 3 coastal sites; and three-wheelers were used to access 1 harvest site near the coast. Boats were utilized during July and August; snowmachines were used during October, November, March, and April; while three-wheelers were used during July and May.

TABLE 3. TRANSPORTATION METHODS USED BY KAKTOVIK HOUSEHOLDS FOR CARIBOU HARVESTING DURING REGULATORY YEAR 1983-84.

Methods	Number of Households	Percentage of Households	Number of Caribou Harvested	Percentage of Caribou Harvested
boat	13	72	54	53
snowmachine	11	61	45	44
three-wheeler	1	6	1	1
three-wheeler and boat in combination	1	6	2	2

Note: Total number of households is greater than 18 because some households used more than one transportation method on different hunts.

Work Groups

At least twenty-four harvesting groups (hunting parties) worked together to procure caribou in 1983-84. Almost half of the hunting parties drew members from a single household, while the other half drew members from two to four households. The majority (64 percent) of caribou harvested were taken by the combined efforts of multi-household work groups (Table 4). The eleven work groups drawing members from single households harvested a total of 37 caribou. Single household work groups utilized the greatest majority of the harvest sites (73 percent), while work groups made up of 2, 3, and 4 households utilized 27 percent of the harvest sites. Thus, it appears that single household hunting parties were more mobile, but also less productive, in comparison with multi-household hunting parties.

TABLE 4. CARIBOU HARVESTING WORK GROUPS IN KAKTOVIK
DURING REGULATORY YEAR 1983-84.

Number of Households in Work Groups	Number of Work Groups	Caribou Harvested by Workgroups
4	1 (4%)	7 (7%)
3	7 (29%)	42 (41%)
2	5 (21%)	16 (16%)
1	<u>11</u> (46%)	<u>37</u> (36%)
Totals:	24 (100%)	102 (100%)

Note: Several households participated in more than one work group.

DISCUSSION

Distribution of Harvest Sites

The distribution of harvest site locations utilized during the 1983-84 regulatory year supports findings by Pedersen and Coffing (1984) that the community's caribou hunting area is quite extensive, falls within an identifiable community use area, and shows specific changes over time. All 15 of the 1983-84 harvest sites fell within the area depicting the extent of the community's caribou hunting from 1923 to 1983 (Fig. 4). All but one harvest site, located on the upper Shavlovik River, were located within the community's "intensively used" caribou hunting area, that area designated by respondents in 1981-82 as the most reliable for obtaining caribou (Fig. 5). The caribou (1 female) harvested outside of the intensive use area was taken in the vicinity of a long used camping and fishing site. This area has been frequented by subsistence users for some time, basically for fishing and furbearer hunting. Residents of Kaktovik have a Native Allotment near this site and have frequented the area over several years.

Comparison of harvest site locations used during 1983-84 with those utilized from July 1981 through June 1983 indicates that six new identified harvest sites were used. Thirty percent of all coastal harvest locations were newly identified sites while 50 percent of the inland harvest sites were new sites. Collectively, these most recently identified sites contributed 25 animals (25 percent) to the overall community harvest.

