

SUBSISTENCE LAND USE AND PLACE NAMES MAPS
FOR KAKTOVIK, ALASKA

by

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ABSTRACT

This study focuses on the spatial dimensions of land use associated with the procurement of wild resources by residents of Kaktovik, Alaska. Land use mapping with members of 21 households produced 33 map biographies, 15 community map biographies, and 3 summary maps covering the time span from about 1923 to 1983. Additionally, 188 place names of significance to Kaktovik residents were recorded and geographically located.

Kaktovik subsistence land uses in Alaska cover a minimum area of 11,406 square miles, stretching from the United States and Canadian border in the east to within 20 miles of the Colville River in the west, a linear distance of 200 miles. The resource use area spans about 25 miles northward into the Beaufort Sea from Kaktovik and extends about 85 miles inland to the continental divide of the Brooks Range in the eastern Arctic. Virtually all community-based subsistence activity takes place within the confines of this area. In certain areas more than one resource use activity occurs. Land use activities by Kaktovik residents are associated with efforts to harvest a wide variety of locally available resources which are shared throughout the community. Use areas may differ between households but all households share common use areas.

One hundred sixty-seven Inupiat place names were recorded for the Kaktovik area. Distribution of the place names firmly supports the initial finding that the community's overall subsistence land use area is extensive. Place names were distributed throughout the delineated

use area as well as outside the minimum boundary for all community based subsistence land use. The cultural geography of the Kaktovik Inupiat thus extends farther than what present-day community-focused subsistence activities take them.

Development of resource management plans for the eastern Arctic should recognize and be sensitive to local subsistence land and fish and wildlife use. Information presented in this report should begin to fill the information void on subsistence land use in the eastern Arctic.

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CHAPTER 1
INTRODUCTION

Land status and land use on Alaska's arctic slope and in the Alaskan portion of the Beaufort Sea are presently undergoing rapid change. These land status changes are due, in part, to the increasing utilization of the existing and potential oil and gas resources on these lands. At the same time, the existing social, ecological, and environmental values in the area are required to be considered in the development process. The federal government recently increased the size of one conservation unit (Arctic National Wildlife Refuge) and created a new national park and preserve (Gates of the Arctic) in the area (Alaska National Interest Lands Conservation Act 1980) while at the same time embarking on a schedule of accelerated lease sales (U.S. Department of Interior 1983) for both onshore and offshore oil and gas exploration. The State of Alaska has followed suit by leasing its arctic slope lands (Alaska Department of Natural Resources 1982) as has the only private landholder in the area--the Arctic Slope Regional Corporation (U.S. Department of Interior 1983).

Changes in land use are accompanying these land status changes. Examples of land use changes range from restrictive access regulations for sport hunters in the Gates of the Arctic National Park, to the development of major industrial centers, such as Kuparuk Industrial Center, in areas previously used only for hunting and fishing by local residents. In general, the trend in land use change in the central and eastern north slope is towards multiple uses. Most present land

management systems allow several land uses to take place at the same time as long as they do not appreciably affect and influence each other in a negative way. This situation exists in the central Alaskan Arctic and the coastal waters of the Beaufort Sea in northeastern Alaska. Lands in the eastern Arctic, east of the Canning River, are managed by the U.S. Fish and Wildlife Service as the Arctic National Wildlife Refuge (ANWR). Present land use policies in ANWR do not allow for industrial development though some private lands in the Barter Island area may be leased to oil and gas interests in the near future. It may also be possible that a section of land within ANWR may be opened to oil and gas exploration by Congressional action some time in 1986.

Since 1960, the lands in the eastern Arctic have been set aside by administrative action (U.S. Department of Interior Public Land Order 2214, December 8, 1960) as the Arctic National Wildlife Range to protect and preserve highly prized wildlife, scenic, and wilderness values. Additional acreage was added with the Congressional establishment of the Arctic National Wildlife Refuge in 1980. The purpose of ANWR is the conservation of fish and wildlife populations and their habitat as well as providing for "the opportunity for continued subsistence uses by local rural residents" (Alaska National Interest Lands Conservation Act, Title III, Sec. 303(2)(B)). The act mandated that a portion of the ANWR be studied with respect to its wildlife values as well as potential oil and gas values (Alaska National Interest Lands Conservation Act, Title X, Sec. 1002). The Department of Interior must provide Congress a report on these values by 1986. Congress will then evaluate the merits of a leasing program within ANWR and may allow for additional development-related land use within the Refuge (Alaska National Interest Lands

Conservation Act, Title X, Sec. 1003). Meanwhile the U.S. Fish and Wildlife Service is to submit annual Section 1002 study reports to the Secretary of the Interior and to formulate a comprehensive conservation plan for the entire ANWR by 1987.

Other land management planning processes are also underway in the central and eastern Arctic. The Alaska Department of Fish and Game is completing work on a Regional Habitat Management Guide for the entire north slope area. This plan will delineate fish and game resource values on the north slope and will facilitate the formulation of land management plans that are in the best interest of the region's fish and wildlife resources. The North Slope Borough has ongoing comprehensive land and coastal management plans which aim to identify and protect social, cultural, and economic values of lands within the Borough boundary.

Clearly land status, land use, and land management are major issues on the north slope. The Alaska Department of Fish and Game, Division of Subsistence began a baseline study of subsistence land use in the eastern and central north slope communities in 1981. The project was formulated in part on the basis of numerous requests from state and federal agencies for subsistence land use information from the northeast Arctic. These requests could not be adequately met by the Division due to the near absence of detailed representative information from the area. Concerns expressed to Division field staff by local residents over the rapidly expanding industrial activities on all north slope lands and their potential impact on subsistence land use in the eastern and central north slope also indicated the need for a detailed land use study. Discussions with community representatives, local fish and game

advisory committee members, North Slope Borough officials, staff from the Alaska Department of Fish and Game, Department of Natural Resources, U.S. Bureau of Land Management, U.S. Fish and Wildlife Service, and other agency personnel helped to formulate research goals and objectives.

Arctic Region staff of the Division of Subsistence, in consultation with the various agencies and the public already listed, decided to begin its work in the eastern Arctic community of Kaktovik. This community was chosen as a starting point because of its location within the ANWR and because there were already several ongoing study and planning efforts in the ANWR which could benefit substantially from having detailed information on subsistence land use by Kaktovik residents.

CHAPTER 2

THE STUDY

PROBLEM AREA AND PURPOSE

The focus of this report is the delineation of the contemporary spatial requirements of the hunting, fishing, trapping, and gathering sector of Kaktovik's economy. An attempt to fill this information gap by the Bureau of Land Management's 105(c) studies (North Slope Borough 1979) resulted in the construction of a community summary map setting down the basic spatial limits of Kaktovik's subsistence land use based on a small number of interviews. Land use associated with each individual resource category was collected but presented only in a regional context because of the relatively small sample size (Pedersen 1979). The project goal was to build a community data base on land use dimensions for each major resource category utilized by relying on community households as the basic data collection unit. A parallel but much more narrowly focused study on caribou was recently completed by Pedersen and Coffing (1984). That report served as a species-specific land use data base for Kaktovik, and as a demonstration of how one can apply the data to the land planning process as well as to the fish and game management process.

It was also the purpose of the present study to be part of a two pronged long term research effort. The first part would fulfill the need for a basic, but well-documented household and community biography of the spatial dimensions of land use associated with each major

resource category. The second part would build on the first and be geared toward the collection of detailed information on community and household subsistence land use pattern variability over time. The study took place both prior to and during land use conversion from single use (subsistence hunting, fishing, and gathering) to multiple use (including industrial development). Analysis of this information would allow the Division to establish land use variability norms against which possible impacts from development could be evaluated and possibly mitigated. Thus, the basic purpose of this study is to meet the immediate demand by land and resource managers for detailed information on the spatial requirements and existing land uses of the natural resource economy in Kaktovik.

OBJECTIVES

The objectives of this baseline study were as follows:

1. to review the literature pertaining to subsistence land use in Kaktovik;
2. to compile a basic community socioeconomic profile, including information on the subsistence economy;
3. to document the spatial dimensions of individual and community-based subsistence land use for each major resource category on U.S. Geological Survey maps at the 1:250,000 scale (using a uniform set of resource categories);
4. to ensure that the mapped community-based subsistence land use information is amenable to cartographic automation used

by the North Slope Borough Geographic Information System, the Division of Habitat's Alaska Wildlife Habitat Information Network (AWHIN), and the Department of Natural Resources' Alaska Land and Resource System (ALARS);

5. to establish a microcomputer-based cartographic data entry, editing, storage, and plotting (drafting) system to pre-process map biographies (enter, edit, and compile into community biography) prior to permanent tape storage and release to other users;
6. to automate all appropriate cartographic data files to facilitate rapid information retrieval, drafting, and data sharing with other agencies;
7. to describe the general seasonal round of production activities for Kaktovik;
8. to document Inupiaq place names for physical and cultural features within the Kaktovik area;
9. to compile an overview of present land status within the community area; and
10. to compile and distribute a subsistence land use atlas for Kaktovik that would be useful for land use conflict identification and mitigation.

In order to carry out our work in the community in a meaningful way to the residents, we also felt strongly that community officials and interested residents in the community be afforded an opportunity to actively participate in the study. An eleventh objective was therefore formulated, namely:

11. to encourage and seek public and local government input into the study from its inception to final reporting.

METHODOLOGY

Research Design

A community-based descriptive research design was employed in this baseline study using the following data collection methods:

1. literature review,
2. systematic land use mapping interviews,
3. systematic place and place name interviews,
4. formal and informal interviews,
5. participant observation, and
6. aerial snowmachine track surveys.

Procedure

Initial visits to the community in 1980 were focused on introducing the land use mapping project to community leaders. Discussions with residents during these visits helped to define which households were the most active subsistence land users. This information enabled the investigators to direct their initial mapping efforts towards those households which could best delineate the community's subsistence land use area.

Drafts of 16 community land use maps (15 resource maps and the overall land use map) were taken to Kaktovik in July, 1983 for public review. Several minor modifications and additions were made based on this review and the maps were returned to Fairbanks for final drafting.

Sample

The original intent was to have all Inupiat and long-term non-Inupiat community households with active hunters participate in the mapping sessions. There were approximately 46 households in the community. Of these, seven household represented teachers or short-term residents, and three households were either long-term Inupiat and non-Inupiat without an active hunter. That left 36 households that were considered as the study group. Due to time constraints and scheduling problems, as well as unwillingness of some eligible households to participate, a smaller sample was actually interviewed.

Twenty-two individual map biographies representing 20 households were obtained by the investigators from July, 1982 through January, 1983 (Table 1). Eleven map biographies developed by Wentworth (1978) contributed one additional household to the overall sample (Table 2). With the exception of one household which could not be contacted, those households interviewed by Wentworth in 1978 were asked to update their biographies or to add information for resource categories inadvertently missed. Two households contributed a separate map biography for the husband and wife. The land use information for each of these households was portrayed on two biographies rather than one. Two households interviewed had utilized aircraft to reach certain areas.

TABLE 1. RESOURCE CATEGORIES CONTAINED IN EACH HOUSEHOLD
 MAP BIOGRAPHY DEVELOPED BY PEDERSEN, COFFING, AND THOMPSON, 1982-83.¹

Household Map Biography	Resource Category															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
A	X	X	X	X	X		X	X		X			X			X
B (husband)	X	X	X	X	X		X	X		X	X	X	X	X		X
B (wife)	X		X	X	X			X		X				X		X
C	X		X		X			X		X	X	X		X	X	
D	X		X	X			X	X		X	X	X	X	X		X
E			X		X					X	X		X			X
F					X					X						X
G	X	X		X	X		X	X		X	X	X	X	X		X
I (husband)	X		X	X	X					X			X	X		X
I (wife)	X	X		X			X	X		X			X	X		X
J	X			X						X			X			X
K	X	X		X	X			X		X	X		X			X
L	X	X		X			X	X		X	X		X	X		
M	X	X		X	X	X	X	X		X	X		X	X		X
N	X		X	X	X	X	X	X		X	X	X	X	X		X
O	X		X	X	X	X		X		X	X	X	X	X		
P	X	X	X	X	X			X		X	X		X	X	X	
Q	X		X	X				X		X				X		X
R	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
S	X	X	X	X	X			X	X		X	X	X			X
T	X	X	X	X	X			X	X		X	X	X	X	X	X
U	X	X	X	X	X	X		X		X	X	X	X	X		X

¹ See Table 7, page 36 for a list of resource categories.

TABLE 2. RESOURCE CATEGORIES CONTAINED IN EACH HOUSEHOLD
MAP BIOGRAPHY DEVELOPED BY WENTWORTH, 1978.¹

Household Map Biography	Resource Category															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
A	X		X	X				X		X	X		X	X		
B (husband)	X		X	X	X		X			X	X		X	X		
B (wife)	X		X	X	X			X		X	X				X	
C	X			X	X		X			X			X			
D	X		X	X						X	X		X			
E	X			X	X		X	X		X	X		X	X		
F	X		X	X		X	X	X		X	X	X	X	X		X
G	X	X	X	X			X	X		X	X		X	X		
H										X			X	X		
I (husband)	X		X	X				X		X	X		X	X		X
I (wife)	X		X	X			X	X		X	X		X	X		X

¹ See Table 7, page 36 for a list of resource categories.

These data are not included in this report because in both instances, the access to these areas was associated with a commercial activity such as flying sport hunters out. The areas delineated deviated considerably from those mapped for the rest of the community. All land use information compiled in this report is based on surface transportation. Study participation rate is summarized in Table 3. Four additional household map biographies covering the period 1980-81 were collected from four households. These maps depict the between-household differences that occur on a year-to-year basis and the extent of annual subsistence land use at a household level. Each household map biography was assigned a unique number identifying the household and date of map origin. A legend was also put on the overlay allowing the lines and circles to be keyed to the appropriate resource category.

The sample size for the systematic place and place name interviews was not predetermined. This collection effort was approached with the idea that as many knowledgeable individuals as possible would contribute. A sample of 14 persons contributed place names. Missing information in this category was identified and rectified during the community information review process after all site locations and place names were compiled.

Methods

Land use mapping proceeded along the same lines as developed by Freeman (1976), as used by the NPR-A 105(c) study team in 1977-78 (North Slope Borough 1978; Pedersen 1979) and Pedersen and Coffing (1984). The aim was to produce a set of 1:250,000 scale subsistence land use maps at

TABLE 3. STUDY PARTICIPATION RATE IN DIFFERENT CATEGORIES OF LAND USE BY 21 KAKTOVIK HOUSEHOLDS. ¹

Land Use Number	Resource Category	Participation (n=21)	
		Number	Percentage
1	Wildfowl	20	20/21=.95
2	Hunting furbearers	12	12/21=.57
3	Trapping furbearers	16	16/21=.76
4	Caribou	20	20/21=.95
5	Moose	16	16/21=.76
6	Walrus	6	6/21=.29
7	Whales	14	14/21=.67
8	Seals	19	19/21=.90
9	Invertebrates	n/a	---
10	Fish	21	21/21=1.0
11	Polar Bear	18	18/21=.86
12	Grizzly bear	11	11/21=.52
13	Sheep	20	20/21=.95
14	Small mammals	18	18/21=.86
15	Wood, fuel, and structural materials	5	5/21=.24
16	Vegetation	15	15/21=.71

¹ Includes some information from initial 1978 mapping effort. These overlays were rechecked during the study and are therefore included here.

the community level through the aggregation of data collection at the household level. The basic collection unit was the household map biography. In a mapping interview, a mylar or acetate overlay was placed over a 1:250,000 scale U.S. Geological Survey base map for the area. Household members delineated, on the overlay, areal boundaries for each resource category using color-coded pens. Sixteen land use categories were used in this study (Table 4).

TABLE 4. LAND USE CATEGORIES USED IN KAKTOVIK MAP BIOGRAPHIES.

Number	Land Use Category ¹
1	Birds
2	Hunting furbearers
3	Trapping furbearers
4	Caribou
5	Moose
6	Walrus
7	Whales
8	Seals
9	Invertebrates
10	Fish
11	Polar bear
12	Grizzly bear
13	Sheep
14	Small mammals
15	Wood, fuel, and structural materials
16	Vegetation

¹ The categories in this table are listed by species in Table 7.

Interviews were most often carried out in English with occasional translation as needed by a bilingual research assistant. Each interview lasted from one to three hours of intensive work and an hour or two of "warming up" and "cooling down." Respondents were paid by the hour

according to North Slope Borough informant fee standards. Maps were reviewed by the investigators shortly after compilation to ensure that the biography and the interpretative notes were complete. Occasionally a map biography was brought back to the respondent for elaboration or clarification. Each map biography was coded and issued a unique catalog number including a letter ["A" (acetate), "M" (mylar), or "P" (transparent drafting paper)] to denote the medium of the biography.

To produce the community biography map set, the interview data were aggregated in four separate steps. First, all land use information from resource category 1 (birds) from each map biography was aggregated on a separate overlay. This overlay when completed contained all mapped information for resource category number 1. The second step in preparing the community biography for resource category number 1 was to firmly delineate the maximum boundary in preparation for formal drafting of the results on to a final production map. Drafting this map was the third step. The final step in producing a community biography map was to aggregate all the individual resource category information onto one overlay which then portrayed the sum of all resource information for the community. This overlay depicts the maximum areal extent of the community-based subsistence land use from 1923 to 1983. This procedure was repeated for all 16 land use categories.

Each overlay produced was cataloged and all pertinent information recorded on a file card. The file card was kept in a separate collection and eventually entered into the computer data base on Kaktovik map products.

Place name information was collected on acetate overlays over 1:250,000 scale U.S. Geological Survey quadrangles of the study area.

The systematic place and place name interviews were conducted in English or Inupiaq using cartographic materials as well as existing narratives (Jacobson and Wentworth 1982; Nielson 1977b; North Slope Borough 1977). Individuals designated by residents as those most knowledgeable about site locations and place names were visited and both mapped and written records were developed. Names for physical as well as culturally important features were collected and recorded in both Inupiaq and English. Informants were paid by the hour and each session lasted from one-half hour to several hours.

Community officials referred local knowledgeable historians to the researchers and community members often suggested that we contact a particular individual known to be more familiar with a given area. One hundred eighty-eight place names were identified (Map 12; Appendix 2) and classified after Ritter (1976).

Information on 116 Native allotments applied for by Kaktovik Inupiat Corporation members was compiled from Bureau of Land Management (BLM) Native allotment files at the Fairbanks District Office. Land use activities information associated with each Native allotment was acquired from the individual BLM case file. Place names appearing on the Native allotment map (Map 12, Appendix 2) were taken from the place name file and classified according to Ritter (1976).

Formal and informal interviews on subjects such as resource use over time, harvest seasonality, Inupiaq names of certain resources, hunting and processing methods, sharing, and kinship were carried out in both English and Inupiaq. The majority of these interviews were carried out with elders identified by community members as particularly knowledgeable on these subjects. Many interviews were carried out in

English, but bilingual assistance was of importance in several instances. Again, those interviewed formally were reimbursed for their time according to North Slope Borough standards.

In this study, participant observation meant the direct involvement of the researchers in subsistence related activities to provide additional insight into trail systems, camp locations, hunting methods, and material culture in the field. These experiences often yielded the best context for certain formal and informal interviews on matters such as resource management and regional issues of concern to subsistence users. In addition, it gave the researchers a much better appreciation of the sociocultural importance of hunting and fishing to Kaktovik residents. Participant observation also allowed for some ground checking of site locations, place names, and individual resource use area extent.

Aerial snowmachine track surveys were conducted to help ground truth winter land use data and provide the researchers with a method of discovering major trail systems as well as previously unreported resource use areas. Due to the moderate snowfall and limited snow redistribution in the mountains, snowmachine tracks formed throughout the winter were found to be observable from the air in mid to late spring, as were most tracks made in the vicinity of the coastal plain because of the relative resistance to erosion of snowmachine compacted snow.

Seven aerial snowmachine track surveys were flown between mid-May 1980 and mid-May 1983. These surveys were conducted to document evidence of recent winter land use throughout the Arctic National Wildlife Refuge and west to the Shaviovik River. Evidence was of two types: observations of local residents camping, fishing, and traveling, and extent of snowmachine trails in certain areas.

Each map overlay developed during this project (and copies of Wentworth's maps) was assigned a unique code number and filed within the Division of Subsistence's North Slope office horizontal map file in Fairbanks. Pertinent information such as the community involved, household interviewed, date of interview, scale of map used, listing of resource color code, individuals contributing to the particular map, and information about particular production areas was placed on a 5" by 7" card for each overlay. Information on this card was later placed into the computerized map information file to facilitate editing or accessing a particular map and provided an index to the maps developed during this project. This system allowed the researchers to keep accurate records on the number of households contributing to a particular resource category, assured that all relevant mapped information was included in the community biographies, and allowed for the systematic development of map products.

Community biography maps produced during this project have been digitized by Environmental Systems Research Institute (ESRI) under the direction of the North Slope Borough Geographic Information System (GIS) (see Appendix 4 for a listing of which U.S. Geological Survey quadrangles have been digitized to date). Digitized maps have been proofread and signed off for use by the GIS. This information is being placed into the Automated Review and Comment System used by the North Slope Borough Planning Department. These data are also available to government, industry, and the public to assist in evaluating land use changes on the North Slope.

Analysis

Community land use areas were determined by combining household land use areas on a resource by resource basis. Wentworth's (1978) community resource biographies were combined with the authors' community resource biographies to develop final single-resource community biographies (Table 5; Maps 1-8; Appendix 1).

Extreme land use boundaries were delineated on each single-resource community biography. A community single-resource land use summary, such as whale, seals, furbearer hunting, etc., may appear as one continuous area, or as several land use locales, as is the case with sheep, fish, and vegetation. The extreme boundaries of all community resource biographies were aggregated to produce a community multi-resource land use biography (Map 10, Appendix 1) followed by a community multi-resource, extreme boundary biography (Map 11, Appendix 1).

Extent of Land Use Area Determination

The total area for each single-resource community biography and the overall community land use biography was computed using the Division's digitizing equipment in Fairbanks (Table 6). Households which did not develop land use map biographies stated that their contribution to the community mapping effort was already represented on map biographies created by close family members in other households. For example, one man stated that a map of his land use areas would be merely a duplication of his father's map biography. Another emphasized that his household's land use area was identical to his wife's brother's and sister's

TABLE 5. KAKTOVIK HOUSEHOLD CONTRIBUTION TO EACH SINGLE RESOURCE MAP BIOGRAPHY.