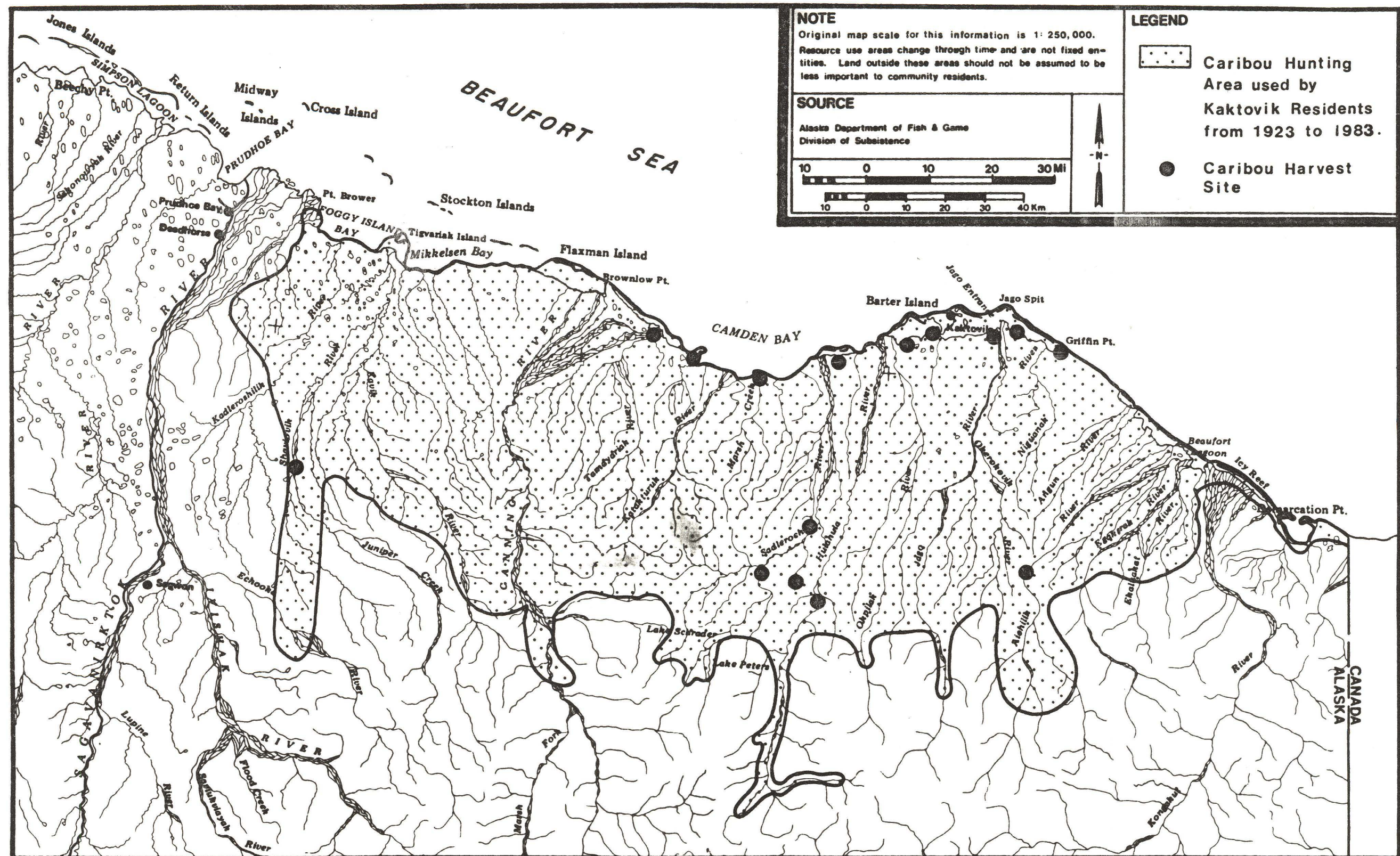


Fig. 4. Extent of land used for caribou hunting by Kaktovik residents ca. 1923 to 1983 and approximate caribou harvest site locations from July 1983 through June 1984.

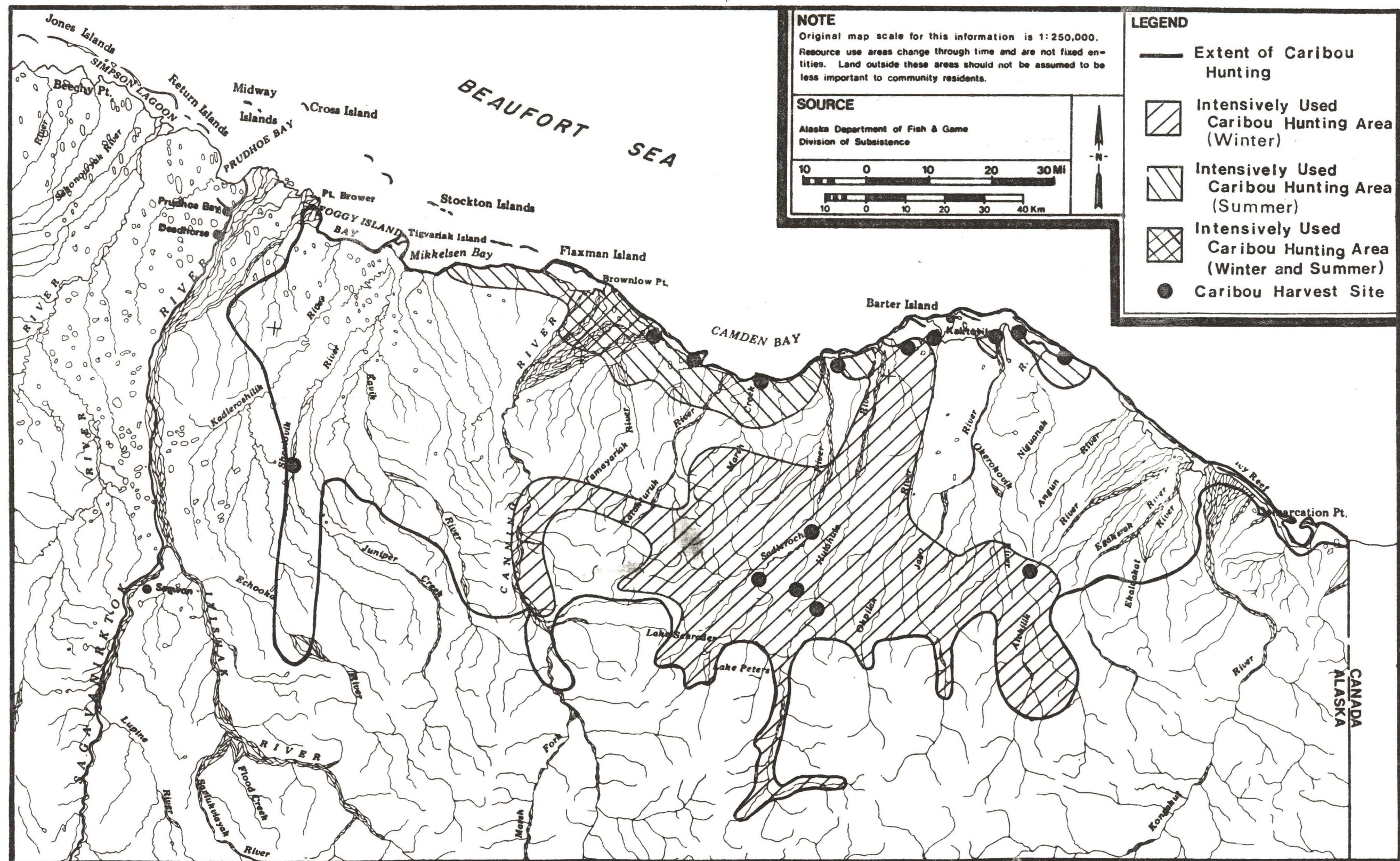


Fig. 5. Intensively used caribou hunting area used by Kaktovik residents ca. 1923 to 1983 and approximate caribou harvest site locations from July 1983 through June 1984.

The addition of new harvest sites is not surprising, for this and the preceding study did not attempt to inventory all previously used caribou harvest sites in the Kaktovik area but merely recorded each one as it occurred in the study time frame. With a greater study time depth it is possible that fewer new sites will be added each year and more of the harvests will take place in already "known" locations. There will, of course, always be some year to year variation in where caribou are harvested. Not all encounters between hunters and caribou are predictable, but Kaktovik hunters know enough about caribou distribution over time that a large percentage of caribou harvested each year will be harvested in locations known, by past experience, to be especially productive. One may anticipate that the most productive sites will lie within the intensive harvest area previously defined.

In contrast to harvest site locations recorded for the period July 1981 through June 1983, when all sites were within Game Management Subunit 26C, one new harvest site was located west of the Canning River well within Game Management Subunit 26B. Recent efforts by the Board of Game to better align bag limits and harvest seasons between Game Management Subunits 26B and 26C, and an increased awareness by Kaktovik residents that the area west of the Canning River is open to hunting of caribou, may have influenced the harvest there.

A lack of harvest sites in parts of the community's caribou hunting area should not be interpreted to mean that these regions are not utilized by subsistence caribou hunters. At least two households reported traveling eastward, one to Demarcation Point during July 1984 by boat, and one to the Kongakut River valley by snowmachine in April. During

these trips, no caribou were harvested, although caribou were among the resources sought after by these subsistence hunters (Coffing field-notes, 1984).