Resource No.	Category	Household																Sample Size						
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P		Q	R	S	T	U	
1	Wildfowl	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	20
2	Hunting furbearers	X	X						X	X		X	X	X		X		X	X	X	X		12	
3	Trapping furbearers	X	X	X	X	X	X	X		X						X	X	X	X	X	X	X	X	16
4	Caribou	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	20
5	Moose	X	X	X		X	X	X		X	X		X	X		X		X	X	X	X			16
6	Walrus							X							X	X	X		X			X	6	
7	Whales	X	X		X	X	X	X		X		X	X	X				X	X	X				14
8	Seals	X	X	X	X	X	X	X		X		X	X	X	X	X	X	X	X	X	X	X	X	19
9	Invertebrates																							
10	Fish	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	21
11	Polar Bear	X	X	X	X	X	X	X			X	X	X	X	X	X		X	X	X	X			18
12	Grizzly bear		X	X	X		X	X								X	X		X	X	X	X		11
13	Sheep	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	20
14	Small mammals	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X		X	X		X	X	18
15	Wood, fuel, and structural materials				X												X		X	X	X			5
16	Vegetation	X	X		X	X	X	X		X	X	X		X	X		X			X	X			15
Total Number		12	12	11	13	12	9	12	11	8	12	13												
Categories in each household map biography		13	11	13	3	5	9	13	11	15	14													$\bar{x} = 11.05$ $r = 5-21$

TABLE 6. MINIMUM ESTIMATED USE AREA UTILIZED OVER TIME BY RESOURCE CATEGORY AND RAKED ACCORDING TO PERCENTAGE OF TOTAL AREA.

Resource Category	Area Used (Sq. Miles)	Percentage of Total Area	Rank
Caribou	6,852	60.1	1
Furbearers (hunting)	5,857	51.4	2
Wildfowl	4,826	42.3	3
Furbearers (trapping)	3,415	29.9	4
Seals	2,303	20.2	5
Polar bear	2,126	18.6	6
Whales	1,626	14.3	7
Small mammals	1,572	13.8	8
Fish	1,387	12.2	9
Sheep	1,285	11.3	10
Grizzly bear	1,219	10.7	11
Wood, fuel, structural materials	835	7.3	12
Vegetation	737	6.5	13
Moose	727	6.4	14
Walrus	651	5.7	15
All resource categories (corrected for overlap)	11,406		

households which had already been mapped. Thus, the information portrayed on the community land use maps represents a greater number of households than the actual sample size indicates.

Limitations

The approach used in this study was highly geographical. Patterned after Freeman's (1976) approach, the study sought only to develop information on what land and ocean areas have been and are now being used for subsistence purposes by people currently living in the community of Kaktovik. There has been no attempt to quantify the resource

yield from the individual resource use areas nor has any attempt been made to qualitatively determine the usefulness of any piece of land, place, or site. A simple set of criteria determined whether or not a particular piece of geography would be included on the land use map, namely, presence or absence of use. This criteria also applies to the collection of camp site locations but does not necessarily apply to the place name identification. For instance, distant mountains were identified in the place name interviews which were used for orientation and navigational purposes, but which had never been closely occupied. This also applies to the boundaries we have constructed for each resource use area. In many instances, hunters may actually scan a much greater area than what is depicted on our maps. It is therefore imperative that the boundary information presented not be taken literally as fixed limits, but with the recognition that it is an ever-shifting line that expands and contracts according to numerous factors including game abundance, snow conditions, and gasoline availability.

Other limitations of this study are its locational focus, time frame of depicted information, sample unit, sample size, resource categorization, map scale, and research questions. The focus of this study was community-based land use at Kaktovik. This focus was selected as it would best represent current conditions. Residents currently conduct most of their social, cultural, and economic life around an established community. In the not too distant past, there were households, now living in Kaktovik, which led a nomadic or semi-nomadic way of life over the entire North Slope. This segment of their life was not included in map biographies produced with them. The study focus thus has been on the community and community-based subsistence activities

from the time Kaktovik was first settled in 1923 to 1983. In selecting the information time frame, it was decided that for a baseline study, it would be appropriate to have this long time depth. This helps ensure that all unusual land use conditions ranging from the most constricted to the most expansive were covered.

Though not all households have been established in Kaktovik for the same length of time, it was determined that this would not present a problem. The most complete information possible over time was being sought and the study would thus accept household information on land use that dated back to about 1923 when the community began to take on the qualities of a permanent settlement.

The study sample unit was the household as represented by either the most active and knowledgeable hunter/fisher/gatherer of the household or by a number of household members who were interested in assisting in the accurate depiction of their use areas. A household was defined as those individuals (family, extended family, single persons, and unmarried couples) who were living together in a structure in the community while the study was being conducted.

The range of resources utilized for subsistence purposes in the community was known from previous work done on resource mapping (North Slope Borough 1978; Pedersen 1979). The resource categories established by previous researchers appeared to have produced good results. Since this study was to build on the existing data base, it was decided to continue to use the 16 categories listed in Table 4. Arrangement of the various species into resource categories may cause some problems. In earlier work, one of the authors (Pedersen) found that the activity category "hunting" for instance covered all hunting and could be

effectively used to elicit all hunting areas. This approach was used by Brody (1982) with excellent results. The goals of the present study however, were to find out which resource areas were used for major resource complexes. It was felt that the added detail gave the researchers better information though it may have appeared redundant to interviewees.

The U.S. Geological Survey 1:250,000 scale quadrangles were used in this study (base maps used in this study are listed in Appendix 1). This choice was partly because they had been used by previous researchers and partly because it had been determined that the scale was neither too detailed nor too generalized for Kaktovik hunters to easily locate geographical features. The major obstacle in using these maps was that not all rivers, mountains, and other geographical features are correctly labeled according to residents of Kaktovik. As a consequence it was decided to not rely much on the geographical names on the map. Rather, the drainages, mountains, and other geographic features were used to orient the researchers and the interviewees on the maps.

A rather difficult area of this investigation was asking the right question. The information sought was which areas people had used (since settling in Kaktovik) and were using in the pursuit of the various resources. The concept of pursuit includes searching, locating, and harvesting a resource. Thus the researchers were not looking for specific harvest locales, though they would be included, but where people had gone in search of a particular resource category over time. The most explicit way to state this was to ask the interviewee to indicate on the map how far he or she had gone on the ground looking for a particular resource. Clearly, places are included where people had

tried to find a resource but were not successful. In the researchers' judgement, both these areas are of interest to subsistence users and should not be separated out from each other at this general level of study.

LITERATURE REVIEW

The literature on subsistence land use in northeast Alaska is rather meager. Glimpses of the recent historical distribution of Inupiat along the eastern portion of the Alaskan Beaufort Sea can be gleaned from the accounts of Franklin (1828), Dease and Simpson (1838), Collinson (1889), Stefansson (1913), Leffingwell (1919), Stuck (1920) and Jenness (1914, 1957). These references are helpful in that they document long-term occupation of the area but do not provide any detail as to what size or shape of the resource use area might have been. Contemporary information on Kaktovik land use is available from the general descriptive records of Klerekoper (1937), Sonnenfeld (1957), Spencer (1959), Chance (1966), Patterson (1977), Neilson (1977a), North Slope Borough (1978), Carnahan (1979, 1980), and Libbey (1981, 1983). These publications again are useful in documenting Inupiat presence in the area but contribute little toward being able to delineate the area in which the Kaktovik subsistence economy operates. It is only recently that one begins to find land use oriented studies in the literature. In 1974, the Arctic Environmental Information and Data Center (AEIDC) in cooperation with the Arctic Slope Regional Corporation (ASRC) published a general place names list for the North Slope area (Inupiat of the Arctic Slope, Villge, and Regional Corporation, and AEIDC 1974-75). The

North Slope Borough (1977) inventoried the historic sites in the Barter Island area and Libbey (1981) provided detailed cultural resource survey of selected sites from the Borough's inventory.

The first attempt at describing spatial dimensions of eastern North Slope subsistence activities dates back to the mid-1940s. Barrow city officials (Barrow City Council May 11, 1947 as quoted in Sonnenfeld 1957), tried to establish a reservation and a game reserve for the express purpose of protecting their subsistence area and "ensuring that the game resource be reserved for native use" (Bureau of Indian Affairs records as quoted in Sonnenfeld 1957:579). The area that the council deemed necessary to effect the desired level of protection spanned from Peard Bay (west of Barrow) eastward all the way along the Beaufort Sea to Demarcation Point, up to 50 miles offshore in some places, and south to the foothills of the Brooks Range covering some 30,000 square miles (Appendix 1). This proposal was met by a counter proposal by the Bureau of Indian Affairs and in the ensuing discussions no acceptable negotiated settlement was ever reached.

During the land claims process in the late 1960s and early 1970s, lands of importance to Kaktovik subsistence activities were delineated by the ASRC and the Kaktovik Inupiat Corporation (KIC) in cooperation with the AEIDC. Though the original documents from this effort have been lost in a fire (A. Brower pers. comm., 1981) some of the information was compiled and published jointly on a 1:500,000 scale map by the ASRC and the AEIDC in 1974 (Inupiat of the Arctic Slope, Village and Regional Corporations, and AEIDC 1974-1975).

The map contains a considerable amount of information. However, there is not an accompanying narrative nor any qualifiers on the map

describing the methodology of data collection, sample size, or timeframe of the data. In addition, the field data from which it was compiled are no longer available for examination. The usefulness of this information is therefore rather limited. However, the map provides a rough delineation of the overall land use area specifically attributable to Kaktovik subsistence activities.

The first well-documented and systematically collected detailed land use maps for the Kaktovik area were a series of 11 individual maps at the scale of 1:250,000. Each depicted the community land use area for a particular resource category and were prepared as part of the NPR-A 105(c) studies (North Slope Borough 1978). Only the community summary map was published in 1978, although the individual resource use area information was used in a 1979 report on the regional subsistence land use across the entire North Slope Borough (Pedersen 1979). The large scale used in the report (1:1,000,000), the fact that resource-specific use areas of individual communities were not readily discernible, and the limited sample size renders the information undesirable for detailed area-by-area analysis, but provides a good regional overview. The sample size of the initial 1:250,000 Kaktovik maps was 9 of 27 households (32 percent) selectively chosen to represent the most active hunters. Compilation of all information from the 9 households indicated that the community used, at a minimum, 13,700 square miles. The use area extended lineally from the United States and Canadian border in the east to Beechey Point in the west, extended up to 40 miles offshore into the Beaufort Sea and well into the Brooks Range to the south. However, the 11 maps were not subjected to a Kaktovik community-

specific level of analysis, were never officially released, and thus are not readily accessible to land and resource management agencies.

The lack of published detailed land use information from the northeast Arctic prompted the Division of Subsistence to evaluate the desirability of a follow-up study to the 105(c) project in 1980. Additional impetus was added to the project by agency requests to the Division for detailed information on subsistence land use in the ANWR and surrounding area and an expressed desire by both local and regional public officials to have this type of information developed. The evaluation indicated that due to a wide range of factors, more detailed subsistence land use information would be needed. It was decided to update and expand the original 1978 data base and make it part of a long term project to establish a sound empirical basis for further land use studies. This report and maps present land and resource managers with detailed and reliable documentation of the spatial requirements of subsistence land uses in Kaktovik for the 1923 to 1983 time period.

CHAPTER 3
THE STUDY AREA

ENVIRONMENTAL SETTING

The community of Kaktovik (70°08'N, 143°38'W), the easternmost of the North Slope Borough villages, is situated on the northeast shore of Barter Island, 360 miles (579 km) east of Barrow and 72 miles (115.8 km) west of the United States and Canadian border (Figs. 1 and 2). The island is a tundra remnant (approximately 4,100 acres) formed by thermal erosion of its ice rich soil by the Beaufort Sea (Alaska Consultants, Inc. 1983). It is separated from the mainland to the south by a one-quarter mile wide channel connecting Arey Lagoon on the island's west side with Kaktovik Lagoon on the island's east side. Gravel sandspits formed by longshore drift processes extend from the island's northeast and northwest ends. The community is situated above the 20 foot (6 m) contour of the relatively flat island; the highest point is approximately 55 feet (16 m) above sea level. A freshwater lake approximately nine feet deep is located less than a mile (1.1 km) west of the community.

Permafrost is continuous on Barter Island and polygonal ground is present throughout most of the island. The water content of the soil is relatively high including the silty soils upon which the present townsite is located.

Three physiographic provinces are represented in the study area using Wahrhaftig's (1965) delineation. The Arctic Coastal Plan Province

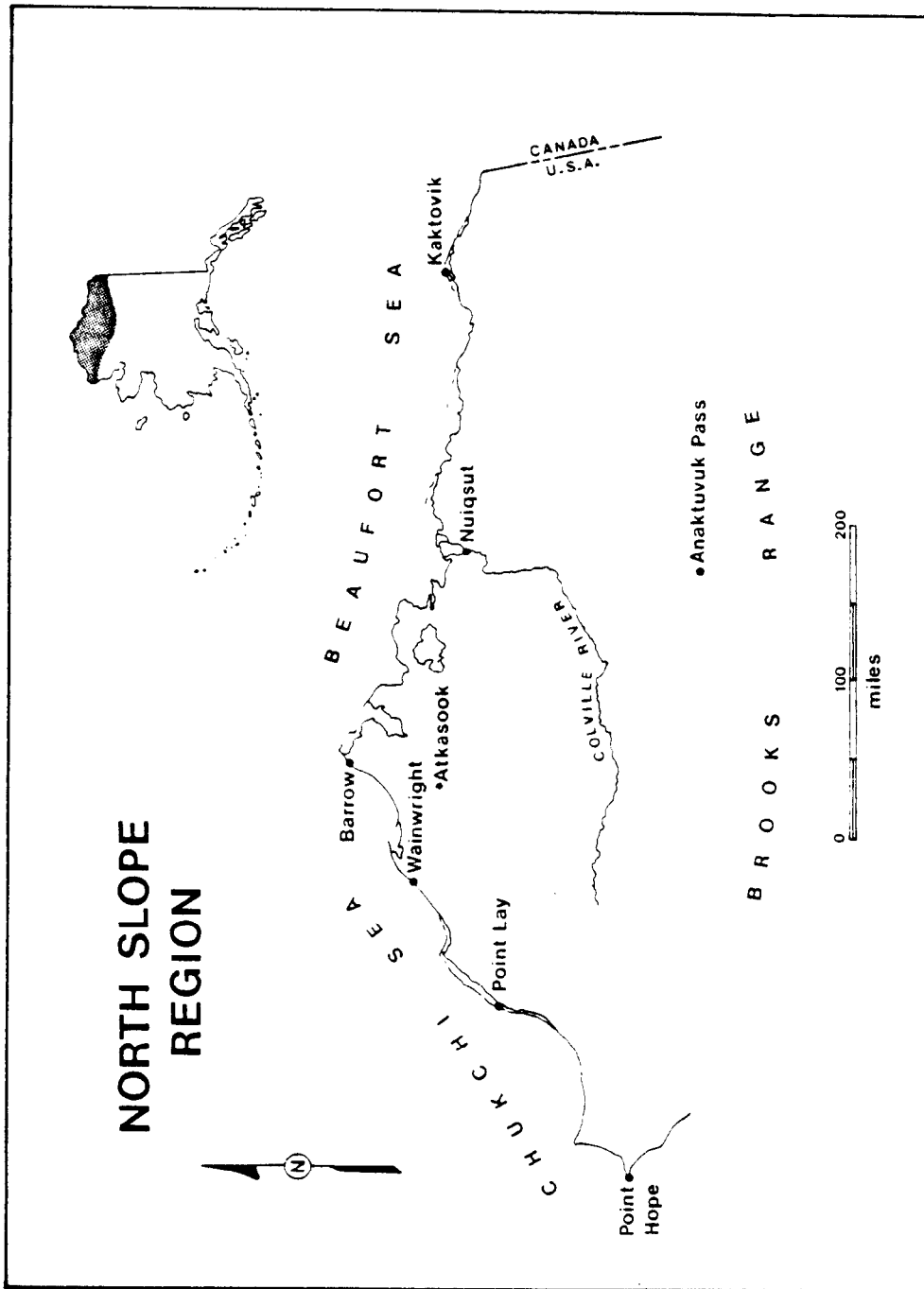


Fig. 1. North Slope region of Alaska.

is relatively smooth, rising to a height of 600 feet (190 m) where it meets the Foothills Province. Pingos are a common feature of the Coastal Plain. Due to the flatness of the tundra and the presence of continuous permafrost, drainage in this province is relatively poor. River channels tend to be braided and most are forming deltas into the Beaufort Sea. Many small and shallow thaw lakes exist in the area (although fewer than found in the western coastal plain). The Foothills Province is characterized by broad ridges and mesa-like mountains rising from 600 feet (183 m) to 1,200 feet (366 m) (Wahrhaftig 1965). Rivers and streams flow in a northerly direction towards the coastal plain, some originating from glacially formed lakes, such as the Schrader and Peters lakes. The Arctic Mountain Province, made up of the Brooks Range mountains, lies within approximately 50 miles (81 km) of the coast directly south of Barter Island and within 11 miles (18 km) of the coast east of Barter Island at Demarcation Bay. It is here where the rivers have their origin, flowing through glaciated valleys, cutting through steep-sided mountains made up of sedimentary and volcanic rock. Glaciers exist in the eastern Brooks Range where the mountains rise to over 9,000 feet (2,700 m). A few lakes are found near the mouths of the glaciated valleys but are relatively scarce in the eastern portion of this province (Selkregg 1976).

Rivers in the study area usually freeze over by late September although portions of some may remain open year round as warm, fast-flowing spring waters prevent ice from forming. Periodic overflow and multiple freeze and thaw cycles tend to raise the elevation of the river ice, building layer upon layer and widening the surface of the river at the same time. Due to the shallow, swift, and braided characteristics

of the rivers in this region, travel upriver by boat is strictly limited. Rivers are generally open by mid to late May and extensive overflow may be present during break-up and freeze-up.

The adjacent Beaufort Sea is ice-covered for about nine months of the year. During spring, flowing rivers contribute to the melting of ice near the coastline. Winds eventually break the pack ice up and move it away from the coast. Ice is generally visible a few miles out to sea and may be pushed to the mainland by winds at any time making access by boat difficult along the coast.

CLIMATE

The climate of the study area is classified as Arctic (Searby 1968). Summers are relatively short. Although the sun is above the horizon from approximately mid May through late July, clouds and fog generally reduce its heating effect. Summer temperatures remain relatively cool with a July mean of 39.9°F (4.4°C) (Alaska Consultants, Inc. 1983), although recorded maximum temperatures have reached 90°F (32.2°C) (Brent and Goldberg 1971).

Winters are long and dark as the sun remains below the horizon from late November through mid-January. Winter temperatures are generally coldest in February with a mean of -20.5°F (-29°C) (Alaska Consultants, Inc. 1983) but extreme lows of -50°F (-51°C) have been recorded (Brent and Goldberg 1971). Based on total precipitation, Kaktovik is considered arid with average precipitation of less than ten inches (25.4 cm) annually including about 43 inches (109.2 cm) of snow (Alaska Consultants, Inc. 1983). Winds are predominantly from the east at 15 to

25 kmph, but westerlies are not uncommon January through April and wind speeds over 115 kmph have been recorded (U.S. Fish and Wildlife Service 1982).

Although snowfall is low, strong winds redistribute the snow and may create drifts in areas such as near river banks and inland willow stands, but may completely remove the snowcover from other areas. Snowcover tends to be shallow and wind packed on the coastal plain, but may be soft and deeper near the foothills and mountains. Winds blowing through the mountain valleys often blow the frozen river surface and adjacent stream banks free of snow, exposing glare ice, rocks, and tussocks. Snow generally melts inland by mid to late May although it may remain on the northern portion of the coastal plain until late May or early June.

Weather in the study area is greatly influenced by the adjacent Beaufort Sea. Coastal areas experience more frequent fog and cloudiness than do inland areas while greater temperature ranges and extremes are found inland away from the buffering effects of the Beaufort Sea. Weather may play a major role in determining when and where people are able to travel in the area, the distribution of wild resources, and the frequency of aircraft arrivals bringing goods and supplies needed to pursue hunting, fishing, and gathering activities.

FAUNA AND FLORA

A detailed account of abundance, distribution, and associated habitat for species found in or near the Arctic National Wildlife Refuge was prepared by the U.S. Fish and Wildlife Service (1982). The species

most commonly utilized for subsistence purposes by Kaktovik residents are listed in Table 7.

Terrestrial subsistence resources such as caribou are seasonally abundant in the study area, but there are also times when they are nearly absent. The only big game found in locally abundant and predictable pockets are sheep, moose, and musk ox. In general, the species diversity and abundance around Kaktovik is not as great as that of other North Slope villages, particularly when compared to communities on the Chukchi Sea coast. The species and numbers of marine mammals found to winter in the Beaufort Sea are fewer than that of the Chukchi Sea (Alaska Consultants, Inc., 1983). At Kaktovik, ringed seal are available year round. However, bearded seal, bowhead whale, belukha, polar bear, and walrus are only seasonally available. Some wildfowl and raptor species are present in the area on a year round or seasonal basis depending on the particular species. Migratory waterfowl are seasonally abundant and play an important role in the local resource economy.

Among the economically important terrestrial subsistence resources found within the region are caribou (Pedersen and Coffing 1984). Animals of the Porcupine Caribou Herd sometimes calve in areas adjacent to Barter Island or in the eastern portion of the Arctic National Wildlife Refuge. The Central Arctic Caribou Herd is also found in the area, generally distributed in the western portion of the Refuge. Moose, musk ox, sheep, grizzly bear, wolves, wolverine, foxes, ground squirrels, marmots, and porcupine are found throughout the region.

Fish are also found throughout the study area. They may be located in most rivers and along the coast although a few rivers are reported to have no fish in them (Jacobson and Wentworth 1982). Larger lakes such

TABLE 7. SUBSISTENCE RESOURCES HARVESTED BY KAKTOVIK RESIDENTS¹.