Examination of the results of coastal versus the inland caribou harvest for the last three regulatory years indicates that the 1983-84 harvest was concentrated more heavily on coastal sites than the overall three year average (Table 5). The percentages of the annual harvest occurring at the coastal and inland harvest locations were similar for regulatory year 1982-83 and regulatory year 1983-84.

TABLE 5. NUMBERS AND PERCENTAGES OF THE KAKTOVIK CARIBOU HARVEST TAKEN FROM COASTAL AND INLAND HARVEST SITES DURING REGULATORY YEARS 1981-82, 1982-83, AND 1983-84

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
3 year average:	63 (74%)	20 (24%)	2 (2%)	85

The fact that coastal harvest sites represent the majority of the community's annual harvest is not surprising. Coastal harvest sites may be accessed by transportation methods not practical for accessing inland sites, and therefore are available for a longer portion of the regulatory season than are inland sites. Access to coastal sites is made possible

by snowmachine, boat, and three-wheeler. Boats are not a useful means to travel inland; the rivers in the region are generally too shallow and braided to permit their use. Inland access by aircraft, three-wheelers, or all-terrain vehicles is possible but is not practical given the cost of chartering a plane, the amount of gear and supplies which are usually taken along if an extended stay is planned, the distance which has to be traveled, and the rough terrain which must be covered as one travels to a suitable, possibly distant camp location while searching an area for subsistence resources. During the summer, mosquitos are also quite bad as one travels inland away from the coast, making inland hunting perhaps less desirable.

Travel Methods and Seasonality

Both boats and snowmachines are popular methods for accessing hunting areas. While the majority (72 percent) of the households which harvested caribou reported using a boat, 39 percent of all harvesting households identified a boat as the only transportation method used when harvesting caribou during the 1983-84 season. Sixty-one percent of the households harvesting caribou used snowmachines. Of the sample, 28 percent used only snowmachines when taking caribou. The household utilizing the three-wheeler when harvesting caribou also used both boat and snowmachine transportation at different times during the season. Correspondingly, one third of the households harvested caribou throughout the season, roughly one third harvested only during July or August and the remaining one third harvested caribou only during winter when snow-machine travel was possible. Data on transportation methods (Table 3) do

not imply that an equal percentage of households own a particular piece of equipment, as hunters share equipment when hunting. These data do, however, indicate that some households harvested caribou only at coastal locations during 1983-84 and that some households harvested caribou during a particular season.

In contrast to the combined 1981-82 and 1982-83 harvest, when caribou harvesting at inland sites took place during September, October, March, April and May, the caribou harvest at inland sites during the 1983-84 regulatory year took place during only April. This narrow harvest window may be attributed to poor snow conditions during October, November, and early December which made accessing inland areas quite difficult. Extreme cold temperatures which continued until mid-April also discouraged hunters from venturing far inland.

Review of the 1981-82, 1982-83, and the 1983-84 coastal harvest data reveals that caribou were harvested during a four-month period in 1981-82, during a three-month period in 1982-83, but over a seven-month period in 1983-84. This shift of effort from inland to coastal sites may be a result of the adverse environmental conditions which prevailed during the 1983-84 regulatory year restricting inland access.

Comparison of the seasonal caribou harvest for regulatory years 1981-82, 1982-83, and 1983-84 (Fig. 6) clearly indicates that peaks in the community harvest occur over a period from the end of June through August and again from March through May. Obvious slack times are December through February and the months of June and September. Inactivity during December through February may be due to periods of characteristically extreme cold winter weather, and very limited daylight duration. June is a month of break-up during which time there

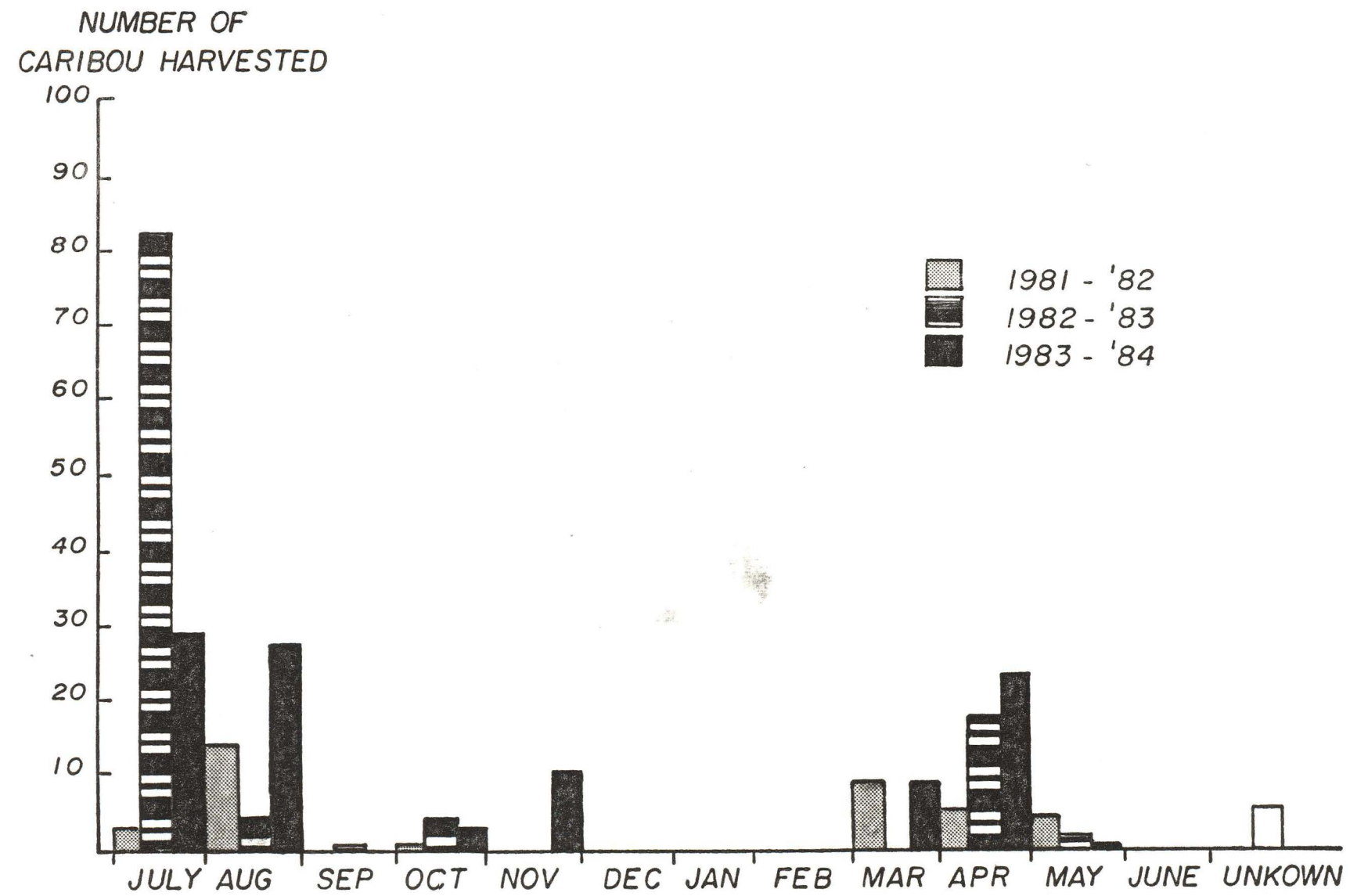


Fig. 6. Kaktovik annual caribou harvest round for regulatory years 1981-1982, 1982-1983, and 1983-1984.

may be little snow cover for inland travel, most rivers in the region are flowing, and lingering but melting shorefast ice near the coast makes both snowmachine and boat travel difficult. September is traditionally a month during which fall whaling activities are paramount, therefore a major portion of the community's subsistence effort is directed toward whaling.

Compared to previous years' recorded subsistence harvest data, the out of season caribou harvest has declined dramatically. Only one animal, less than one percent of the overall harvests, was taken outside of the regulatory season. This reduction in the out of season take from previous years is a result of the regulatory season being open a full month longer (until April 30) in Game Management Subunit 26C compared to the 1981-82 and 1982-83 seasons, and by changes in the harvest season in Game Management Subunit 26B to mirror the Game Management Subunit 26C season (Table 6). This season change in Game Management Subunit 26B extended the open season there by a full six months.