Category ²	Inupiaq ³	Scientific ⁴
<u>BIRDS</u>		
Common eider	Amauligruaq	<u>Somateria mollissima</u>
King eider	Qiqalik	<u>Somateria spectabilis</u>
Black brant	Nigliñgaq	<u>Branta bernicula</u>
Snow goose	Kanuq	<u>Chen caerulescens</u>
Canada goose	Nigliq	<u>Branta canadensis</u>
Pintail	Kurugaq	<u>Anas actua</u>
Oldsquaw	Aaghaaliq	<u>Clangula hyemalis</u>
Willow ptarmigan	Aqargiq	<u>Lagopus lagopus</u>
Rock ptarmigan	Niksaaktunig	<u>Lagopus mutus</u>
Snowy owl	Ukpik	<u>Nyctea scandica</u>
Birds' eggs	Mannich	
<u>FURBEARERS</u>		
Arctic fox	Tigiganniaq	<u>Alopex lagopus</u>
Red fox	Kayuqtuq	<u>Vulpes vulpes</u>
Wolf	Amaguq	<u>Canis lupus</u>
Wolverine	Qavvik	<u>Gulo gulo</u>
<u>CARIBOU</u>		
	Tuttu	<u>Rangifer tarandus</u>
<u>MOOSE</u>		
	Tuttuvak	<u>Alces alces</u>
<u>WALRUS</u>		
	Aiviq	<u>Odobenus rosmarus</u>
<u>WHALES</u>		
Belukha	Qilalugaq	<u>Delphinapterus leucas</u>
Bowhead whale	Agviq	<u>Baleana mysticetus</u>
<u>SEALS</u>		
Bearded seal	Ugruk	<u>Erignathus barbatus</u>
Ringed seal	Natchiq	<u>Phoca hispida</u>
Spotted seal	Qasigiaq	<u>Phoca vitulina</u>

Category ²	Inupiaq ³	Scientific ⁴
<u>FISH</u>		
Arctic char	Igalukpak	<u>Salvelinus alpinus</u>
Whitefish		
Arctic cisco	Qaaktaq	<u>Coregonus autumnalis</u>
Least cisco	Igalusaaq	<u>Coregonus sardinella</u>
Broad whitefish	Aanaakliq	<u>Coregonus nasus</u>
Round whitefish	Savigunaq	<u>Prosopium clydraceum</u>
Ling cod	Tittaaliq	<u>Lota lota</u>
Grayling	Sulukpaugaq	<u>Thymallus arcticus</u>
Chum salmon	Igalugruaq	<u>Oncorhynchus keta</u>
Pink salmon	Amaqtuq	<u>Oncorhynchus gorbuscha</u>
Arctic flounder	Nataagnaq	<u>Lisopsetta glacialis</u>
Fourhorned sculpin	Kanayuq	<u>Myoxocephalus quadricornis</u>
Lake trout	Igalukpak	<u>Salvelinus naymacush</u>
Pike	Paighuk	<u>Esox lucius</u>
Arctic cod ("tomcod")	Uugaq	<u>Boreogadus saida</u>
Rainbow smelt	Ithuañniq	<u>Osmerus mordax</u>
<u>POLAR BEAR</u>	Nanuq	<u>Ursus maritimus</u>
<u>GRIZZLY BEAR</u>	Akñaq	<u>Ursus arctos</u>
<u>DALL SHEEP</u>	Imnaiq	<u>Ovis dalli</u>
<u>SMALL MAMMALS</u>		
Arctic ground squirrel	Siksrik	<u>Spermophilus parryii</u>
Alaska marmot	Siksriqpak	<u>Marmota broweri</u>
Mink	Itigiaqpak	<u>Mustela vison</u>
Weasel	Itigiaq	<u>Mustela erminea</u>
<u>FUEL AND STRUCTURAL MATERIAL</u>		
Coal	Aluaq	
Willows	Uqpik	
Driftwood	Quruk	
Sod	Ivruq	

Category ²	Inupiaq ³	Scientific ⁴
<u>VEGETATION</u>		
Berries		
Blueberry	Asiaq	<u>Vaccinium uliginosum</u>
Cloudberry	Aqpik	<u>Rubus chamaemorus</u>
Cranberry	Kimmirñaq	<u>Vaccinium vitis-idaea</u>
Greens/Roots		
Wild Potato	Masu	<u>Hedysarum alpinum</u>
Wild rhubarb	Qurulliq	<u>Oxyria digyna</u>
Willow leaves	Akutuq	<u>Salix sp.</u>

¹ This is a listing of all locally harvested resources used by Kaktovik residents in the 1970s and 1980s (Jacobson and Wentworth 1982; North Slope Borough 1979). Use of additional species, particularly bird and fish species, is known to occur from time to time. Consult with the community for definitive information.

² The species category corresponds to the categories in Table 1.

³ Inupiaq names are from NSB (1978), Pedersen (1979), Jacobson and Wentworth (1982) and local residents in Kaktovik. The orthography used is that of the University of Alaska Native Language Center.

⁴ The scientific names listed here are from Armstrong (1980), Hultén (1968), Morrow (1980), and U.S. Fish and Wildlife Service (1982).

as Schrader and Peter's lakes and larger coastal plain lakes near the Canning River drainage area also known to contain fish (U.S. Fish and Wildlife Service 1982). Driftwood originating from the MacKenzie River in Canada is found on barrier islands, in bays, and along the coastline of the mainland.

CHAPTER 4
THE COMMUNITY

HISTORY OF THE COMMUNITY

The Barter Island area is known to have been historically important as a meeting and trading place (Nielson 1977b). Sir John Franklin mentions stopping at what is today's Arey Island, which he named "Barter Island," on August 4, 1826. He counted 54 adults with "a collection of tents planted on a low island with many oomiacks, kaiyacks, and dogs around them" (Franklin 1828:146). In 1914, Diamond Jenness reported between 30 to 40 old house sites on the island speculating that the location had once been the site of a prehistoric village (Leffingwell 1919).

Jenness (1914) suggests that Barter Island received its name because non-Native whaling captains had put in there to trade with Inupiaq, and as far as he could learn, it was never a rendezvous for the local population. He states that Qaqtorvik (Kaktovik's Native name) means "the place where the sein (qaqto) is used," and relates a story told to him of a boy belonging to one of two families living on the island who turned up missing. After searching in vain for his son, the boy's father discovered the arm of his son in his fish net as he pulled it from a crack in the ice to check it. He knew that his son had been killed and his body thrown into the sea through a hole in the ice. "Thenceforth, the island received the name of Qaqtorvik" (Jenness 1914:8).

Contacts between Natives and non-Natives intensified after the late 1860s during which time whaling fleets wintered over at Herschel Island, introducing epidemic disease and increasing competition for local resources such as caribou (McGhee 1974 as cited in U.S. Fish and Wildlife Service 1982). Others (Dease and Simpson 1838; McClure 1850; Simpson 1852; Maguire 1852; Collinson 1889; Mikkelson 1909; Leffingwell 1919; Stefansson 1919) give accounts of settlements near the Barter Island and Camden Bay area and on the activities and establishment of Native communities in the area. Ologak (Okakok 1981) and Nielson (1977a) identify the establishment of a trading post on Barter Island by Tom Gordon in 1923 as the inception of Kaktovik's permanence. It is not clear where the permanent population came from but it is thought that some came from Barrow while others moved in from neighboring seasonal camps. Following Tom Gordon's death and the crash of the fox fur market in the late 1930s, some families moved to MacKenzie River villages where they have remained. Other families either remained in the Barter Island area or moved temporarily to Barrow until additional employment opportunities became available in the area.

In 1947, the U.S. Air Force began building a runway and hangar for a Distant Early Warning (DEW) station on Barter Island's eastern sandspit, on top of a prehistoric village site and in the same place where several Kaktovik residents had their homes. In 1951, a Bureau of Indian Affairs school was opened in Kaktovik. Construction of the DEW Line station on the north side of Barter Island began in 1952. These construction activities, though they provided jobs for local residents, required not only that the community be relocated, but also that the former community site and an important archeological site be covered

over by sand and gravel. In fact, the community had to be relocated three times between 1947 and 1964 due to DEW Line construction and expansion. The present townsite plat was approved by the Bureau of Land Management on July 24, 1964 (Nielson 1977a). In 1971, the Kaktovik Inupiat Corporation was formed as a result of the Alaska Native Claims Settlement Act (ANCSA) and in September 1971, Kaktovik was reclassified as a second-class city (Alaska Consultants, Inc. 1983).

SOCIOECONOMIC OVERVIEW

Demography

The earliest documented population figures for the community and surrounding area are from the winter of 1935-36 when 58 persons representing 10 families were reported living on Barter Island. An additional 122 individuals from 20 families were living at locations along the Beaufort Sea coast between Brownlow Point and Demarcation Bay (U.S. Bureau of Indian Affairs 1936). The 1980 Census (U.S. Bureau of the Census 1980) placed Kaktovik's population at 165 of which 99 (60 percent) were male and 66 (40 percent) female. With respect to ethnic origin, 148 (90 percent) were Native and 17 (10 percent) were non-Native (Alaska Consultants, Inc. 1983). The median age of males was 25.4 while the female median age was 23.5. A housing survey conducted by the North Slope Borough in 1980 indicated that Kaktovik's population was older than that of other North Slope Borough communities with the exception of Atqasuk (Alaska Consultants, Inc. 1983). Kaktovik's population has increased steadily since 1950, but a major population increase took

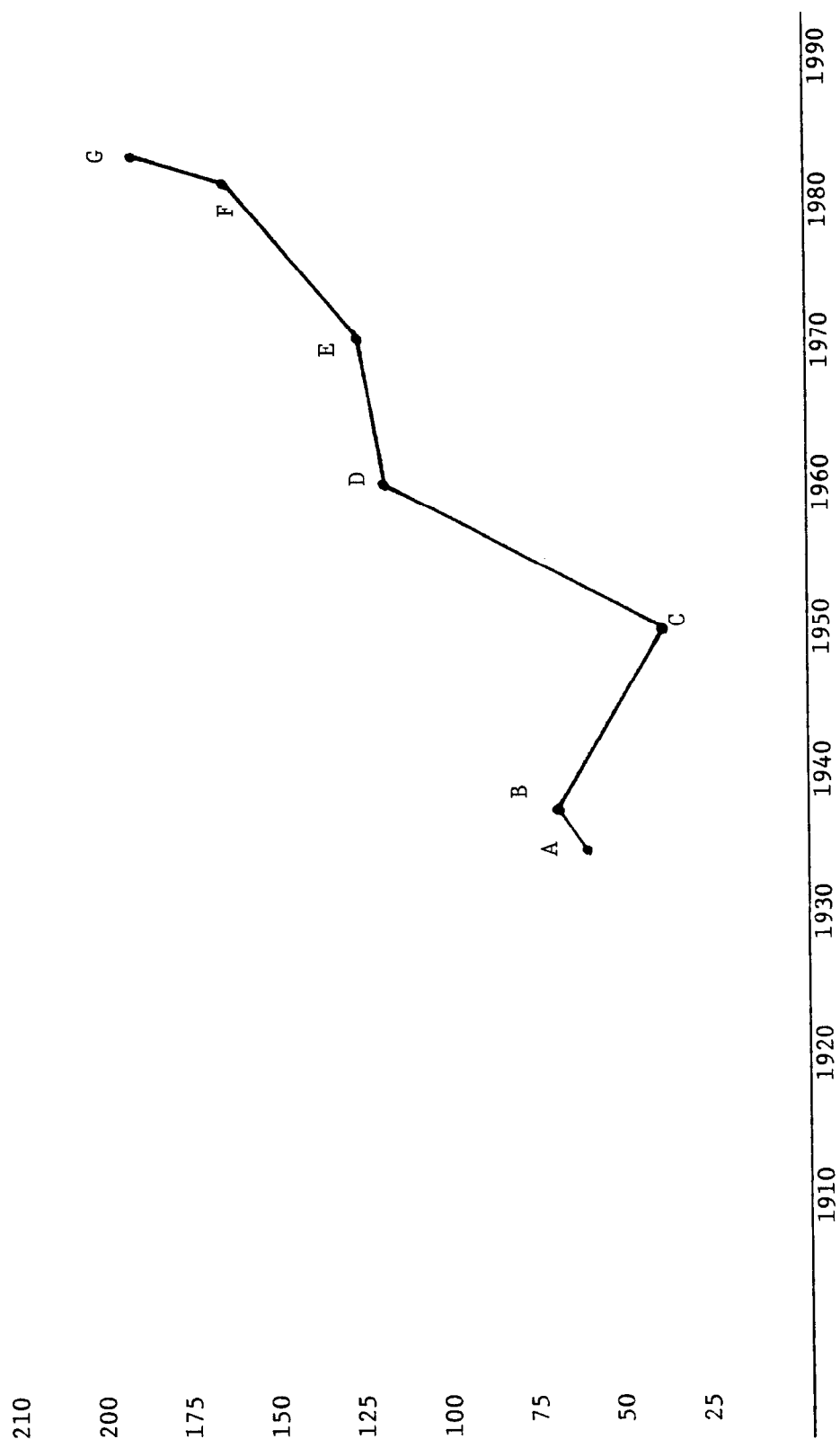
place between 1950 and 1960 when the population grew from 46 to 120, a 160 percent increase (Fig. 3). This was possibly a response to employment opportunities in construction activities. The majority of this population increase can be attributed to dispersed family groups moving in from the surrounding area (Worl and McMillan 1982).

Based on information compiled by the U.S. Bureau of Indian Affairs, the average size of households on Barter Island during 1935-36 was 5.8 persons and approximately 6.1 persons for all households located between Brownlow Point and Demarcation Bay. Surveys conducted in 1973 and 1977 indicate that of 22 households interviewed, the average household size was 4.9 and 4.4 persons respectively (Kruse, Kleinfeld, and Travis 1981).

A population count conducted by the authors in April 1983 accounted for 185 persons in Kaktovik. Males comprised 55 percent (102) and females 45 percent (83) of the population (Fig. 4). Eighty-three percent (154) of the population was of Eskimo descent. Forty-six households averaging 4.0 persons per household comprised the total population (Table 8).

Employment

Other than seasonal trading mentioned above, there were few cash employment opportunities in the Barter Island area during the first half of this century. Some MacKenzie Delta Eskimos were employed by whaling ships to hunt for caribou and other food species in order to sustain the whaling crews wintering over at Herschel Island (U.S. Fish and Wildlife Service 1982). These hunting parties ranged as far west as the Aichilik



Sources: A. U.S. Bureau of Indian Affairs 1936 E. U.S. Bureau of the Census 1970
 B. U.S. Bureau of Indian Affairs 1938 F. U.S. Bureau of the Census 1980
 C. U.S. Bureau of the Census 1950 G. Alaska Department of Fish and Game,
 D. U.S. Bureau of the Census 1960 Division of Subsistence 1983

Fig. 3. Kaktovik population for the period 1935 through April 1983.

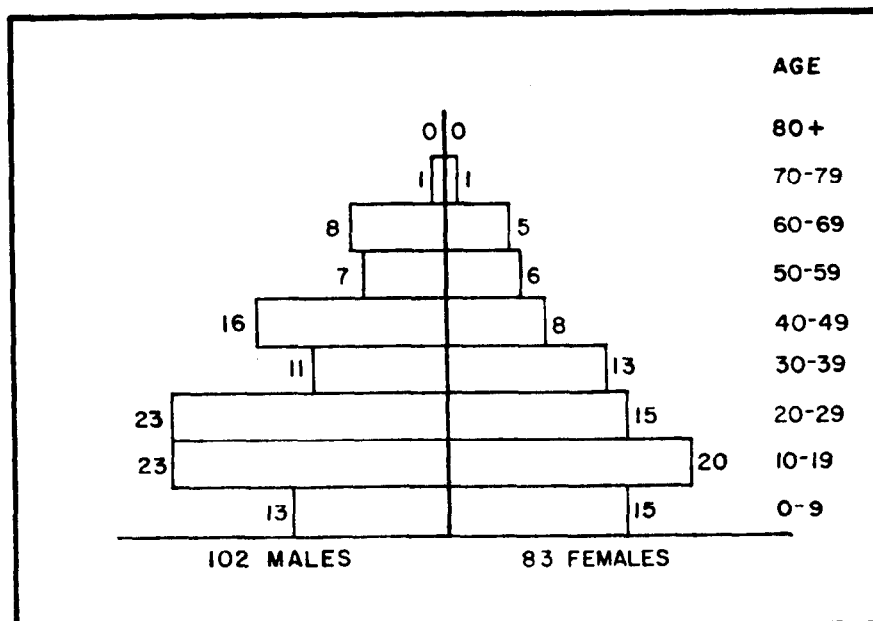


Fig. 4. Kaktovik demographic profile, April 1983.

TABLE 8. NUMBER OF HOUSEHOLDS AND PERSONS PER HOUSEHOLD
IN KAKTOVIK, APRIL 1983.

Number of Persons in Households	Number of Households	Total Individuals
1	7	7
2	7	14
3	8	24
4	9	36
5	4	20
6	4	24
7	2	14
8	1	8
9	3	27
10	0	0
11	<u>1</u>	<u>11</u>
Total No. Households	46	Total No. Persons 185

River. Information indicating whether or not persons living at Barter Island were employed at this time is lacking. During the early part of the century through about 1936, fox trapping provided a source of income for area residents. Five non-Native traders operating posts between Beechey Point and Demarcation Point provided locations where furs could be traded (Libbey 1983).

Under the auspices of the Alaska Reindeer Service, reindeer herding began in the Barter Island area during the late 1920s. Several families were involved with managing the herds and were paid in reindeer for their efforts (Jacobson and Wentworth 1982). Reindeer herding near Barter Island came to an end in 1938. Its termination was due in part to unusual winter rains which changed the snow cover to ice and resulted in the starvation of many of the animals. Another factor was that, in an effort to bring additional animals into the area, some Barrow area

reindeer were herded eastward in to the area. Unfortunately the Barrow reindeer turned back west once they arrived in the study area and many of the remaining Barter Island reindeer joined them (Jacobson and Wentworth 1982).

Wage-labor employment was virtually nonexistent until the mid-1940s when the U.S. Coast and Geodetic Survey hired a few Kaktovik residents to assist in efforts to map the Beaufort Sea coast (Nielson 1977b). After the arrival of the Air Force in 1947, wage employment opportunities in Kaktovik increased as manpower was needed during the construction of the DEW Line Station and a 5,000 foot airstrip. People were also employed at DEW Line stations located at Camden Bay and Beaufort Lagoon.

The passage of the Alaska Native Claims Settlement Act in 1971 and the resulting establishment of the Kaktovik Inupiat Corporation, the incorporation of the North Slope Borough in 1972, and the development of the Prudhoe Bay oilfields provided additional employment opportunities for Kaktovik residents. The number of local government positions increased as a result of the North Slope Borough formation and as the Kaktovik Inupiat Corporation hired several local employees to run its business affairs. Development of the Prudhoe Bay oilfields also provided Kaktovik residents with some new construction related employment in Prudhoe Bay and on the Trans-Alaska Pipeline System. The employers of Eskimo workers 18 and over in Kaktovik between October 1976 and September 1977 are depicted in Table 9. As indicated, in 1976-77 there was not a well-developed private business sector in Kaktovik, providing only 18 percent of wage employment. Instead, the Borough and Regional Corporation provided 78 percent of the wage employment

TABLE 9. SOURCES OF EMPLOYMENT AT KAKTOVIK, 1976 and 1982.

Employer	October 1976 to September 1977 ^{a b} (Percent)	August 1982 ^c (Percent)
North Slope Borough	52	49
State and Federal Government	0	4.5
Local Government	4	3
Business	<u>44</u>	<u>43.5</u>
Total	100	100.0
(Total Jobs)	(23)	(67)

^a Includes all jobs Native adults held with various employers from October 1976 to September 1977.

^b Adapted from Kruse, Kleinfeld, and Travis (1981:35; Table 4-2).

^c Adapted from Alaska Consultants, Inc. (1983:11; Table 2).

positions. Of interest, state and federal government provided no jobs directly. In 1983, the situation did not appear to have changed much from the situation described for 1976-77. Kaktovik residents working between October 1976 and September 1977 worked for an average of 5.2 months (Kruse, Kleinfeld, and Travis 1981). Thus, seasonal and other temporary employment was the norm for most adult workers, not 12-month positions. Again, this norm appeared to be widely held to in 1983.

An August 1982 job count identified 67 full-time jobs in Kaktovik (Alaska Consultants, Inc. 1983). Fifty-six percent of the jobs were in government occupations with the North Slope Borough employing the majority (51.5 percent) of the work force. The North Slope Borough School District employed an average of 19.5 persons on a full-time

basis. Three of seven mining-related jobs were located at Prudhoe Bay while the other four were associated with oil and gas exploratory related activities in the Arctic National Wildlife Refuge. Six contract construction jobs were attributed to activities such as building the village corporation's new store, the fire station, and the village clinic (Alaska Consultants, Inc. 1983). Three persons were employed at the DEW Line station and three more at the local air taxi operation. Three jobs were associated with Kaktovik Inupiat Corporation, managing corporation lands, finances, and fuel and equipment sales.

Employment patterns in the community vary depending on need and seasonal subsistence activities such as whaling. Men and women who are employed full-time and also desire to pursue subsistence activities often plan their time off during periods of the year when they can travel to the mountains to hunt, fish, and trap such as in late October and November or early April to mid May. Information from Kruse, Kleinfeld, and Travis (1981) shows that though many community residents are employed, subsistence hunting, fishing, trapping, and gathering activities are still actively participated in.

Income

Based on sample of 25 households, the median income of Kaktovik's Native households was \$24,167 in 1980. The median household income for the community overall was \$25,000 in 1980 compared to \$25,421 for households statewide (Alaska Consultants, Inc. 1983). Although Kaktovik's household income appears to be only slightly lower than statewide household incomes, the cost of living for Kaktovik households

is significantly higher than most household averages statewide. This is primarily due to the distance of Kaktovik from major distribution centers such as Anchorage and Fairbanks.

Specific income data for Kaktovik are not available. Worl and McMillan (1982) reported that during March 1982, the average monthly salary for permanent North Slope Borough employees was approximately \$2,400, for village corporation employees \$3,000, and for construction workers \$4,000. Since most jobs (72.5 percent) are directly or indirectly dependent on North Slope Borough funds, job opportunities are expected to decrease. Increasing income levels continue to be offset by the high cost of living in northern Alaska. A comparison of food and fuel prices (Table 10) shows that indeed, expenses are quite high, averaging 72 percent higher than in Anchorage.

Unemployment

Reliable statistics to document rates of unemployment in Kaktovik are sparse. Unemployment data for October 1976 through September 1977 indicate that the annual average unemployment rate for Eskimos 18 and over in Kaktovik was 8 percent. This figure did not include 18 percent of the work force which were unemployed but were not seeking work (Kruse, Kleinfeld, and Travis 1981). Based on available jobs and a survey conducted in July 1982 which indicated that there were 119 persons (69 males, 50 females) between the ages of 18 and 65, it would appear that some unemployment does exist (Alaska Consultants, Inc. 1983). A desire to participate in hunting, fishing, and gathering of local resources and the amount of time devoted to these activities must

TABLE 10. COMPARISON OF PRICES -- KAKTOVIK AND ANCHORAGE MARCH 1982.

Market basket items	Kaktovik	Anchorage	Percentage difference Kaktovik/ Anchorage
Pilot bread, 32 oz.	\$ 2.95	\$ 2.34	26
Chicken, 1 lb.	1.69	1.29	31
Tea, 16 bags	1.09	.79	38
Cereal, frosted flakes, 20 oz.	3.12	2.25	39
Bacon, 1 lb.	2.99	2.09	43
Pork chops, 1 lb.	4.37	2.99	46
Disposable diapers, 12 overnight	5.65	3.59	57
Beef stew, canned, 24 oz.	3.40	2.15	58
Eggs, one dozen	1.85	1.15	61
Hamburger, 1 lb.	2.57	1.59	62
Coffee, freeze dried, 4 oz.	5.52	3.39	63
Orange drink mix, instant, 40.5 oz.	7.19	4.39	64
Cornmeal, yellow, 40 oz.	3.26	1.89	72
Steak, T-bone, 1 lb.	7.12	3.99	78
Coffee, regular grind, 32 oz.	11.00	5.95	85
Pork and beans, canned, 16 oz.	1.11	.59	88
Beef flavored instant rice, 8 oz.	1.50	.79	90
Kleenex, regular	2.23	1.15	94
Creamy peanut butter, 12 oz.	3.02	1.49	103
Sugar, granulated, 5 lb.	4.57	2.15	113
Evaporated milk, canned, 13 oz.	1.36	.63	116
Light bulbs, Soft White, 2 100-watt	2.88	1.29	123
Sweet peas, canned, 17 oz.	1.37	.57	140
Baking soda, 16 oz.	1.51	.63	140
Butter, 1 lb.	<u>5.33</u>	<u>2.09</u>	<u>155</u>
TOTAL	\$ 88.65	\$ 51.23	73
Blazo, one gallon	5.75	5.50	5
Diesel, one gallon	1.99	1.36	46
Gasoline, one gallon	2.25	1.43	57
Stove oil, 55-gallon drum	<u>109.45</u>	<u>61.16</u>	<u>79</u>
TOTAL	\$119.44	\$ 69.45	72
CUMULATIVE TOTAL	\$208.09	\$120.68	72

Adapted from: Worl and McMillan (1982:57, Fig. 5).

be taken into account when examining the unemployment situation in Kaktovik. Not unlike cash paying "jobs," these activities contribute to the economic base of a household. Temporary and seasonal employment such as local construction projects sponsored by the Borough or the village corporation and week on - week off employment at Prudhoe Bay and Kuparuk allow persons to hold cash providing jobs and pursue subsistence activities. Completion of North Slope Borough capital improvement projects may result in an increase in unemployment if other work opportunities do not become available (Alaska Consultants, Inc. 1983).

Facilities

In 1983, the following facilities were located in Kaktovik according to our records: an elementary and high school (serving 52 students, excluding kindergarten during the 1981-82 school year); two stores owned by the village corporation; a privately owned store; a U.S. post office; a North Slope Borough utilities office providing water delivery, sewage pick-up, electricity, and trash pick-up; a community fire station operated by a volunteer search and rescue team; a public health clinic; a community hall; a Presbyterian church; a Native corporation office; two bunkhouse/construction camp complexes; a local air taxi operation providing charter service year-round, and a public safety office building which contains two holding cells and an office for the two North Slope Borough public safety officers. Most households have telephones and television service is made available through an ALASCOM satellite.

During the period of this study in Kaktovik (1981-83) Wien Air Alaska and Air North flew to Barter Island but have since discontinued service. A locally based air taxi operator, Audi Air provides charter and scheduled service in the eastern and central Arctic. Under contract to the North Slope Borough, Cape Smythe Air Service flies to Barter Island once a week stopping at Deadhorse and Nuiqsut when returning to Barrow. The 5,000 foot gravel runway used by the community is operated by the U.S. Air Force and permission is required to use the runway. Barge service by Northern Transportation Company Limited and the DEW Line sealift have been used to transport fuel and freight to Kaktovik although ice conditions often hamper efforts to serve Kaktovik.

Gravel streets have recently been built adjacent to most buildings in the community allowing water delivery trucks and other wheeled vehicles to approach most dwellings. Streets are maintained by the North Slope Borough Public Works Department. Transportation in the community includes a half-dozen trucks, but three-wheelers and snowmachines are more common forms of transportation.

Economy

Kaktovik's current economy is a mixture of wage employment and subsistence activities. Households typically engage in both types of activities. Households require cash to pay for basic living expenses and to obtain equipment used to procure subsistence resources, such as snowmachines, boats, outboard motors, rifles, traps, ammunition, camping equipment, and gasoline. The wild resources provide food for the community and raw materials are used to produce goods such as mukluks,

Eskimo masks, parkas, and baleen baskets. The craft items are sold to provide more cash which is funneled back into subsistence gathering activities.

Fish, fowl, and mammals taken by the Kaktovik community contribute significantly to the local economy. Peterson (1978) estimated that 85 percent of Kaktovik households obtained all or most of their food supply by hunting, fishing, and gathering (Table 11). Locally harvested resources prevailed in the diet of Kaktovik households surveyed in 1981 (Table 12).

In 1982 over 92 percent of 369 north slope Inupiat households responding to a questionnaire still hunted and fished, and 86.5 percent reported that all or most of the meat they ate was obtained by hunting and fishing for locally available wildlife resources (Alaska Consultants, Inc. and Stephen Braund and Associates 1984). During 1981, caribou was the species which was reported harvested by the most respondents (Table 13). The estimated average annual resource harvest numbers, pounds, and percent of contribution based on a 20 year time period (1962-82) are presented in Table 14. Note that these estimates are based on very meager data and represent, at best, an informed guess as to what the 1962-82 average harvest might have been.

The seasonal round of subsistence harvesting activities in Kaktovik is depicted in Figure 5. This seasonal pattern is reported by residents to have remained stable over time since the establishment of the community, with one exception. The taking of bowhead whales did not begin until the early 1960s. However, whales may have been taken by Inupiat in the study area prior to the establishment of Kaktovik (Jacobson and Wentworth 1982).

TABLE 11. PROPORTION OF KAKTOVIK HOUSEHOLD FOOD SUPPLY
OBTAINED BY HUNTING, FISHING, AND GATHERING, 1978.

Amount	Percent
All	20
Most	65
Half	5
Some	5
None	5
No response	0

Source: Peterson (1978:42, Table 3.5)

TABLE 12. FREQUENCY OF CONSUMPTION OF MEATS FROM HUNTING AND
FISHING IN KAKTOVIK HOUSEHOLDS, 1982.

Frequency	Percent
Seven days per week	79.9
Six days per week	0.0
Five days per week	7.7
Four days per week	3.9
Three days per week	11.5
Two days per week	0.0
One day per week	0.0
Never or very seldom	0.0
TOTAL	100.0
(Number of respondents)	(26)

Adapted from: Alaska Consultants, Inc. and Stephen Braund and
Associates (1984:175, Table 102).

TABLE 13. RESOURCES MOST OFTEN HARVESTED BY KAKTOVIK RESIDENTS.

Species	Percent
Caribou	50.0
Walrus	0.0
Bowhead whale	15.4
Fish	19.2
Seal	0.0
Bearded seal	0.0
Game birds	7.7
Other	<u>7.7</u>
TOTAL	100.0
(Number of respondents)	(26)

Adapted from: Alaska Consultants, Inc. and Stephen Braund and Associates (1984:167, Table 96).

TABLE 14. KAKTOVIK'S ANNUAL SUBSISTENCE RESOURCE HARVESTS AVERAGED FOR THE PERIOD 1962-1982.

Species	Number	Utilizable Weight		Percentage of Total Village Harvest
		(kg)	(lbs)	
Bowhead whale	1	8,900	19,647	27.5
Caribou	75	5,250	11,589	16.2
Walrus	3	1,050	2,318	3.2
Bearded seal	30	2,400	5,298	7.4
Hair seal	70	1,330	2,936	4.1
Belukha whale	5	2,000	4,415	6.2
Polar bear	4	900	1,987	2.8
Moose	5	1,125	2,483	3.5
Dall sheep	27	1,227	2,709	3.8
Reindeer	0	0	0	0.0
Small game	--	136	300	0.4
Birds	--	1,045	2,307	3.2
Fish	--	7,045	15,551	21.7
Vegetation	No data	No data	No data	No data
Total Harvest		32,408	71,540	100.0
Per capita/per year		219	483	

Adapted from: Stoker (1983:A7, Table A1).

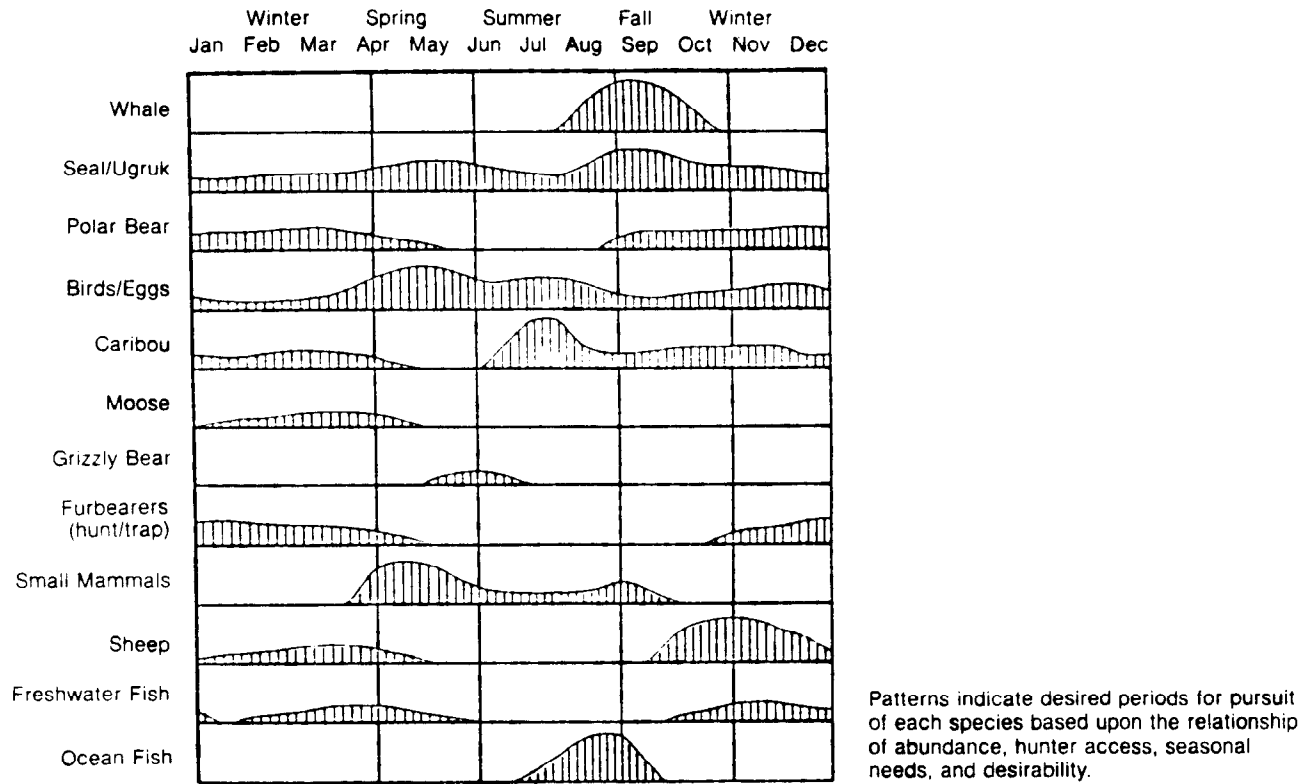


Fig. 5. Kaktovik seasonal round of subsistence harvesting.
 Source: Jacobson and Wentworth (1982:29; Figure 6.)

Over the years as the community of Kaktovik has grown, residents have maintained their ties to the land. The same resources sought some sixty years ago when Kaktovik was first settled are still sought today though the emphasis on furbearer trapping during mid-winter has decreased substantially (Pedersen unpublished field notes 1980/81). Employment opportunities have changed over time and increased wage labor coupled with North Slope Borough capital improvement projects have enabled residents to raise their material standard of living. Although technology has altered the methods used to procure local resources, subsistence caught fish and game continue to contribute in a major way to the local economy. Subsistence activities which contribute to a household's or community's economic well-being are not restricted to working adults. Persons too young to enter the wage-labor market and individuals retired from the work force may make substantial contributions to a household's food needs. As experienced hunters and fishers teach the young the skills of hunting, fishing, and gathering, the subsistence life-way is maintained in another generation of community members.

CHAPTER 5

FINDINGS

USE AREAS FOR ALL RESOURCES

Overall size and location

The minimum estimate of the community subsistence use area for the period 1923 to 1983 based on Map 9 (Appendix 2) was 11,406 square miles (Table 6). Of this, about 23 percent (2,600 square miles) represents coastal and near coastal waters in the Beaufort Sea and 77 percent (8,900 square miles) represents the onshore terrestrial component. Based on our information, it appears that much of the delineated area is used annually with a gradually decreasing number of households utilizing remote places as evidenced in Map 11 (Appendix 2).

Comparison of overall size with other studies' findings

The minimum estimate for the community's use area is similar to information developed for Kaktovik in 1978 (Pedersen 1979) and the early 1970s (Inupiat of the Arctic Slope, Village and Regional Corporations, and the Arctic Environmental Information and Data Center 1974-75). On the basis of 11 biographies from individual hunters and their households, developed by Wentworth in 1978, Pedersen (1979) estimated that the minimum subsistence resource area for Kaktovik was near 13,700 square miles. This figure was adjusted downward during this study, for

review of the 1978 data revealed inclusion of land use, by families not yet settled permanently in Kaktovik, on the upper Sagavanirktok River as well as in the mountainous area between the Kongakut and Aichilik rivers. With these two deletions, the area extent information developed in 1978 was very close to the 1983 estimate. Households judged particularly active in subsistence activities formed the basis for the earlier data base as they were thought to provide the best estimate of the minimum area. That assumption was verified with the additional research carried out.

The estimate of Kaktovik's "area of interest" by AEIDC in 1974 is also very close to findings of this study. Both the areal estimate, about 12,200 square miles, and the configuration of the community biography approximate the results of this study. The major differences between the products are that the AEIDC map is vague as to the time frame of the mapped information, number of resource categories utilized, extent of community participation, and actual question(s) asked by AEIDC staff in developing the information. Based on methods used in and results from this study, it would appear that the AEIDC map depicts spatial data on subsistence land use for all resource categories used during the lifetimes of community members.

Sonnenfeld (1957) reported on the spatial extent and dimensions of Barrow's "trapping--hunting--fishing area" in the late 1940s. The information base used to construct his map clearly includes data from Kaktovik residents, though they have been included under the heading of Barrow users. The Kaktovik community use area is not treated as a separate entity in Sonnenfeld's report, but has been merged with Barrow and several intervening settlements and camps in existence at the time

the map was constructed. In all, the Barrow use area is portrayed as being over 54,000 square miles, covering all areas between the United States and Canadian border and the middle of Peard Bay to the crest of the Brooks Range. The spatial information from Inupiat of the Arctic Slope, Village and Regional Corporations, and AEIDC (1974-75), Pedersen (1979), and the present study all show considerable overlap and fit well into the area delineated in the eastern portion of the North Slope on Sonnenfeld's map.

The similarities of Sonnenfeld's use area from the late 1940s with the 1970s and 80s use area suggest that Kaktovik residents have utilized the same general terrestrial and near shore marine areas of the eastern North Slope in support of their subsistence based economy for at least the past 35 years. This apparent stability in the size of Kaktovik's subsistence use area has occurred during a period when Kaktovik's population increased from ca. 50 to 60 to ca. 160 to 180 (see Figure 3). It may be that Kaktovik's defined use area has had the capacity to accommodate an increasing number of users because the area's resources were not fully utilized in the past. Additionally, the incorporation of imported food resources has likely tended to decrease the overall per capita harvest of local resources and, in that manner, also allowed for increased participation. Another reasonable explanation may be that the key subsistence resources have been gradually increasing in abundance and availability within the defined resource area to match the increasing demand.

As mentioned above, the bowhead whale resource was not pursued by Kaktovik residents until 1964. The addition of this large source of subsistence food, within a comparatively small geographic area (Map 2,

Appendix 2) already utilized for other marine mammals, may in part also explain why the local subsistence production area has not appeared to have increased over time despite the gradually increasing community population. Other explanations may exist. Suffice it to say that some form of relationship exists among local and non-local resource availability, which leads to the appearance that the minimum extent of Kaktovik's subsistence use area has not changed appreciably for some time, at least not since the early 1970s.

Use area territoriality

Kaktovik subsistence users can be said to occupy a definable territory within which all community based harvest of locally occurring renewable resources take place (Map 9, Appendix 2). The territory is defended and measures are voluntarily implemented to conserve and protect the locally available renewable resources in the face of rapid industrial development nearby. However, full recognition that the territory is not a closed self-sustaining system exists. A considerable effort is expended by Kaktovik residents to interact with private, state, and federal agencies as well as with other subsistence and sport users to protect their fish and wildlife resource interests, even those at a distance from their territory.

Kaktovik residents take an active interest in what goes on within and near their use area. This is well evidenced in the keen interest and concern residents have shown over issues ranging from oil and gas exploration in their whaling and caribou hunting areas to the passage of certain hunting and fishing regulations which apply to their area, as

well as certain conservation efforts aimed at protecting the Porcupine Caribou Herd's habitat in both Canada and Alaska. The importance, socially and nutritionally, of the barter and exchange of resources between Kaktovik and other North Slope communities is acknowledged and it is clearly understood that the health of nearby, as well as distant, resource areas is of importance to keep the basis for exchange alive. The community is represented on the Eastern Arctic Fish and Game Advisory Committee as well as the North Slope Borough Fish and Game Management Committee, North Slope Borough Planning Commission, and a multitude of other forums. Residents of Kaktovik speak up not only for the resources of their area but also for the habitat. On many an occasion, they clearly indicate that they are territorial, in the sense that they defend their resource area as best as they can with the limited means available. A goal commonly expressed by community leaders in this connection is the desire to ensure that the option for people to live entirely off the land is preserved for all future generations.

Additionally, some resources occurring within the Kaktovik subsistence resource area are often "managed" by the local hunters. For instance, although Kaktovik hunters have in recent years had access to permits for 50 sheep annually, since this study began in Kaktovik hunters have taken about half that number of sheep per year (Pedersen and Coffing, unpublished field notes 1982 and 1984). The reason is not that people have tried and failed, but rather that hunters say the harvest of other resources has been sufficient. Therefore, the need to exploit the entire sheep allocation has not been necessary. As a consequence, some residents argue, sheep are now able to propagate more than if the allocation had been taken. Sheep are "money in the bank"

for a day when they are really needed and in numbers perhaps exceeding the present annual harvest limit. The same reasoning applies to other resources formerly harvested in greater numbers than today, including bearded and ringed seals, ground squirrels, several species of fish, some birds, and polar bear.

Use area overlap with other harvesters

Kaktovik's community use area overlaps with that of only one other Alaskan community. Nuiqsut, a small community located about 200 miles west of Kaktovik, shares a portion of the use area located in the coastal region between the mouth of the Sadlerochit River in the east and Beechey Point in the west (Pedersen 1979). This is evidence that there are no strict, exclusive territorial boundaries between community use areas either. Information gathered, but not reported here, indicates that there is also an overlap in use area with the Canadian Inuit community of Aklavik in areas east of the international boundary (Pedersen and Coffing, unpublished field maps 1982 and 1983, Freeman 1976). There is, thus, both national and international overlap in community resource use areas in northeastern Alaska.

A third overlapping use area is that of big game guides, their clients, and non-guided sport hunters, who utilize portions of Kaktovik's use area. This overlapping land use usually occurs without friction or incident. In fact, during the spring musk ox hunt, which is by drawing permit only, a few Kaktovik hunters act as transportation-providers to non-local hunters. Rarely, however, do local and non-local resource users meet in the field. The sport hunters are usually found

in the mountains during early fall, before Kaktovik hunters begin to frequent the area (usually in late fall after the first few good snowfalls when snowmachine travel again becomes possible).

Factors influencing size and boundaries

To round off the discussion of community use area information, it is worthwhile to briefly consider an additional concept which helps shed light on Kaktovik land use. Jochim (1981:105) stated "the most generally valid statement [that] can be made is that niche width tends to vary inversely with subsistence security. Wide niches or generalist orientations may be increasingly advantageous as security decreases." In the case of Kaktovik subsistence, it is clear that a generalist orientation is, on the whole, in effect. Of locally harvested resources, the diet breadth covers over 50 recorded species (Table 7) and likely contains many more that are either uncommon or rarely taken. Add to this the foods available through inter-community sharing and bartering, as well as the imported foods available in local stores, and a rather wide niche, in terms of diet breadth, begins to take shape. Thus, indications are that, over time, subsistence security is low in the area exploited by Kaktovik residents. This is not really a new finding for the historical and archaeological records, for the area amply demonstrates that there have been dramatic cycles in the abundance and distribution of major subsistence resources in northeast Alaska, with resultant adjustments in the distribution and numbers of people in the area.

Overall, biotic productivity of northeast Alaska is also comparatively low. This generally leads to a scarcity of predators and broad predator niche--a small group of hunters utilizing a large resource area and a variety of resources.

USE AREAS FOR PARTICULAR RESOURCES

Relative size and locations of each resource category

Community land use maps are presented in Maps 1-8. Each community map represents that area which households have accessed for the purpose of hunting, fishing, trapping, or gathering for that specific resource category over time. The area calculation for each land use category is presented in Table 6.

Smallest of all community resource use areas, ranking 15th, is that used for walrus hunting which covers 651 square miles. The relatively small number of households (six in all; Table 5) reporting hunting walrus is related to the uncommon appearance of walrus in the Kaktovik area. Walrus are only harvested by hunters if sighted while out in search of other resources during the ice-free season, and few have ever been taken. This is clearly reflected in the limited role that walrus play in the annual resource harvest budget--less than three percent per annum averaged for the period 1962-1982 (Alaska Consultants, Inc. and Stephen Braund and Associates 1984). Jacobson and Wentworth (1982) commented on the limited number of walrus that hunters in Kaktovik have taken since the 1950s.

The largest community resource use area is that used for caribou hunting. It covers 6,852 square miles of terrestrial and coastal lagoon/barrier island area, extends 180 miles along the coast, and goes as far as 70 miles inland. Nearly all terrestrial land use categories are contained within the caribou use area, notable exceptions being the sheep and small mammal resource categories. Caribou hunting takes Kaktovik hunters into a variety of habitats where they encounter a wide variety of resources except those which require highly specialized habitats.

Local participation in land use associated with caribou hunting is high, ranking second (Table 15). That caribou play an important role in the local subsistence economy is an implication of this finding, which is supported by recent quantitative and comparative harvest estimates for Kaktovik residents. Caribou ranked third in terms of percentage weight contribution to the average village harvest for the period from 1962 to 1982 (Alaska Consultants, Inc. and Stephen Braund and Associates 1984).