An additional factor in reducing the reported out of season harvest was the presence of enforcement officers who confiscated, from local residents, some furbearers which were reported to have been taken out of season. At least one hunter reported that he did not harvest caribou during the 1983-84 regulatory year because the season was closed by the time cold spring temperatures had moderated enough for him to travel to the mountains. Other hunters harvesting caribou during the open season reported that they had opportunities to harvest caribou after the season had closed but that they chose not to based on the previous enforcement activities.

TABLE 6. CARIBOU HUNTING SEASONS AND BAG LIMITS FOR
GAME MANAGEMENT SUBUNITS 26B and 26C, DURING
1981-82, 1982-83, AND 1983-84 REGULATORY YEARS

	1981-82	1982-83	1983-84
Game Mgmt. Unit 26B	August 10 through October 15 and February 15 through April 15.	August 10 through October 15 and February 15 through April 15.	July 1 though April 30
	Three Bulls	Three Bulls	Five caribou; however, female caribou may be taken only from October 1 through April 30.
Game Mgmt. Unit 26C	July 1 through March 31.	July 1 through March 31.	July 1 through April 30.
	Five caribou; provided that not more than two caribou may be transported from these units per regulatory year.	Five caribou; however, not more than two caribou may be transported from these units per regulatory year.	Five caribou; however, not more than three caribou may be transported from these units per regulatory year.

Source: Alaska Board of Game (1981, 1982, 1983).

The total harvest of 102 caribou during regulatory year 1983-84 is greater than the 1981-82 harvest of 43 but less than the 1982-83 harvest of 110 caribou. Caribou distribution during both the 1982-83 and 1983-84 post-calving periods were favorable to Kaktovik hunters harvesting caribou along the coast near Kaktovik. The absence of caribou near the coast in the vicinity of Kaktovik during the 1981-82 season no doubt contributed to the low number of caribou harvested by the community at that time.

Composition of Harvest

Composition of the community caribou harvest during the 1983-84 regulatory year, as with the 1981-82 and 1982-83 regulatory years' harvest, was made up largely of male caribou (Table 7). The 1983-84 harvest comprised a higher percentage of females than the harvest of the previous two regulatory years. This is likely due to the harvest of a relatively high percentage of females during November and March compared to the 1981-82 and 1982-83 harvest. Based on harvest information for the 1981-82, 1982-83 and 1983-84 regulatory years, most males were harvested during July and August while the majority of females were harvested during July, November, March and April.

Based on data from July 1981 through June 1984, it appears that males may be selected over females during the July and August harvest period. Over the last three regulatory years, 88 percent of the caribou harvested during this two-month period have been male. Data also suggest that females may be selected for during October, November, April,

TABLE 7. SEX COMPOSITION OF KAKTOVIK CARIBOU
HARVEST FOR REGULATORY YEARS
1981-82, 1982-83, AND 1983-84

Regulatory Year	Percent Males	Percent Females
1981-82	89	11
1982-83	75	25
1983-84	59	41
3 year average:	74	26

and May as 63 percent, 100 percent, 57 percent, and 71 percent of the caribou taken at this time were females (Table 8). An equal percentage of males and females have been harvested during March. The fact that the majority of the male harvest occurs near the coast and that the inland harvest was divided between males and females is related to hunters' seasonal preferences, as well as access and availability of caribou at these locations.

Non-harvesting Households

The major reason given by households for not harvesting caribou was related to employment and absence from the community when caribou were easily accessible. It is worth mentioning that approximately 30 percent of those responding as above, were either non-Native school employees who usually leave Kaktovik during the summer months, or Distant Early Warning (DEW) employees residing in the community who may leave for an

TABLE 8. CARIBOU HARVESTED BY MONTH AND SEX
JULY 1981 THROUGH JUNE 1984 BY KAKTOVIK RESIDENTS

Sex	J	A	S	O	N	D	J	F	M	A	M	J	Total
Male	97 (32)	43 (14)	1 (-)	3 (1)	0 (-)	0 (-)	0 (-)	0 (-)	9 (-)	19 (6)	2 (-)	0 (-)	174 (58)
Female	17 (6)	2 (-)	0 (-)	5 (2)	10 (3)	0 (-)	0 (-)	0 (-)	9 (3)	25 (8)	5 (2)	0 (-)	73 (24)

Note: This data does not include 8 caribou for which sex or month of harvest is unknown. Numbers in parenthesis represent average harvest based on three years of harvest data. Averages less than one are indicated by (-).

extended period of time during the regulatory year. Recent construction projects such as the community fire station, health clinic, and North Slope Borough housing may have had some impact on household harvest effort in 1983-84. Some households employed elsewhere in the community such as the public works department or the gravel dredging operation may also have had to forego hunting opportunities due to employment obligations.