It should be pointed out that size of a particular use area is not necessarily indicative of the contribution that the resource category makes to the annual subsistence economy. The resource category "whales" provides a good example of this. In this study, the community use area for "whaling," which largely focuses on bowhead whales, was estimated at 1,626 square miles, seventh in size among all resources. Yet whales, ranked first among local resources in terms of their average net contribution to the local subsistence economy in the period 1962 to 1982 (Alaska Consultants, Inc. and Stephen Braund and Associates 1984). On the one hand, whales are a good example of a resource harvested in a

TABLE 15. PERCENT OF HOUSEHOLDS HARVESTING PARTICULAR RESOURCE CATEGORIES, CIRCA 1923-1983.

Resource Category	Number of HHs (n = 21)	Percent	Rank
Fish	21	100.0	1
Sheep	20	95.0	2
Wildfowl	20	95.0	2
Caribou	20	95.0	2
Seals	19	90.0	3
Small Mammals	18	86.0	4
Polar bear	18	86.0	4
Trapping furbearers	16	76.0	5
Moose	16	76.0	5
Vegetation	15	71.0	6
Whales	14	67.0	7
Hunting furbearers	12	57.0	8
Grizzly bear	11	52.0	9
Walrus	6	29.0	10
Fuel/Structural Materials	5	24.0	11

rather confined geographic area which contributes in a considerable way to the local economy. On the other hand, it is incorrect to conclude that the whales use area, because of the sizable harvest contribution it makes to the local subsistence economy, is the most important resource use area for Kaktovik hunters. Just because an area produces a resource that contributes significantly to the local resource economy over time does not mean that it necessarily does so over a shorter time period such as every year.

Subsistence harvesting of local resources is not a static system that year after year produces the same resource yields in the same place, at the same time of the year. In fact, it appears to be almost the reverse. Informants stated that rarely was the harvest level of even one resource for one household the same from one year to the next, and even more rarely would the resource harvest area be the same. Furthermore, it was stated that the set of resources harvested by a household would rarely be the same year after year.

Fishing is another good example of a subsistence activity which occurs in fairly small locales over a widely scattered area, yet is participated in by nearly everyone and which contributes much to the local economy over time. In Table 6, the land use category "fish" is ranked ninth, calculated to occupy 1,387 square miles of coastal, riverine, and lacustrine habitats. This resource category was utilized by all 21 households interviewed in Kaktovik (Table 5).

Fishing occurs in one large widespread and numerous smaller, discretely located areas, both along the coast and inland (Map 4). Based on the ranking of the resource area, it would not appear to be overly significant in economic terms. However, the large number of respondents

to this category indicates that there may be some greater significance attached to the land use activity than what is first apparent. Fish ranked second in volume of harvested resources in the time period 1962 to 1982, contributing 21.7 percent of the community harvest for the period (Alaska Consultants, Inc. and Stephen Braund and Associates 1984).

There is no simple generalization that conveniently describes the relationship between size of a resource-specific community land use area and its contribution to the local subsistence economy in Kaktovik. Similarly, the participation rate of hunters in the hunting or gathering of the resource in the community does not necessarily tell much about its economic contribution. The data necessary to permit such basic statements to be made are longitudinal harvest information. Even in the possession of these data, extreme care must be taken to avoid assuming that areas or resources identified as contributing in a major way to the total subsistence economy are the most important. There are several points worth considering that favor such a conservative approach. The first is that importance must be defined in terms that are culturally relevant. All too often, values assigned to the land and resource use among Inupiat hunters are not the same as those of the non-Inupiat managers or planners. If land or resource use decisions are made without considering culturally relevant factors, the outcome can have potentially grave consequences for those who depend on the resources. This serious problem is pointed out and discussed in a recent contract report to the Alaska OCS Office (Institute of Social and Economic Research 1982).

The second point is that community land and resource use dimensions change over time. Even though the current data base does not have much of a longitudinal component, relative to the history of the Inupiat, it contains some useful information on this matter. The taking of bowhead whales was not carried out in modern Kaktovik until the early 1960s (Jacobson and Wentworth 1982). There was considerable whaling activity in the area during the late 1800s and archaeological evidence on Barter Island indicates that bowhead whales were utilized by early inhabitants of the island (Libbey 1982). Temporal cycles in the use of certain resources may be much greater than what present data bases indicate.

One final point is that importance could justifiably be imparted on an area and a resource (or set of resources) which is (are) not utilized much under "normal" circumstances, but which actually provide the basis for household or community survival when other major resources categories fail. Dall sheep, some fish species, seals, and small mammals appear to be examples of such "emergency" resources. In fact, some Kaktovik hunters even consider imported foods in their local store as emergency food that could pull residents through a collapse in the availability of "normal" subsistence resources.

USE AREAS FOR HOUSEHOLDS

Household participation rates for resources

The average number of resource categories utilized by community households in the sample (n = 21) was 11.05 and ranged from 5 to 21 (Table 5). Resource categories most commonly reported as having been

harvested over time were fish (100%), wildfowl (95%), sheep (95%), caribou (95%), seals (90%), polar bear (86%), and small mammals (86%) (Table 15). Least commonly reported was use of fuel and structural materials (24%). There was no reported use of invertebrates in the sample. Participation rates in harvesting local resources are high, as there are only two of fifteen resource categories not harvested by more than 50% of the interviewed households. Big game species (caribou, moose, sheep, and grizzly bear) are harvested by more than half of the community's households, as are all marine mammals with the exception of walrus. The reason for the participation rate in harvesting of walrus being so low (29% of sampled households) can be attributed to their infrequent appearance in the Kaktovik area. Furthermore, they only appear in mid-late fall when it is mainly whaling crews that ply the waters around Kaktovik. As can be seen in Table 15, 67% of the households sampled participate in whaling and of these households, slightly less than half have hunted walrus. This is, in itself, not a really low participation rate, for it ends up being near the fifty percent level when considering the whale hunting households as the maximum participation level possible for walrus hunting. The low participation rate for fuel and structural materials may be the result of a poor question rather than there being so few households utilizing this resource category. Field observations indicate that all households utilize driftwood or dry willows for firewood when camping. It is possible that some respondents thought we asked if they had ever used locally harvested or found wood in the construction of cabins or small permanent shelters. During the study period, there were very few of

these structures within Kaktovik's area of interest, which may help explain the low participation level recorded.

In general, it is evident that household participation rates in harvesting locally available resources is high. Almost all households in the community are involved in some fashion in the harvest of locally available wild resources; certainly an indicator of the character of the community's economy.

Household use areas

Overlap and non-overlap areas

Based on Map 11, it was possible to determine in a general sense where household areas overlapped the most over time. This is not to say, however, that these areas are necessarily the most important areas to Kaktovik subsistence users. Overlapping of household biographies appears considerable along the coast east of Kaktovik to Demarcation Point and west to Flaxman Island and to the south of the community along the Jago, Okpilak, Hulahula, Sadlerochit, and Canning rivers up to a distance of 80 miles inland. Household biographies also overlap considerably seaward (to the north, northeast, and northwest of Barter Island) up to 30 miles out.

The considerable overlap of the household biographies is an indicator that, on the whole, the subsistence land use territory for Kaktovik is not organized into exclusive household use areas (such as a privatized land ownership system). There may be mechanisms that separate areas used by hunters from different households over time, but

they are not possible to glean from these data. Field observations on this matter failed to detect any household territories used for fishing. Even access to the smallest productive winter fishing sites along rivers did not appear to be controlled by households. Fishing sites could be used by all members of the community, regardless of household membership.

Four annual biographies from selected households, covering the period from summer 1980 to summer 1981, serve to further illustrate two points: the range of variability in the size of household resource areas, and the amount of overlap of use areas (Fig. 6). Much of Kaktovik's delineated resource use area is used on an annual basis. There are households in Kaktovik which travel long distances away from the community to hunt and fish in the same places every year according to informants.

There is evidently substantial overlap among areas used on an annual basis by Kaktovik households (Fig. 6). Some segregation between households in the extreme easterly and westerly dimensions was observed in the community biography (Map 11, Appendix 2). There appear to be no exclusive household territories and household use areas overlap considerably both over time as well as in time.

Comparative data from nearby communities at the annual or long-term levels are lacking. Only two references, Thomas (1982) for Shaktoolik, Alaska and Brody (1982) for several communities British Columbia, Canada, provide household level information for comparison. In both cases, the aggregate data appear similar to the Kaktovik information in that individual household use areas overlap to such an extent that only small peripheral areas are used by a few or a single household.

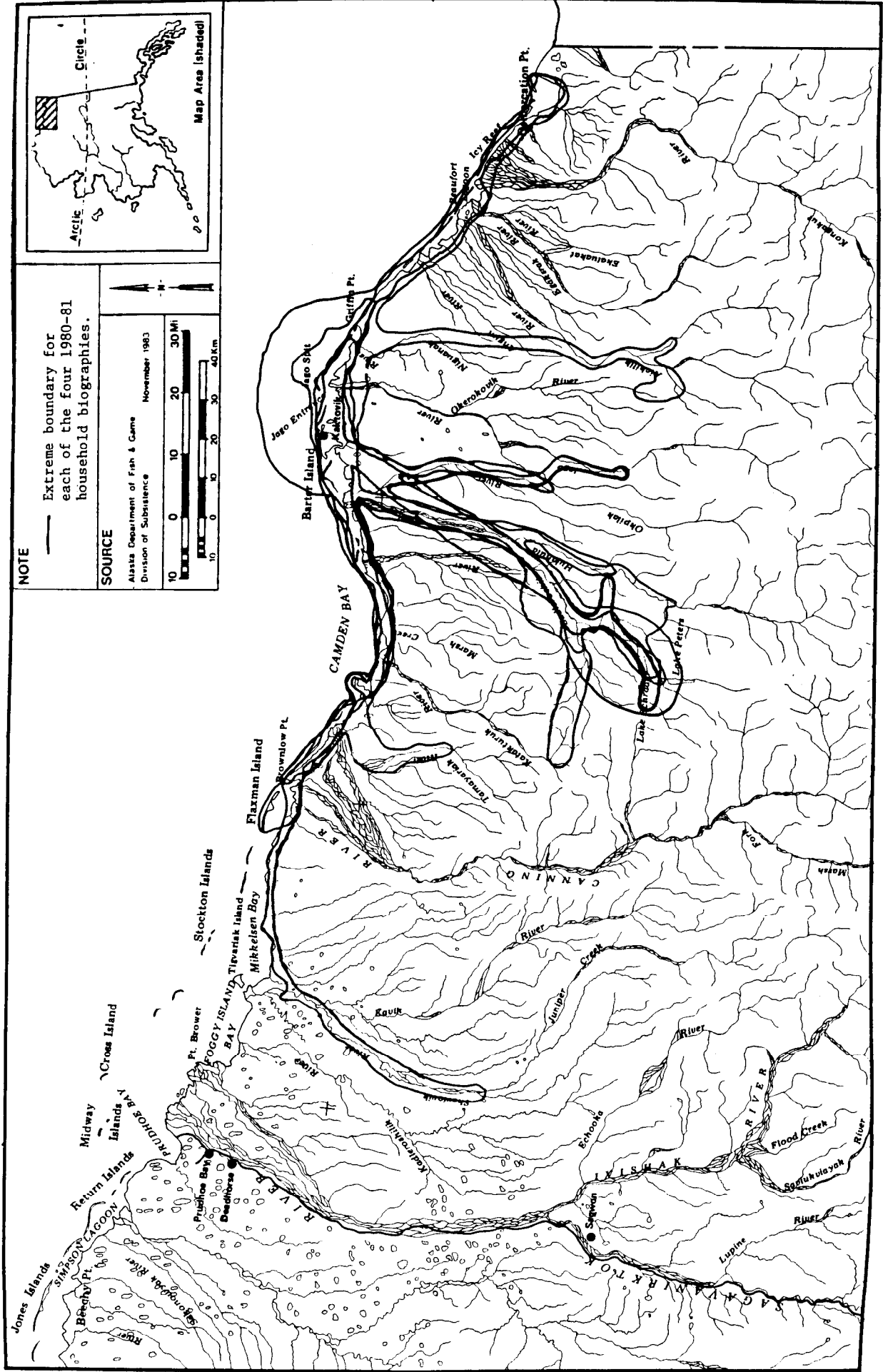


Fig. 6. Four annual household biographies from 1980-1981.

However, one should not assume that areas used by only a few households are less important to the community. Though a household may be utilizing an area used by few or no other households, there is an existing resource distribution mechanism in the community which ensures that harvested resources are shared widely with other households in the community (Worl and McMillan 1982). Economic interdependence exists among households not only in the community itself but also in other communities. Some resources are shared or bartered to relatives or trading partners in distant communities as well. The circle of households, influenced by access to and the productivity of Kaktovik's use area, is thus widened considerably. Thus, management decisions made about lands or resources within Kaktovik's use area are bound to have effects that are felt by the entire community and across the entire North Slope region.

None of the household biographies collected were entirely unique; that is, each household shared some part of its area with another household. Thus, over time at least, there do not seem to be any exclusive territories among Kaktovik resident households interviewed. Since all households considered particularly active in subsistence activities as well as other perhaps less active households were interviewed, there is little chance that a separate household territory is to be found among residents. As this study did not investigate closely the interaction between households with respect to territoriality, the possibility does exist that some limited form of territoriality is practiced for certain resources at certain times. On the whole, however, it appears that the residents all share the same

basic resource area, leading to greater subsistence security for the entire community.

In Map 11, the extreme boundaries of each of 21 household land use biographies have been aggregated. Clearly, considerable overlap exists among individual biographies. Only at the extreme fringes of the overall use area do there seem to be areas utilized by only one household.

Upon close examination of Map 11, it is possible to gain some appreciation for those areas which are used by all interviewed households. The greatest overlap is in the immediate vicinity of Kaktovik, for this is where most household subsistence activities originate. The entire coastline from Brownlow Point in the west to Demarcation Point in the east is heavily overlapped as are the Canning, Sadlerochit, Hulahula, Okpilak, and Jago river drainages. The observation that these areas sustain a considerable number of Kaktovik households must, however, not be equated with these areas being either the most intensively used or where the most important hunting, fishing, or gathering areas necessarily lie. The first step toward this sort of analysis has been carried out for caribou, using information from this report together with other information (Pedersen and Coffing 1984, Coffing and Pedersen 1985).

The aggregate household biographies show that there is no gradual decrease in the number of households with increasing distance away from Kaktovik. To the east and south, the gradient going from nearly all households to one is very steep, (occurring in a matter of just a few miles). In the westerly direction, the gradient is fairly steep in the Brownlow Point/Flaxman Island area and tapers off to one household in a

matter of about 25 miles. The gradual northward gradient may be an artifact of the mapping methodology as there are no reliable reference points that informants can utilize in approximating their extreme northern (seaward) boundary. It is possible that, with more refined interview methods for delineation of marine areas, the gradient would be much steeper than depicted here.

Size of household areas

Analysis of the 21 household biographies reveals that there is a considerable variation in the size of the area and number of resources utilized over time. The smallest complete biography contains seven resource categories (wildfowl, fish, caribou, furbearer trapping, seals, small mammals, and vegetation), covers a minimum area of about 846 square miles, and extends mainly south and west of Kaktovik with a small nearshore component (Fig. 7). The use area is concentrated on five river drainages west of Kaktovik (Hulahula, Sadlerochit, Tamayariak, Canning, and Shaviovik rivers) and extends up to 60 miles inland on some of the drainages. The largest biography covers a minimum of 6,000 square miles and contains 12 resource categories (wildfowl, fish, moose, caribou, polar bear, sheep, small mammals, furbearer trapping, whales, seals, wood, and vegetation) (Fig. 7). This use area extends 10 to 15 miles into the Beaufort Sea near Barter Island, follows the coast eastward well into Canada (extent not depicted), penetrates up to 70 miles inland to the south of Barter Island (along the Hulahula River), and extends over 80 miles westward along the coast to Tigvariak Island. The area is not confined to major river valleys, but covers the entire

coastal plain and foothills provinces from the Aichilik River to the upper reaches of the Shaviovik River. This one household's use area covers over half (52 percent) of the minimum use area calculated for the entire community of Kaktovik.

The socioeconomic characteristics of the two households may be related to their use area characteristics. The first household consisted of an elderly woman with no direct dependents, whereas the second was a large, relatively young household which very actively pursues subsistence resources. Based on casual observations, the degree of dependence on subsistence resources was high for both households.

OTHER LAND USE MEASURES AND INDICATORS OF USE

Place Names

The distribution of Kaktovik place names (Map 12) supports the finding that the community's overall land use area is quite extensive (as evidenced by the community land use maps; Maps 1-11). Not only are place names found throughout the land use area, but place name distribution extends outside of the line delineating the extreme boundary of community land use. These outlying place names may indicate that at some time community members traveled outside of the community's overall land use area (Map 11). The names may be remnants of a time when people lived away from Barter Island in pursuit of subsistence resources or when extended trips were made in order to trade or visit friends. Knowledge of these place names persists in the minds of present community

land users. Expansion of the community land use area in the future, to include those known sites, would not be surprising.

Place names are located throughout the community's land use area though their distribution appears heavier along the coast than inland. Approximately 63 percent (106) of the 167 places in Alaska are located near the coast. The western-, eastern-, and northernmost place names are all associated with coastal sites. Place names along the coast appear to be evenly distributed except for a notable concentration in the Barter Island area.

Sixty-one place names (37 percent) were located at inland sites, the majority of which are located along some river or waterway. The southernmost place name on the upper Hulahula is approximately 70 miles from the coastline and is near the southern boundary of community land use area. The majority of the inland place name sites are located near the Sadlerochit, Hulahula, and Kongakut rivers.

Fifteen place names (9 percent) are located outside of the community's overall land use area. Thirteen of these are coastal sites located near the western edge of the community land use area and two are inland sites located on the upper Sagavanirktok and Ivishak rivers.

Of 167 places, names were not known for 13 (8 percent), whereas several places had two or three place names. The 154 places with names account for a total of 163 place names.

Place names which appear in Map 12 (Appendix 2) were classified according to Ritter (1976). His classification scheme developed for Kutchin names is general enough for developing an understanding of the various types and categories of place names used by Kaktovik residents. The classification system provides some insight into the cultural

geography of the Kaktovik Inupiat. Ritter's classification system allows placement of names into one of ten categories (Table 15). While certain place names could be placed into more than one category, they have been categorized according to their primary significance.

Place Name Categories

Names Which Describe Fauna or Faunal Activities

This category contains ten place names which refer to fish, game, or their habitat and subsistence activities associated with local faunal resources. For instance, sirraq ("place where polar bears come to cover themselves up with snow to have their cubs") identifies a place where polar bears often locate maternity dens.

Sallitchit Iqualutch ("most northern fish hole") describes a popular fishing area on the Hulahula River which is the most northerly of the fishing spots located on the river.

Niaquqtuguiqsaagvik ("place where the heads are eaten for the last time") relates to an area located near Sadlerochit Springs. There, people traveling north to the coast would stop to eat the heads of caribou which they had harvested, so that the heads would not have to be carried all the way to the coast.

Names Associated with Particular Individuals

Some sites bear the names of individuals who at one time lived in the area. Often such place names indicate that a particular individual

TABLE 15. PLACE NAME CLASSIFICATION

Category	Number	Percent of Total
Fauna or faunal activities	10	6
Particular individuals	17	10
Flora	5	3
Material culture	31	19
Historical events	1	1
Mythological events	0	0
Descriptive names	56	34
Metaphorical names	7	4
Borrowed names	11	7
Unanalyzable or opaque names	<u>25</u>	15
Totals	163	

Note: Names were not known for 13 places.

had a house or a camp at a particular spot, that a person's grave was located near the site, or that an event took place which involved a certain person.

Kisium Inaa ("Kisik's place") located in Foggy Island Bay is an old, well-known site once used for camping by the Wood's (Kisik) family, now living in Nuiqsut.

Patkutaq ("Paul Patkutaq's place") is a place name of a site located near the mouth of Nataroarok Creek where Paul Patkutaq, a relative of many Kaktovik residents, once had a house.

Pivsuk located near Kaktovik is named after an individual (Pipsuk) whose grave is located on this point. One legend has it that Kaktovik got its name as a result of Pipsuk's body being recovered by a seining net.

Names Associated with Flora

Five place names are directly related to flora. Gathering certain flora, especially wood or fuel such as willow, continue to be an important part of most camping activities.

Ninjulit ("place with cottonwood trees") on the upper Ivishak indicates a place when cottonwood trees are known to grow.

Uqpiuruuraq ("place of willows") is a place name given to a creek where many willows are known to grow.

Uqpiilaq Lake ("willowless lake") is the name of a lake located near a river having the same name and along which comparatively few willows are found.

Names Associated with Material Culture

Included in this category are names which refer to tools, ice cellars, sod houses, or activities associated with subsistence pursuits. This category was comparatively large, containing 31 place names.

Nullaagavik ("place to camp") received its name because it is a good camping place where there is an abundance of firewood.

Atchalik ("place with skin tents") is a historic site with at least six house ruins and, as the name implies, is associated with the occurrence of skin tents.

Names Associated with Historical Events

Though a small category, names included in this category are names which reflect local historical events. Itqiliagiaq ("on the way to Itqiliq") located near Sunset Pass in the Sadlerochit Mountains may be a place name which reflects a time when there was trade activity between Indians living inland and coastal Eskimo groups.

Names Associated with Mythological Events

This was one category for which the authors did not have a single place name. Additional and continued investigation into the history and origin of certain place names could result in both currently recorded place names and new place names being added to this category.

Purely Descriptive Names

This category is fairly general and contains names of which little can be said, except that they describe some physical features in a tangible manner. Names describing rivers, lakes, islands, topographic,

and geologic features of the land and ocean environment are included here.

Paaqteagiik ("two rivers coming together") describes a place on the Kongakut River where two streams enter the river from opposite sides.

Kaŋi ("end") describes a location on the upper Hulahula River where the river valley makes a sharp bend to the east, marking the southern end of the valley.

Suvilik ("flowing regularly") refers to the location of a spring near the Canning River which flows year-round and is the site of a hunting and fishing camp for Kaktovik residents.

Metaphorical Names

Seven names were placed in this category. Examples of metaphorical names included Igniq ("fire"). Located near the Sadlerochit Mountains, the Ignek Valley appears quite red. During Leffingwell's work in the area in the early 1900s, natives assured him that smoke was rising from this valley when their ancestors came into the area a few years ago.

Pattaktuq ("he, she, it is spanking") refers to a site near Demarcation Point where the shore is pounded by the surf which sounds as if someone is being spanked or slapped.

Qinaq, ("nose") is a hill located on the northern edge of the Brooks Range between the Sadlerochit and Hulahula rivers that resembles a person's nose.

Names Borrowed From Other Languages

Some names appear on the place name map which are not Inupiat names. Point Gordon and Point Hopson are place names of sites which were names for particular individuals but for which there is also no recorded Inupiaq name, thus, the use of the English place names. Beechey Point, another well-known site best known by this name, was once a prominent settlement and has been visited by many present-day Kaktovik residents.

Unanalyzable or Opaque Names

Several names appeared to have no easily recognizable or obvious meaning and did not avail themselves to clear, satisfactory translations. Continued awareness of the need to update and expand place name information may result in the expansion of our knowledge about certain place names and place name sites and their meaning.

Although the community's land use maps illustrate land use from 1923 to 1983, the place names distribution map includes knowledge about places which have been used by people for generations, including the time when people were scattered along the coast of northeastern Alaska and western Canada. This may explain why some place names are located outside of the community's land use area. The majority (92 percent) do fall within the total land use boundary.

Systematic information to indicate the frequency of use for each place name site was not collected. Based on observation and information shared with the authors during interviews, it appears that the most

distant places receive less visitation than do those more locally situated. It also appears that the more distant places received more frequent use in times past, when people traveled by dog team. This is a generalization, however, and it certainly cannot be considered absolute for all distant place name sites. Before more frequent commercial airplane use and the introduction of snowmachines in the early 1960s, travel back and forth between Kaktovik and other communities (to the west such as Barrow and east such as Aklavik or Inuvik) was made by boat or dog team. These methods required that travelers spend several days enroute, stopping at places to rest and procure subsistence resources. Today, travel to and from Barrow or Aklavik is usually made by airplane. Consequently, place name sites enroute are not frequented as often by ground travel. However, such flights are usually over roughly the same routes used when people traveled by boat or dog team. Local resource experts who are familiar with the land often visually inspect and refamiliarize themselves with place name sites known to them. Places and sites of cultural importance are pointed out and information is often shared about a particular site. Game abundance and distribution may be noted enroute and associated with a particular place or place name. Information relating to travel conditions such as the amount of snow cover, open water, overflow on the rivers, and conditions along the coast are generally observed in terms of their proximity to a particular place name site.

Such information helps subsistence users to maximize their time and resources when searching various areas, while at the same time keeping the significance of particular sites alive in the memory of users. This, in turn, facilitates the transmittal of site-related information

to other users, which aids them in their subsistence pursuits. Much of the land area utilized by the community of Kaktovik is within the Arctic National Wildlife Refuge or within the boundaries of several state or federal oil and gas lease sale areas. Increased exploration and potential development of oil and gas resources on state, federal, and Native corporation land is a reality which could impact subsistence use of the community's present land use area. Information derived from local people about place names and the sites significance could prove quite helpful in identifying important fish and game habitat, such as fish overwintering areas, mineral licks, migration routes, the distribution and abundance of various types of flora, and topographic or geologic features of the land.

Knowledge of local land use patterns revealed by place names should help land managers better understand both the land and the people who live in the area. This enhanced understanding should benefit not only the resource but also the people who use the resources. It also fosters better communication between land managers and land users when developing land use and wildlife management plans.

Native Allotments

Location and distribution of Native allotment selections made by Kaktovik Inupiat Corporation members are shown in Map 13, Appendix 2. Native allotments were located as far as 58 miles west, 62 miles east, and 78 miles south of Kaktovik.

A total of 116 allotments associated with 42 individuals were located within the community's overall land use area. Eighty-two (71

percent) were located near the coast, while the remaining 34 were situated more than 20 miles inland. All but one of the inland allotments were located near a river, lake, or stream. Fifty-nine (51 percent) Native allotments were located within 25 miles of Kaktovik.

U.S. Bureau of Land Management Native allotment case files identified up to 14 land use characteristics of Native allotment selected lands using attributes such as hunting, fishing, and berry picking. Attributes most often listed with the Native allotment applications included hunting (115), fishing (111), and camping (98). Most Native allotments had more than one attribute associated with them. The frequency of various attribute combinations among all Native allotments appears in Figure 8. The percentage of allotments with specific attributes is shown in Table 17.

Comparison of Native allotment locations (Map 13, Appendix 2) with the place name locations (Map 12, Appendix 2) allowed the Native allotments to be categorized in a similar fashion as was done with the place names. Eighty-three (72 percent) of the Native allotments were adjacent to place names sites. Of these 83 allotments, 26 (31 percent) were adjacent to place names associated with material culture, 15 were adjacent to place names associated with fauna, faunal activities, or flora, and 7 were near place name sites categorized as names associated with particular individuals.

Native allotments were often clustered near a site known to be particularly popular as a hunting, fishing, or camping area. For example, seven Native allotments are recorded near "Second Fish Hole" on the Hulahula River, a popular fishing spot and camping area from which

	H U N T	F I S H	C A M P	T R A P	H O U S E	G R A V E	C E L L A R	W O O D	S T O R A G E	T E N T	N E T	F I S H R A C K	B E R R Y P I C K I N G	S M O K E H O U S E
HUNT	115													
FISH	111	111												
CAMP	98	97	98											
TRAP	30	30	21	30										
HOUSE	22	22	18	4	23									
GRAVE	0	0	0	0	1	1								
CELLAR	22	22	17	6	4	1	23							
WOOD	14	14	14	0	0	0	5	14						
STOR- AGE	15	15	15	3	0	0	5	0	15					
TENT	12	12	10	0	5	0	4	0	0	12				
NET	5	5	5	0	0	0	0	0	5	0	5			
FISH- RACK	4	4	1	3	1	0	0	0	0	0	0	4		
BERRY- PICKING	10	10	7	5	6	0	3	0	0	0	0	0	10	
SMOKE- HOUSE	2	2	0	2	2	0	0	0	0	0	0	0	0	2

Source: U.S. Bureau of Land Management Native Allotment Case Files, Fairbanks. April 1982.

Fig. 8. Attribute combinations of Native allotments within the Arctic National Wildlife Refuge.

TABLE 17. NATIVE ALLOTMENT APPLICATION ATTRIBUTES.

Attribute	Number of Allotments Having Attributes	Percentage of All Allotments Having Attributes
Hunting	115	99
Fishing	111	96
Camp	98	84
Trap	30	26
House	23	20
Cellar	23	20
Storage	15	13
Wood	14	12
Tent	12	10
Berry picking	10	9
Net	5	4
Fishrack	4	3
Smokehouse	2	2
Grave	1	1

Note: House attribute includes cabins. Storage attribute includes gear.

Source: U.S. Bureau of Land Management Case Files, Fairbanks. April 1982.

people base hunting activities. Other locations, such as near Schrader Lake, Okpilak Lake, and Brownlow Point have a similar pattern.

Given that nearly all of these Native allotments were associated with hunting (99 percent), fishing (96 percent), and camping (84

percent) activities, it appears that the desire for continued subsistence hunting, fishing, and gathering activities was of prime concern when selecting allotments. Community land use maps developed during this study illustrate that Native allotments are contained within the community's overall land use area. As shown by the community land use maps, land use activities are not restricted to Native allotments or camping locations. Hunting fishing, and gathering activities radiate in all directions from camps for many miles. Calculations or estimates of land use based solely on Native allotments result in a gross underestimate of the community's land use area.

Individual household land use areas range between 846 square miles to almost 6,000 square miles. Each eligible individual was permitted to file for only one-quarter of a square mile (160 acres) in up to four separate parcels as his or her Native allotment. A common concern in selecting an allotment site was perhaps to obtain a camping location near a productive fishing spot from which one could base hunting activities radiating from the camp. Selecting multiple, small Native allotments, as opposed to fewer and larger Native allotments, may have been a strategy used by some residents for controlling several parcels from which they could pursue several subsistence activities. However, community residents cannot protect enough land through Native allotment holdings to meaningfully carry out their subsistence activities, much less accumulate adequate holdings to enable them to effectively protect the habitat and the resources which they utilize.

Snowmachine Tracks

Snowmachine tracks made in October of one year were found to be easily visible from the air in May of the next year. In subsequent interviews, track locations agreed with information given to the researchers by the hunters who made them. This validation suggests that aerial observation of snowmachine tracks may be a good cross-check of hunter dispersal during winter.

For instance, early on in the study snowmachine tracks were observed in an area west of the Canning River which had not previously been documented through interviews as a use area for hunting. Interviews with hunters about the observed tracks enabled the researchers to identify and collect additional land use information about specific activities in the area. Additional camping, hunting, and fishing locales were also identified in this manner.

CHAPTER 6

ISSUES

LAND OWNERSHIP

Patterns of Current Land Ownership

As was pointed out elsewhere, land status, land use, and resource management are important factors which can influence Kaktovik's future subsistence activities to a considerable degree. Present land status within the community land use area is relatively simple (Fig. 9). To the west of the Canning River are state lands and to the east lie federal lands (the Arctic National Wildlife Refuge) with some Native lands immediately east and west of Kaktovik. One hundred and sixteen Native allotments lie scattered throughout the entire area (Map 12). Federal managers of the Arctic National Wildlife Refuge are, however, considering land transfers in the northwestern portion of the Refuge to make lands with high energy potential available to private ownership in exchange for wildlife habitat elsewhere (Baumgartner 1984).

Extent of Subsistence Use on Federal, State, and Private Lands

Overall, local subsistence land use in terms of land ownership is also fairly straightforward. Approximately 68 percent of Kaktovik's use area lies within federal lands, 30 percent on state, and 2 percent on private (Native Corporate) lands. The private component could be

increased by up to 23 percent should the entire Federal 1002 study area within the Refuge be transferred into private ownership. Clearly, it is important for the three landowners to recognize and provide protection for the documented subsistence commitment of their land holdings.

Development Within Kaktovik's Use Area

Land use within Kaktovik's use area varies from full scale industrial development in the western portions (on state lands) to no industrial development and relatively restrictive recreational use in the eastern portion (within the designated wilderness area of ANWR). Subsistence land use is a legally recognized and legitimate activity in federal land use designations (ANILCA, Section 810), but not State designations.

The efforts of all landowners in the area are directed toward making oil and gas leases available to industry at an accelerating rate. Several productive discoveries of oil resources have been made in the north central portion of Kaktovik's use area. The coastal area in Camden Bay as well as the lower Marsh Creek drainage inside the Kaktovik use area are considered very desirable locations for further testing and exploration. There are also clear indications that the private lands near Kaktovik will soon be explored as prospects are good for commercial quantities of oil there (since the drafting of this report some limited exploration activities have taken place on these lands).

A recent list of existing and proposed oil and gas lease areas (U.S. Department of Interior 1983) yields nine that are directly within Kaktovik's use area (six are state leases and three are federal) and

several others that are in the immediate vicinity. The private lands around Kaktovik are also opening to exploration but are not listed by Mineral Management Service. Fifty-six percent of Kaktovik's use area lies within these ten leases. Subsistence uses could be subject to regulatory restrictions should development to full-scale production proceed in these areas. Subsistence users may also find displacement of the fish and game resources, competition in hunting and fishing, physical barriers to both users and resources, restrictive fish and game management regulations, loss of cultural privacy as well as the possible loss of subsistence security in these lease areas unless adequate mitigation is formulated well in advance of lease development.

LAND AND RESOURCE MANAGEMENT

Management of the subsistence resource complex upon which Kaktovik residents depend is divided between three agencies. The State of Alaska Department of Fish and Game manages all fish and wildlife resources with the exception of migratory waterfowl and marine mammals. These are managed by the U.S. Fish and Wildlife Service (migratory waterfowl, polar bear, walrus, and sea otters) and National Marine Fisheries Service (seals and whales).

The three agencies managing the subsistence resources harvested by Kaktovik residents are each required by international treaties and agreements, as well as state and federal law, to manage the resource base so as to ensure that certain biological requirements are met with respect to the welfare of the harvested populations. In addition, they are also required by law to ensure that among consumptive users, the

subsistence user group is accorded the highest priority when resources are not sufficiently abundant to satisfy the demand by all user groups.

At the present time, only the state, and to some extent, National Marine Fisheries Service (NMFS) have set regulatory frameworks with seasons and harvest limits. Marine mammal and waterfowl harvests managed by the U.S. Fish and Wildlife Service (USF&WS) are not totally unregulated however. There is evidence that expressed government concerns and local customary law are influencing these harvest levels. One of the best examples in this connection may be with respect to the polar bear harvest, which is not strictly regulated by USF&WS. In recent years, (in the early 1980s), the harvest went from near 40 to less than one quarter of that now (1984). The reason for the decline in harvest level is not associated with a lack of bears but rather that community elders, community leaders, and many of the women (who have to do most of the processing of resources brought home) decided in the fall after the high harvest year, that there had been far too many bears taken the year before. A general request went out to the community hunters from the women, elders and city officials to keep the harvest lower and only to shoot bears near town if they were becoming a public safety hazard (Pedersen unpublished field notes 1982/83). A similar request was informally stated to community officials by USF&WS biologists and ANWR staff. There is evidence available to suggest that self-regulation does exist in the absence of external regulations, for in the following year and those after, the polar bear harvest in Kaktovik dropped off considerably (Pedersen n.d.). In fact, even when there is external regulation, local self-regulation is also in effect, as with the sheep harvest mentioned earlier.

Only one agency, the U.S. Fish and Wildlife Service, has habitat management responsibility and authority in addition to wildlife management duty. Their area of responsibility covers only ANWR however. This means that offshore, on private lands, and on state lands within Kaktovik's use area, it is not the same resource agency that manages the land. This adds considerable complexity to management of subsistence resources in areas such as the eastern Arctic and the Beaufort Sea. The only recourse wildlife agencies have, when faced with a situation of diminished habitat availability and evidence of decreasing population levels in a resource such as caribou, for instance, is to apply more restrictive regulations on the consumptive use to hopefully compensate for the reduced habitat available for the resource. In addition, industrial land users and managers desire to maintain high public safety standards and minimize unauthorized access to exploration or production areas. This, in effect, then displaces fish and wildlife users who already may have had their resource allocation reduced because of habitat loss the resource have experienced.

Though this may sound far-fetched, it has for all practical purposes already happened in the Prudhoe Bay area (the entire area is closed to big game hunting for public safety reasons), and in all state waters from Bullen Point westward to the Kalubik River (which are closed to subsistence fishing because of concerns that employees associated with oil and gas development in the Prudhoe Bay area may otherwise over harvest char and whitefish populations found in these waters, under the guise of subsistence, ie., net fishing in the area). Recently (1985) a portion of the closed area was opened up to subsistence fishing by emergency regulation. No information is currently available to

indicate the impact of the regulation on the resource or in terms of public participation. Furthermore, industry has suggested that the Kuparuk oil field, west of the Prudhoe Bay oilfield, be closed to all hunting for public safety reasons (Letter to the Board of Game from ARCO Alaska, Inc. and Sohio Alaska Petroleum Co. dated September 21, 1981). Although this proposal was rejected by the Board of Game, industry is continuing to press for harvest and access restrictions in the Kuparuk area (Posey, ARCO Land Management, pers. comm. 1985).

LEGAL RECOGNITION AND PROTECTION OF SUBSISTENCE USES

The issue of allocation of fish and wildlife resources within Kaktovik's use area has been fully addressed by recent state and federal laws (SL 151 and ANILCA, Title VIII). These laws provide recognition that subsistence uses are those which are to be restricted last if a particular resource cannot be maintained on a sustained yield basis. Sport and commercial uses have been restricted. Fortunately, there is little competition between subsistence and sport harvesters in the Kaktovik use area, and there is no commercial harvesting of any of their resources in the area either. Furthermore, all resources, with the notable exception of bowhead whales, are sufficiently abundant so as to satisfy the present harvest levels of the two user groups.

Recognition of subsistence land use and the allocation of the resource among users is a bit more unclear at this time. Though ANILCA, Title VIII, Section 810 (1980) requires a complete evaluation of all land disposition actions, which may adversely affect subsistence uses on federal lands in Alaska, there is no guarantee that subsistence uses

will be given priority over other uses of the land. Rather, mitigating measures are to be put into effect to minimize any adverse impacts suspected due to a competing form of land use. It seems, therefore, that even under the most restrictive scenario, a proposed land use activity which may significantly affect subsistence uses is only required to try to minimize its effect on the existing use. Furthermore, there is no required compensation to subsistence users for loss of fish and game or access to land resulting from oil and gas development, only that these activities should seek to minimize the loss.

Under state law, there is nothing similar to the federal Section 810 law. The most elaborate statement which is made in this request is made in the Sale Measures (Plans and Operations and Other Terms of Sale; Access Nos. 22 and 23) which accompany state lease sales. These measures guarantee subsistence and other public users continued access to sale areas but also allow for some restrictions in the immediate vicinity of industrial facilities. However, assessing development impacts on subsistence is not required during the impact evaluation process preceding a state lease sale.

Thus, the economic value of subsistence land uses is not recognized by either the federal or state authorities vis-a-vis oil and gas development. This translates to the following: there is no legally required compensation for loss of fish, game, or other resources due Kaktovik subsistence resource users in the event that there are identified negative impacts on any resource resulting from oil and gas development within their use area.

AREAS WARRANTING FUTURE STUDY

Because it is expected that industrial development will be the leading cause of impact on Kaktovik subsistence resource users, it is recommended that the following general areas be considered for additional indepth study in the Eastern and Central Arctic:

- A. Restrictions on access - state, federal, and private lands
- B. Increased competition for fish and wildlife resources
- C. Changes in fishing and hunting regulations
- D. Changes in resource distribution
- E. Habitat alterations

Recent technical reports from the Division of Subsistence describes an ongoing study which deals with B, C, and to some Extent D with respect to subsistence caribou hunting by Kaktovik hunters (Pedersen and Coffing 1984; Coffing and Pedersen 1985).

THE NEED FOR LAND AND RESOURCE MANAGEMENT PLANS IN THE EASTERN ARCTIC

In order to ensure that the land, the fish and wildlife resources, and access to them by subsistence users is not impaired by the ongoing and impending industrial development within Kaktovik's use area, it will be of the utmost importance for all resource management agencies with responsibilities in the area to coordinate their information gathering efforts. They will also need to collaborate closely with each other, and the affected public, on the development of resource management plans for the eastern Arctic that recognize and are sensitive to subsistence

land and resource use. To accomplish this, the agencies and the public need access to solid information on subsistence land and resource use. The information presented in this report should begin to fill the obvious information void for the area by providing planners and public with details on the size and configuration of Kaktovik residents' subsistence resource use areas. These areas are a central and uncompromisable part of the local Kaktovik subsistence economy.

Providing continued subsistence opportunities in the eastern Arctic into the future, will be a challenging but worthwhile goal to strive towards. Achievement of this will require that all parties, from subsistence users to oil development policy planners, work together in the spirit of genuine cooperation and healthy respect for the value of a pluralistic society - after all, hunting and gathering is the oldest human profession and as a way of life it "has been the most successful and persistent adaptation man has ever achieved" (Lee and Devore 1968:3).

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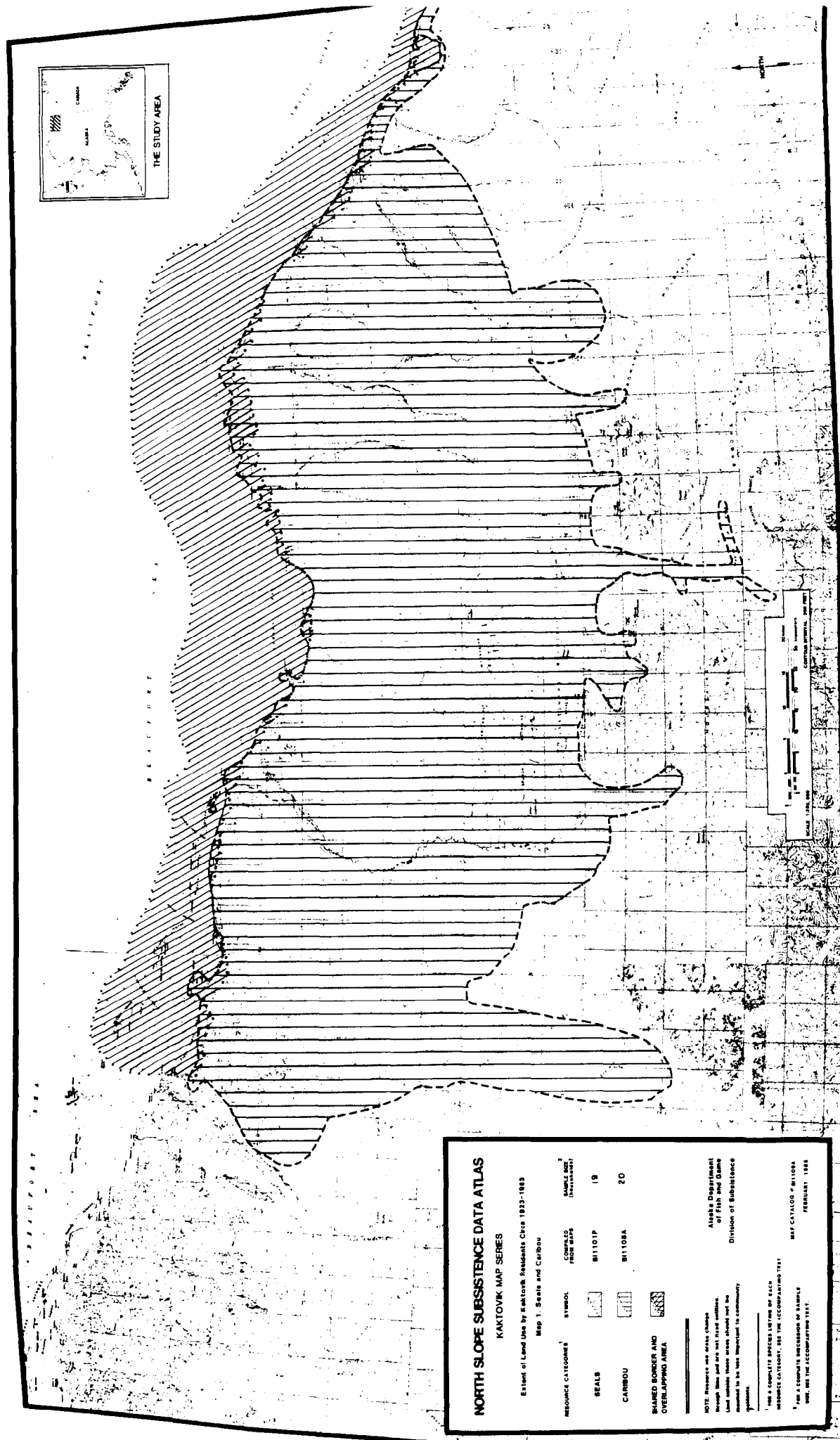
APPENDIX 1. Index of U.S. Geological Survey 1:250,000 scale Alaska quadrangle names and sequential numbers used in mapping Kaktovik subsistence land use:

BEECHY PT. 148	FLAXMAN ISLAND 147	BARTER ISLAND 146
SAGAVANIRKTOK 143	MT. MICHELSON 144	DEMARICATION PT. 145
PHILLIP SMITH MTN. 131	ARCTIC 130	TABLE MTN. 129

APPENDIX 2.