It appears that some households may have wished to harvest caribou but did not due to the absence of functioning equipment or because they loaned equipment to other households. Households traditionally share resources with one another. Several households gave no specific reasons why they did not harvest caribou. Some may have gone hunting but due to undetermined reasons, failed to harvest caribou. One household respondent indicated that he would have taken caribou but the season had already closed before he was able to get to the mountains and hunt during

the spring of 1984. Another household head stated that he had not hunted caribou since the mid-1970s because others (including his son in a separate household) provided him with caribou.

Caribou Herd Assignment of Harvest

Caribou harvested during the 1983-84 regulatory year probably have come from both the Porcupine Herd and the Central Arctic Herd. Until recently, some (U.S. Department of State 1980) assumed that only Porcupine Herd caribou were harvested by Kaktovik hunters. Based on herd distribution in recent years and harvest site locations identified during the 1981-82 and 1982-83 regulatory years, Pedersen and Coffing (1984) concluded that approximately half of the community's caribou harvest came from the Porcupine Herd and half from the Central Arctic Herd.

During the winter of 1983-84, animals from both the Central Arctic and the Porcupine caribou herds were present in the foothills and mountain regions east of the Canning River. Based on research by Game Division utilizing radio-collared caribou, it appears that animals in the vicinity of Schrader and Peters Lake, Kikiktat Mountain, and Second Fish Hole on the Hulahula River during winter and spring belonged to the Porcupine Caribou Herd (Ken Whitten pers. comm., 1984). During the same time period, caribou of the Central Arctic Herd were located generally west of Sunset Pass in the Sadlerochit Mountains and west of Marsh Creek on the coastal plain.

During the summer of 1983, few if any Porcupine caribou traveled further west than the Jago River before turning inland away from the

coast (Fran Mauer pers. comm., 1984). Central Arctic caribou are distributed near the Canning River delta and Konganevik Point during the summer and possibly as far east as the Okpilak River or Jago River. The coast between the Sadlerochit River and Jago River during July and August 1983 is frequented at times by both herds. As long as the two herds continue to utilize relatively close ranges which vary and may overlap year to year, there will remain some degree of uncertainty as to which herd an animal harvested in these overlapping areas should be attributed to. In order to simplify comparison of 1983-84 harvest data with harvest data from July 1981 through June 1983, the assumption is made that caribou harvested during the summer, east of the Sadlerochit River are Porcupine Herd animals. Caribou taken west of the Sadlerochit River are thus assigned to the Central Arctic Herd.

Based on the above assumption and information regarding the winter distribution of caribou both inland and along the coast, 48 percent of the 1983-84 caribou harvest by Kaktovik hunters came from the Central Arctic Herd (29 males, 20 females) and 52 percent from the Porcupine Herd (30 males, 21 females, and 2 unknown). Virtually all caribou harvested inland, except one which was harvested on the upper Shaviovik River, are attributed to the Porcupine Herd. The majority of the harvest sites (83 percent of the inland sites and 56 percent of the coastal sites) are linked with the harvest of Porcupine Herd caribou.

All harvest of Central Arctic caribou took place west of Marsh Creek with the exception of one male harvested just east of the Sadlerochit River mouth during October. All Central Arctic animals were harvested near the coast with the exception, again, of the upper Shaviovik harvest of one female. Comparison of the 1983-84 data with harvest data for the

previous two regulatory years (Table 9) reveals a possible increase in the number of Central Arctic caribou harvested by the community. Although the harvest attributed to the Porcupine Herd is significantly larger than the 1981-82 harvest, it is still less than the 1982-83 harvest. During the past three years, each herd has at times contributed a majority of animals to the annual community harvest. Harvest of Central Arctic caribou appear to be less variable over time in terms of number of caribou harvested than is the harvest of caribou from the Porcupine Caribou Herd.