NORTH SLOPE SUBSISTENCE DATA ATLAS
KAKTOVIK MAP SERIES

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NORTH SLOPE SUBSTANCE DATA ATLAS
KAKTOVUK MAP SERIES
 Extent of Land Use by Kaktovik Residents Circa 1923-1983
 Map 1. Seals and Caribou

RESOURCE CATEGORIES	SYMBOL	COMPILED FROM MAPS	SAMPLE SIZE (hectares)
SEALS		B1101P	19
CARIBOU		B1108A	20

SHARED BORDER AND OVERLAPPING AREA

NOTE: Resource use areas change through time, and are not fixed entities. User should locate areas shown and be prepared to be less important for community purposes.

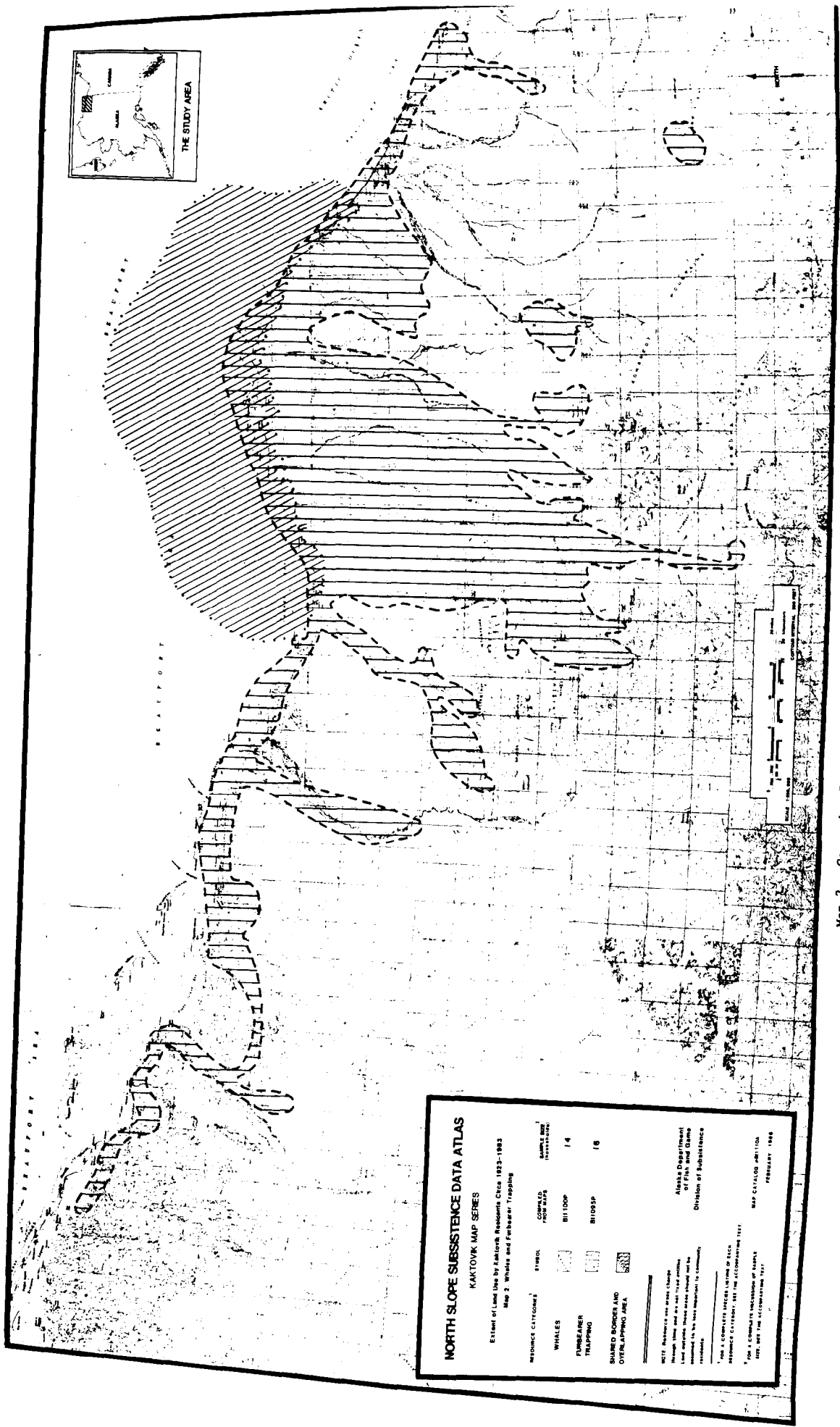
1. FOR A COMPLETE RECORD LISTING OF ALL RESOURCE CATEGORIES, SEE THE ACCOMPANYING TEXT.

2. FOR A COMPLETE DESCRIPTION OF SAMPLE SITES, SEE THE ACCOMPANYING TEXT.

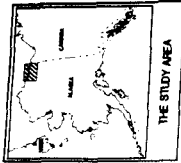
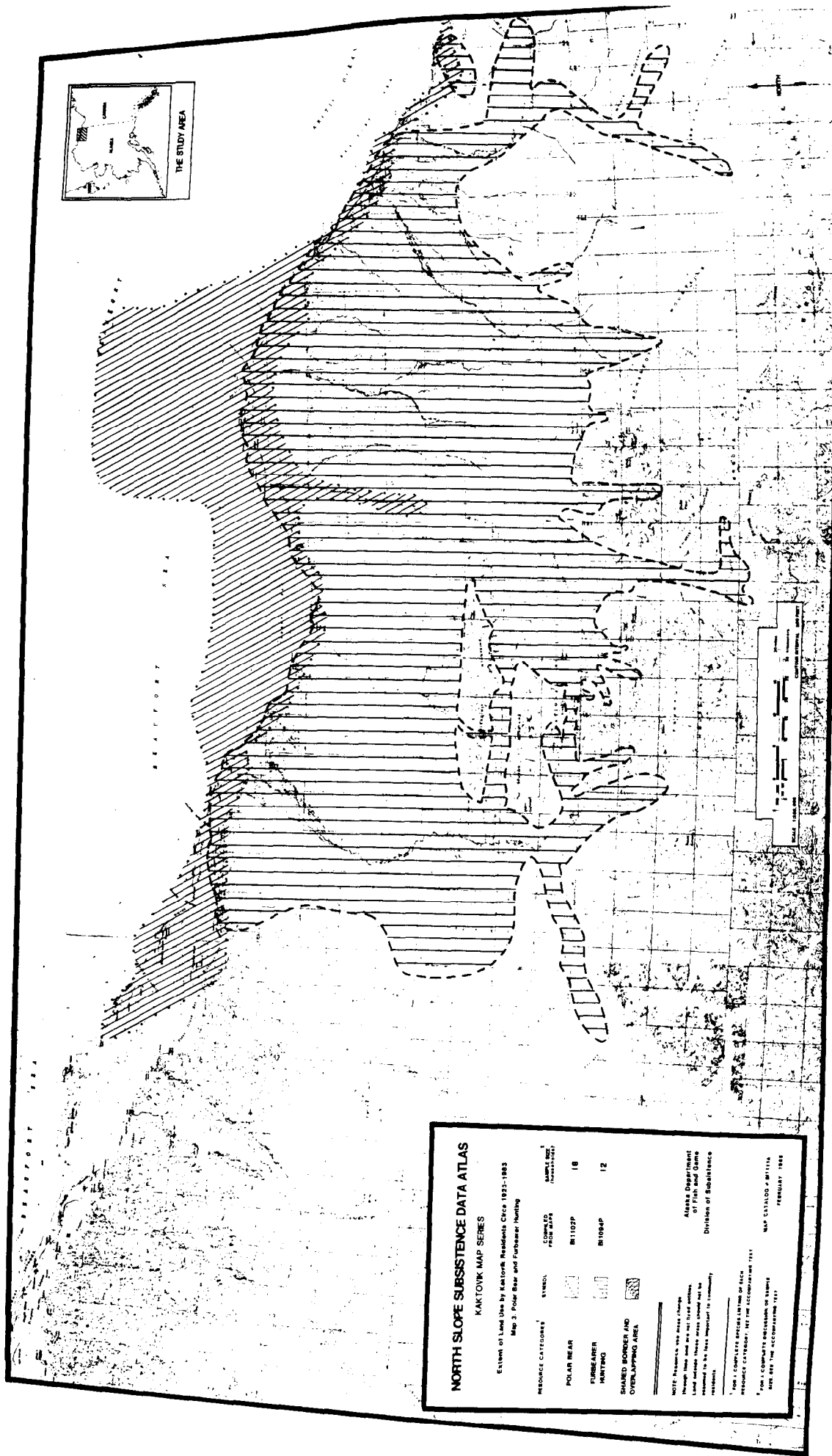
Alaska Department of Fish and Game
 Division of Subsistence

MAP CATALOG # 11108A
 FEBRUARY 1988

Map 1. Community Biography: Seals and Caribou



Map 2. Community Biogeography: Whales and Furbearer Trapping



NORTH SLOPE SURSTIBENCE DATA ATLAS
 KAKTOVIK MAP SERIES

Extent of Lead Use by Kaktovik Residents Circa 1923-1983
 Map 3. Polar Bear and Furbearer Hunting

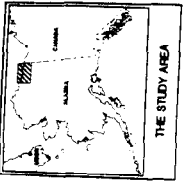
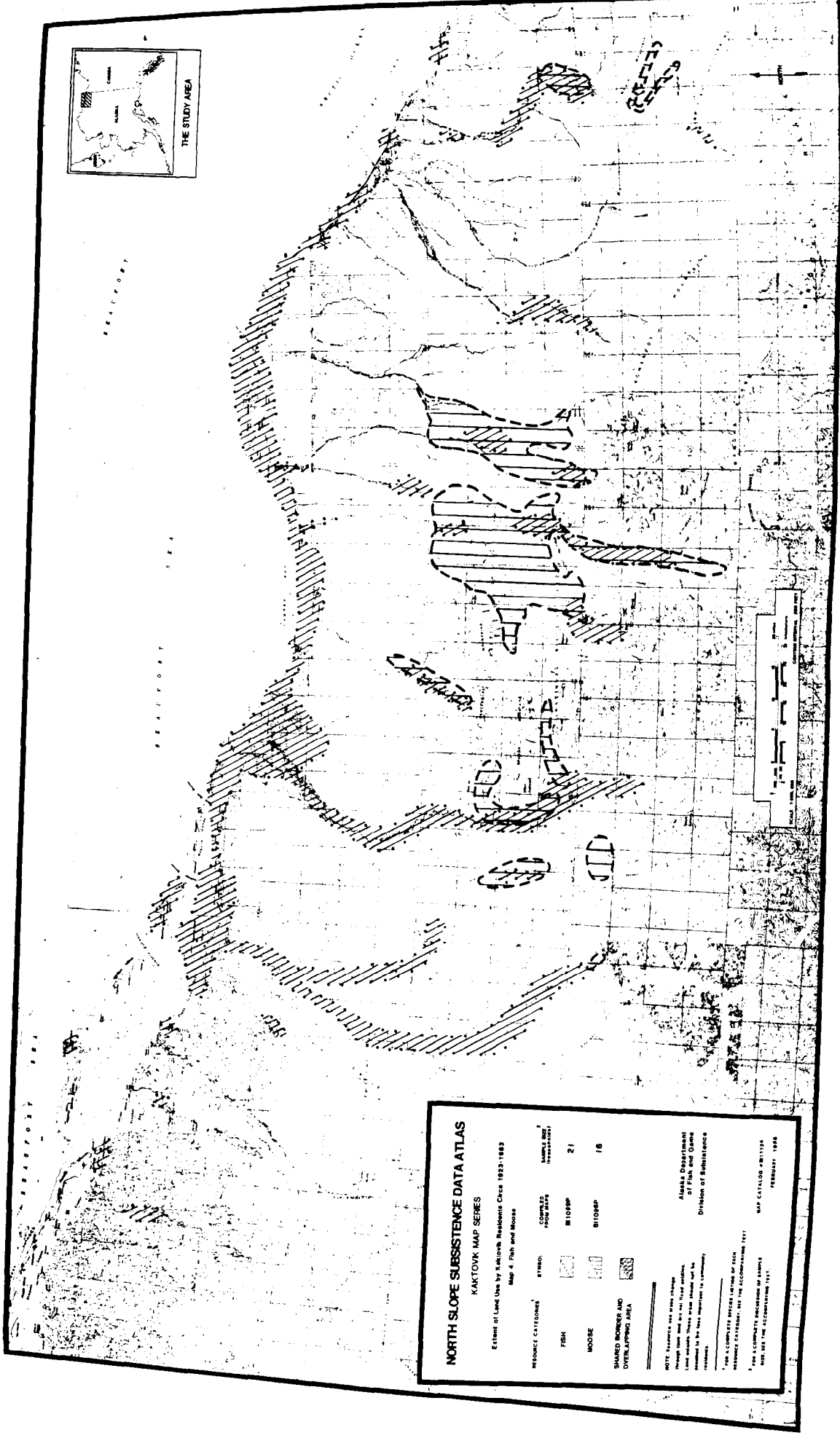
RESOURCE CATEGORIES	SYMBOL	COMMUNITY RESOURCE CODE	MAP SHEET NUMBER
POLAR BEAR	[Hatched Box]	B1102P	18
FURBEARER HUNTING	[Dotted Box]	B1104P	12
SHARED BORDER AND OVERLAPPING AREA	[Cross-hatched Box]		

NOTE: Resources in this area change through time and space. Lead use data were collected from interviews with the most important community residents.

FOR A COMPLETE DESCRIPTION OF RESOURCE CATEGORIES, SEE THE ACCOMPANYING 1983 RESOURCE CATALOGUE BY THE ALASKA DEPARTMENT OF FISH AND GAME, DIVISION OF SUBSISTENCE.

MAP CATALOG # M1114
 FEBRUARY 1988

Map 3. Community Biogeography: Polar Bear and Furbearer Hunting



NORTH SLOPE SUBSISTENCE DATA ATLAS
KAKTOVUK MAP SERIES
 Extent of Land Use by Kaktovuk Residents Circa 1933-1983
 Map 4. Fish and Moose

RESOURCE CATEGORIES	SYMBOL	CONTROLS AND NOTES	SAMPLE SIZE (HAPPOUNTS)
FISH		W10SP	21
MOOSE		W10SP	16
SHARED BOUNDARIES AND OVERLAPPING USE			

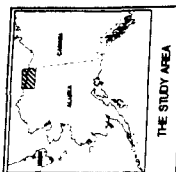
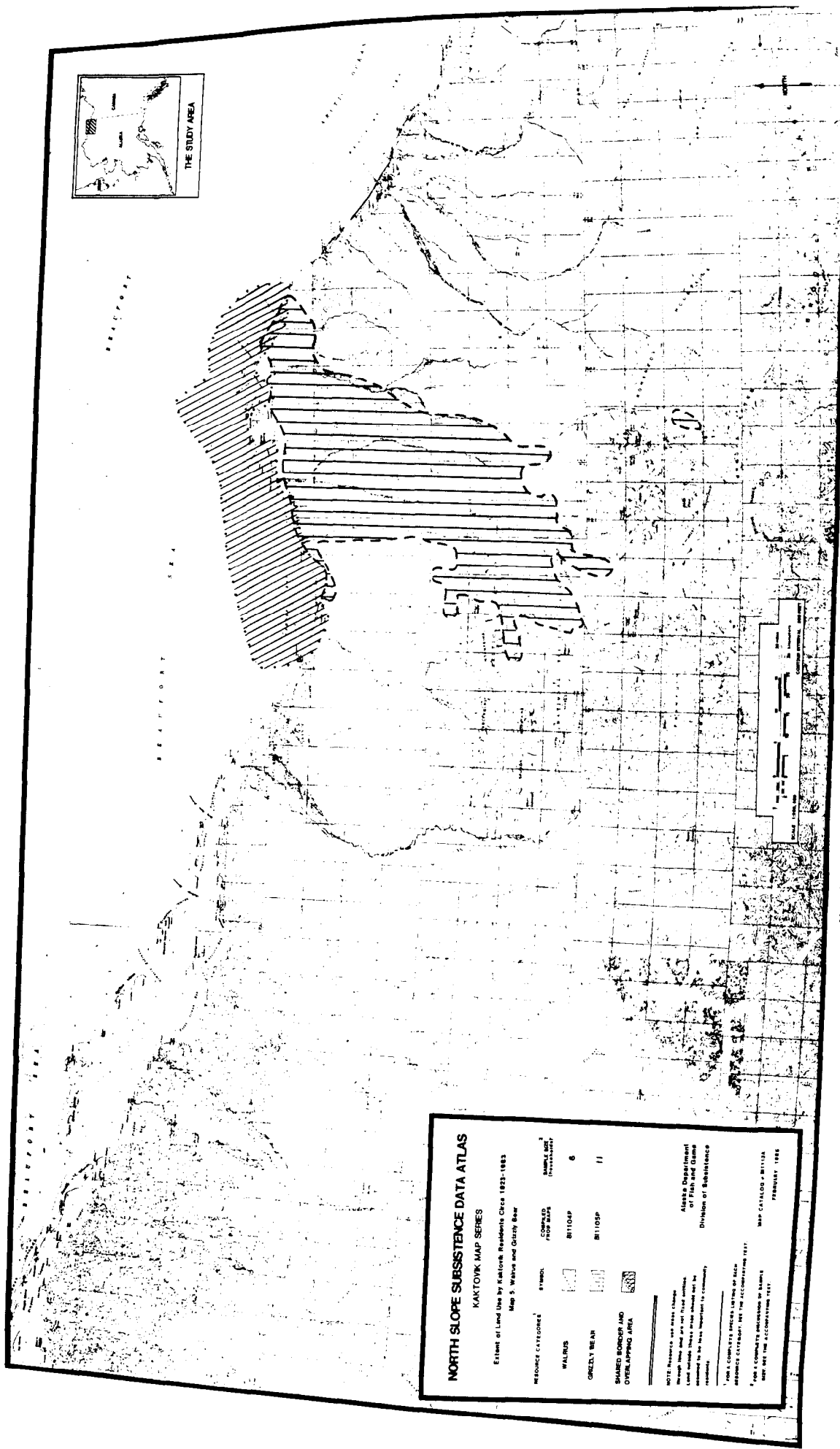
NOTE: Boundaries are drawn on the basis of the best available information. Land use patterns shown are based on the best available information and are subject to change. For a complete description of symbols used see the accompanying text.

FOR COMPLETE DESCRIPTION OF EACH RESOURCE CATEGORY, SEE THE ACCOMPANYING TEXT.
 FOR A COMPLETE DESCRIPTION OF SYMBOLS USED, SEE THE ACCOMPANYING TEXT.

MAP CATALOG NUMBER: 1000
 FEBRUARY 1985

Alaska Department
 of Fish and Game
 Division of Subsistence

Map 4. Community Biography: Fish and Moose



NORTH SLOPE SUBSISTENCE DATA ATLAS

KAKTOVIK MAP SERIES

Extent of Land Use by Kaktovik Residents Circa 1925-1985

Map 5. Walrus and Grizzly Bear

RESOURCE CATEGORIES	SYMBOL	COMPILED FROM DATA	SAMPLE SIZE (RESIDENTS)
WALRUS		BT100P	6
GRIZZLY BEAR		BT100P	11

SHADED BORDER AND OVERLAPPING AREA

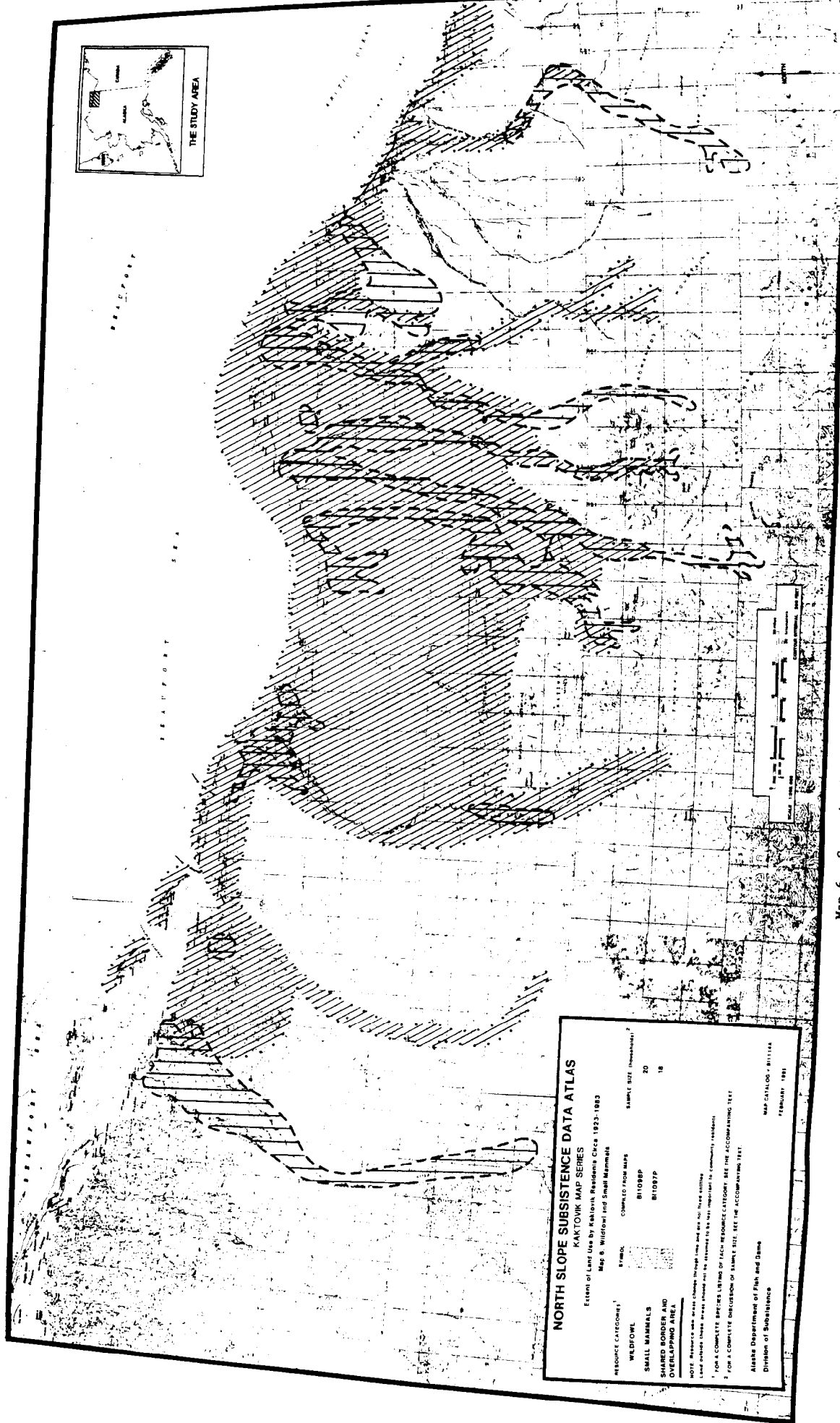
NOTE: Residents use areas shown through lines and are not tied to them. Land outside these areas should not be used for the same subsistence as community residents.