TABLE 9. PROVISIONAL HERD ASSIGNMENT OF CARIBOU HARVESTED BY KAKTOVIK HUNTERS IN REGULATORY YEARS 1981-82, 1982-83, AND 1983-84.

	1981-82	1982-83	1983-84	3 Year Average
Porcupine Herd	1	77	53	44
Central Arctic Herd	36	33	49	39
Unknown Locations	<u>6</u>	<u>0</u>	<u>0</u>	<u>2</u>
Totals:	43	110	102	85

Land Status

Ten (67 percent) of the harvest sites used during the 1983-84 season lie within the area proposed for withdrawal for oil and gas leasing in the Arctic National Wildlife Refuge (Fig. 7, U.S. Fish and Wildlife Service 1982). Combined data for 1981-82 and 1982-83 indicated that 71 percent of Kaktovik's caribou harvest was derived from the proposal area. Data

for the 1983-84 season indicates that even a higher proportion (83 percent) of the annual community caribou harvest came from land inside the proposal area boundary. Eighty-five caribou were harvested from this area. Eighty-three percent of the community's households, harvesting caribou during 1983-84, harvested animals within the proposal area and all (18 households) accessed the area whether actively harvesting caribou there or while enroute to other harvest sites. One factor which all harvest sites have in common, based on locally accepted subsistence transportation methods, is that the area proposed for oil and gas exploration in the Arctic National Wildlife Refuge must be traversed in order to access existing caribou harvest sites. Ensuring that this area remains accessible to local subsistence users is clearly an important land use policy issue.

SUMMARY

The aim of the report was to provide information on land use dimensions, harvest levels, and selected social aspects of caribou harvesting in Kaktovik, Alaska. Data gathered through a community wide survey of households indicate that caribou harvesting areas used during the 1983-84 regulatory year were all within an area previously identified as the community's caribou hunting area. Furthermore, for the first time in three regulatory years, some harvest was reported outside of the area identified as the community's intensively used caribou hunting area. Although some harvest sites utilized during previous years were again used, 6 of the total 15 harvest sites used during the 1983-84 season were newly identified sites. Sixty percent of the

harvest sites utilized during the 1983-84 season were located on the coast and accounted for 78 percent of the community's harvest. All but one harvest site were located in Game Management Subunit 26C. Only one harvest site and one percent of the harvest occurred in Subunit 26B.

In 1983-84, caribou from both the Porcupine and the Central Arctic Herds were harvested by Kaktovik hunters. Due to range overlap and annual variation in herd distributions, confident assignment of harvest to either of the two herds is difficult at this time. However, based on the best available information regarding caribou distribution on the eastern North Slope during regulatory year 1983-84, it appears that approximately half of the community's 1983-84 caribou harvest came from each herd. In fact, based on the combined last three regulatory years' data, Kaktovik's caribou harvest has been almost equally divided between the two herds.

The majority of the caribou harvest took place during July, August, and April of 1983-84 while no harvest was reported for December through February. The extension of the caribou hunting season to April 30 was a contributing factor in reducing the out of season harvest as less than one percent of the community's reported harvest took place outside of the 1983-84 regulatory season.

Based on the last three regulatory years' harvest data, it appears that the annual caribou harvest level for Kaktovik hunters is quite variable from year to year. Weather conditions and caribou distribution directly affect hunting success. The annual harvest level of caribou also may be responsive to harvest of other local subsistence resources, a condition which has not yet been fully examined.

Of the 45 households participating in the study, 27 reported harvesting no caribou during the 1983-84 regulatory year. The majority of those households not harvesting caribou reported employment obligations or absence from the community when caribou were accessible as reasons for non-harvest. Approximately 30 percent of non-harvesting households contained non-Natives working at Kaktovik or DEW line employees. Several non-harvesting households received caribou from harvesting households. The majority of households harvesting caribou combined efforts with other households to form caribou hunting parties. Twenty-four specific work groups were identified, drawing members from one to four households. Work groups recruiting members from three households harvested the greatest percentage of caribou.

Caribou continue to be an important food resource to Kaktovik residents. Most of the community's caribou harvest (83 percent in 1983-84) is obtained from within an area proposed for possible oil and gas exploration. Because of this, it is important that federal, state, and private land and resource managers consider Kaktovik's local subsistence activities when developing future land management plans for northeastern Alaska.

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