FOR A COMPLETE LITERATURE OF THE ARCTIC SUBSISTENCE COUNTRY, SEE THE ACCOMPANYING VOLUME.

FOR A COMPLETE LITERATURE OF ALASKA, SEE THE ACCOMPANYING VOLUME.

MAP CATALOG # 11111
FEBRUARY 1986

Map 5. Community Biogeography: Walrus and Grizzly Bear



NORTH SLOPE SUBSISTENCE DATA ATLAS
 KATYOVIK MAP SERIES
 Extent of Land Use by Kalyovik Residents Circa 1923-1983
 Map 6. Wildfowl and Small Mammals
 COMPILED FROM MAPS

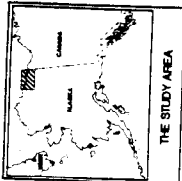
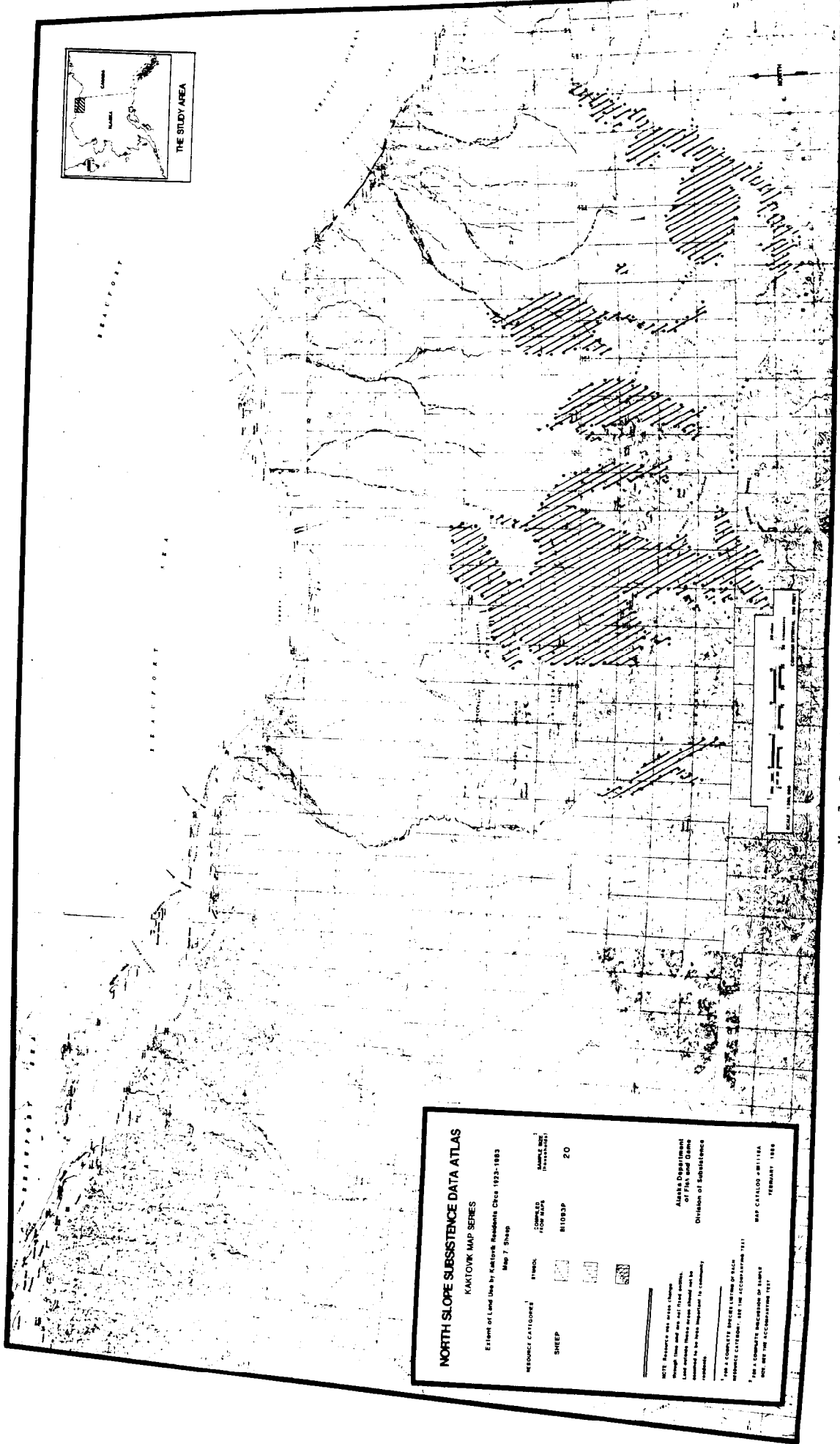
RESOURCE CATEGORIES*	SYMBOL	SAMPLE SIZE (NUMBER)
WILDFOWL	[Symbol]	20
SMALL MAMMALS	[Symbol]	18
SHARED BORDER AND OVERLAPPING AREA	[Symbol]	

NOTE: The area shown is a composite of maps and data. It is not a true map. The area shown is a composite of maps and data. It is not a true map. The area shown is a composite of maps and data. It is not a true map.

FOR A COMPLETE LISTING OF TACHY-RESOURCE CATEGORIES, SEE THE ACCOMPANYING TEXT.
 FOR A COMPLETE DISCUSSION OF SAMPLE SIZE, SEE THE ACCOMPANYING TEXT.

Alaska Department of Fish and Game
 Division of Subsistence
 MAP CATALOG # 811144
 FEBRUARY 1981

Map 6. Community Biogeography: Wildfowl and Small Mammals



NORTH SLOPE SUBSIDENCE DATA ATLAS
KAKTOVIK MAP SERIES

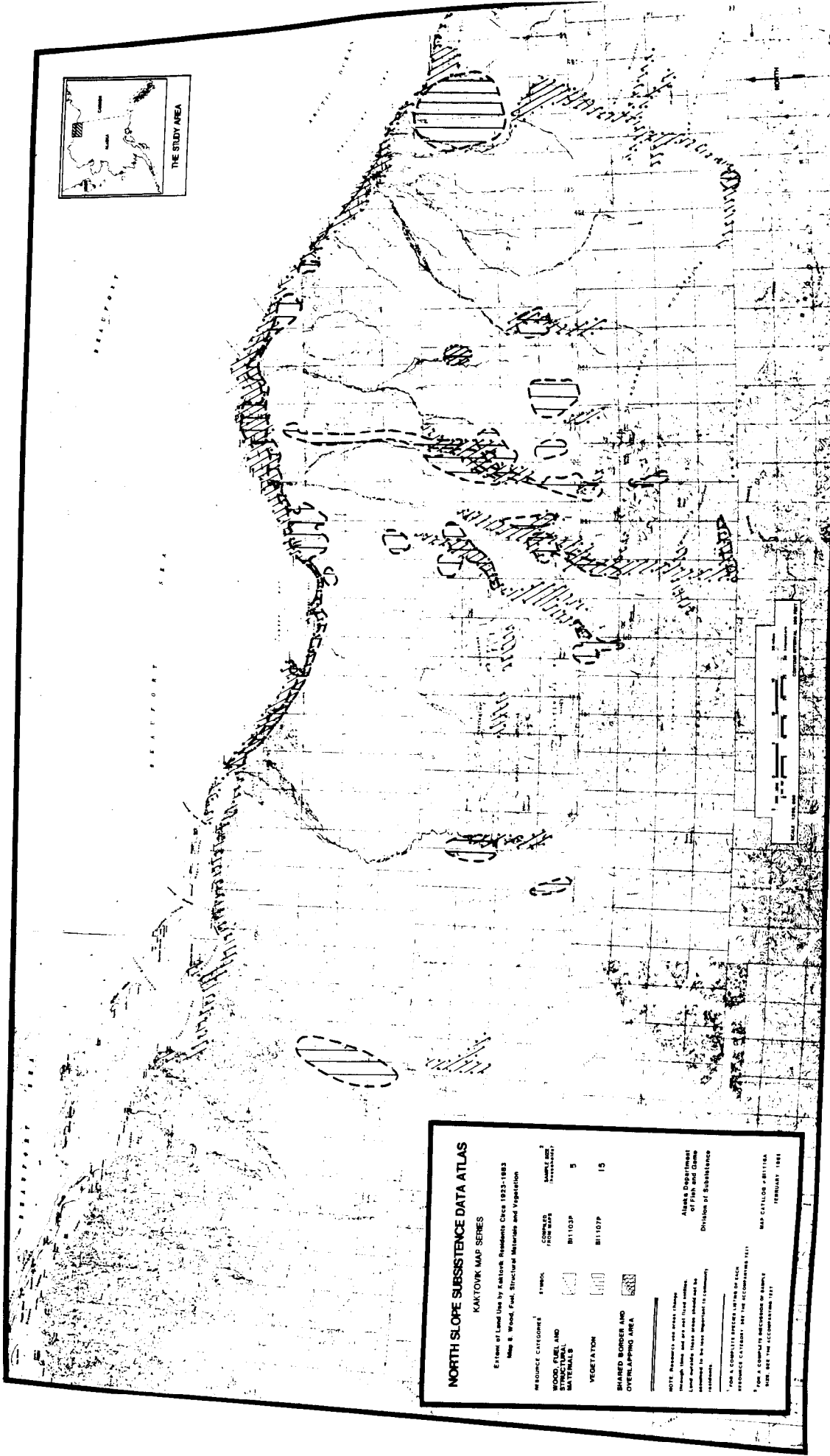
Extent of Land Use by Kaktovik Residents Circa 1925-1985
 Map 7. Sheep

RESOURCE CATEGORY	SYMBOL	COMPLETION DATE (OR MAP)	SAMPLE NO. (PREVIOUS)
SHEEP	[Symbol: Diagonal lines]	8/10/82P	20

NOTE: Resources are areas shown through lines and are not fixed points. Land markings shown are not to be taken literally but are representative of community knowledge.

THIS IS A COMPLETE PROJECT, AND NO FURTHER REVISIONS WILL BE MADE.
 PREPARED BY: [Name]
 DATE: [Date]

Map 7. Community Biography: Sheep



NORTH SLOPE SUBSISTENCE DATA ATLAS
KAKTOVIK MAP SERIES

Extent of Land Uses by Kaktovik Residents Circa 1923-1983
 Map 8. Wood, Fuel, Structural Materials and Vegetation

WILDLIFE CATEGORY	SYMBOL	COMPLEX FORM DATA	MAP SCALE
WOOD, FUEL, AND STRUCTURAL MATERIALS		B1103P	5
VEGETATION		B1107P	15

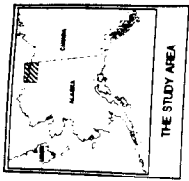
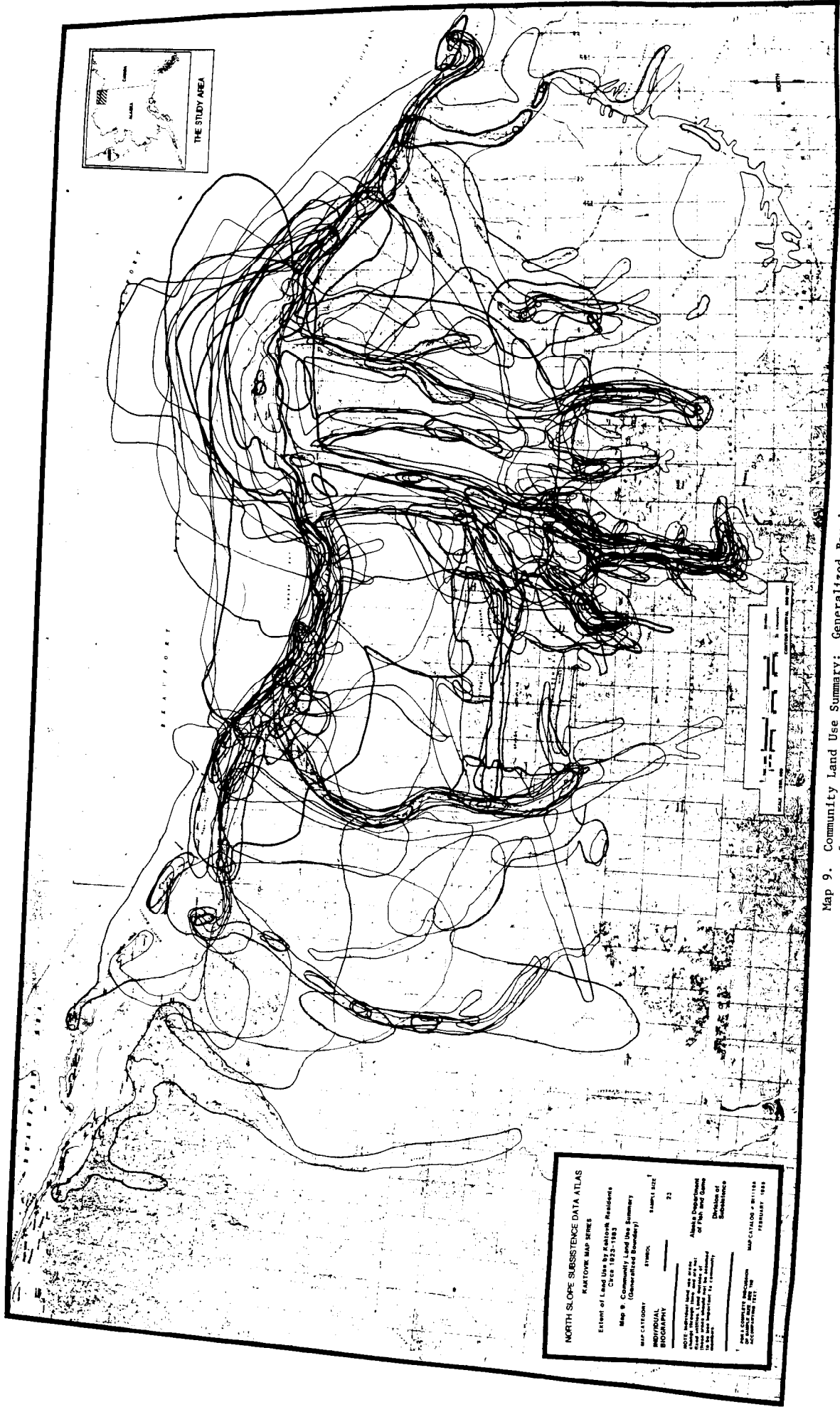
SHARED BORDER AND OVERLAPPING AREA

NOTE: Symbols are placed along through lines and are not placed on land outside these areas unless the symbols are the most important to community subsistence.

FOR A COMPLETE DESCRIPTION OF EACH WILDLIFE CATEGORY, SEE THE ACCOMPANYING 1:125,000 MAP CATALOG # B1118A, FEBRUARY 1984.

FOR A COMPLETE DESCRIPTION OF EACH WILDLIFE CATEGORY, SEE THE ACCOMPANYING 1:125,000 MAP CATALOG # B1118A, FEBRUARY 1984.

Map 8. Community Biography: Wood, Fuel, and Structural Material and Vegetation



NORTH SLOPE SUBSISTENCE DATA ATLAS
 KARTOVR MAP SERIES
 Extent of Land Use by Kartoavr Residents
 Chcs 1925-1993
 Map 9. Community Land Use Summary
 (Generalized Boundary)

MAP CATEGORY: **STRONG** SCALE: **1:25,000**
 PROGRAM: **23**

NOTE: Inventory Map and Data
 were prepared by the Alaska Department
 of Fish and Game, Division of
 Subsistence, Fairbanks, Alaska.

THE GEOLOGICAL SURVEY
 WASHINGTON, D.C. 20541
 MAP CATALOG # 11189
 FEBRUARY 1993

Map 9. Community Land Use Summary: Generalized Boundary for Each Individual Biography

PLACE NAMES - MAP 12

- | | |
|--|---|
| 1. Sanniaruk
(Meaning unknown) | 16. Sikḷaqtitaq
"The place that's
been picked with
a pick axe" |
| 2. Uuliktug
"It is shaking" | 17. Napaqsralinaraq
"The place where a
post has been
placed" |
| 3. Ugruknavik
(Meaning unknown) | 18. Napaqsralik
"Place with a pole
(post) " |
| 4. Ugruknavin Paaña
(Meaning unknown) | 19. Narwhal Island |
| 5. Taaqpam Inaa
"Taaqpak's place" | 20. Pole Island |
| 6. Nuvuḡaqpak
"Big point of land" | 21. Kaḡiḡḡuk
"Bad (corner) end" |
| 7. Piḡu
"Round hill" | 22. Niaquḡ
"Head" |
| 8. Qaviarat
"Place of fine sand" | 23. Tikigagruk
(Meaning unknown) |
| 9. Nukatpiat
"Young men (of
marriageable age) " | 24. Point Brower |
| 10. Beechey Point | 25. Agliḡvurak
(Meaning unknown) |
| 11. Aquvlaaq
(Meaning unknown) | 26. Quḡanam Inaa
"Quḡanaq's place" |
| 12. Tapḡaqturuḡ
"This place has a
big sand spit (or
small island) | 27. Ikulum Inaa
"Ikulug's place" |
| 13. Saḡuḡauraq
"Little bend" | 28. Kisium Inaa
"Kisik's place" |
| 14. Kuukappḡruk
"Big river" | 29. Tigvaḡiaḡ
(Meaning unknown) |
| 15. Point Storkersen | 30. Kakianaam Inaa
"Kakianaaq's place" |

PLACE NAMES continued

- | | |
|--|---|
| 31. Sikiagruum Inaa
"Sikiagruk's place" | 48. Suvlik
"Flowing regularly" |
| 32. Savviugvik
"Place of iron" | 49. Name not known |
| 33. Tigvaqiaq
(Meaning unknown) | 50. Igniq
"Fire" |
| 34. Point Lookout | 51. Agliguaqruk
"Big jawbone" |
| 35. Name not known | 52. Nod |
| 36. Name not known | 53. Niksiksuqvik
Place of fish
hooking |
| 37. Name not known | 54. Tammaiyaqiam Paana
Mouth of "where you
go to lose some-
thing" |
| 38. Qalqusilik
"A place with some-
thing on top" | 55. Qayuuttaq
"Ladle" |
| 39. Siqsiñaq
(Meaning unknown) | 56. Kañiñiivik
"Meeting at the
end" |
| 40. Siiqsiññiq
"Water seepage" | 57. Qayuuttaq
"Place with a big
kettle" |
| 41. Ninjulit
"Place with cotton-
wood trees" | 58. Nuyuum Tapqana
"The Point's small
island" |
| 42. Imailat
"Without water" | 59. Nuvuaq
"Point" |
| 43. Point Gordon | 60. Qugannaq
(Man's name) |
| 44. Point Hopson | 61. Aanalaq
(Meaning unknown) |
| 45. Ikpigauraq
"Little bank
(bluff) " | |
| 46. Narvaq
"Lake" | |
| 47. Shublik Island | |

PLACE NAMES continued

- | | |
|--|---|
| 62. Sanniqsaaluk
(Meaning unknown) | 74. Anigaganig
"Place to be
outside" |
| 63. Patkutaq
"Paul Patkutaq's
place" | 75. Igluqpauraq
"Little big house" |
| 64. Sivugaq
"Space in front" | 76. Kanj
"End" |
| 65. Sallitchit Iqaluitch
"Most northernly
fish hole" | 77. Paaqta
"Let's go meet
someone coming" |
| 66. Siiqsinniq
"Glacier" | 78. Name not known |
| 67. Niaquqtuguigsaagvik
"Place where the
heads are eaten for
the last time" | 79. Katak
"To fall" |
| 68. Arctic Creek
(Communal campsite) | 80. Nullaagavik,
Nullagviuraq
"Place to camp" |
| 69. Itqiliagiaq
"On the way to
Itqiliq" | 81. Agviquraq
"Little whale" |
| 70. Nagauraq
"Little hood" | Igalunjaagvik
"Place to catch
fish" |
| 71. Qayyaaq
"Forks of rivers" | Niksiksuagvik
"Place to keep old
woman" |
| 72. Qikiqtaq Qayyaaq
(Meaning unknown) | 82a. Anayuaqsrakuvik
"Place to keep old
man" |
| 73. Qikiqtam Paana
"Qikiqtaq's mouth" | 82b. Aaquaksrakuvik
"Place to keep old
woman" |
| Navraqpak
"Big lake" | 83. Suuvlik
(Meaning unknown) |
| Makpia
(Meaning unknown) | 84. Uqpiilaq Lake
"Willowless lake" |

PLACE NAMES continued

- | | |
|---|--|
| 85. Igaagaksraq
"Something to cook" | 102. Niksiksuġvik
"Place to hook
fish" |
| 86. Name not known | 103. Name not known |
| 87. Uqpiuruuraq
"Place of willows" | 104. Tapqauralik
"Place with a
little island" |
| 88. Sisuuġat
"Sliding place" | 105. Tianuraraq
Named after Danny
Gordon, Sr. (his
eskimo name" |
| 89. Uqpiilam Paarġa
"Mouth of Uqpilaaq" | 106. Name not known |
| 90. "Low Islands" | 107. Yaigum Tapqarġa
"Jago spit" |
| 91. Naalagiagvik
"Place where one can
come to listen" | 108. Tapqauraaq
"Little sand spit" |
| 92. Name not known | 109. Nuvuġaaq
"Point of land" |
| 93. Name not known | 110. Tapqauraaq
"Little sand spit" |
| 94. Igluqpak
"Big house" | 111. Nuvuġaaq
"Point of land" |
| 95. "Kaktovik 2"
"Qaaqtuġvik 2" | 112. Nuvuġaaq
"Point of land" |
| 96. Name not known | 113. Uqsruqtalik
"Place with some
oil" |
| 97. "Kaktovik 1"
"Qaaqtuġvik 1" | 114. Puukak
(Name of person?) |
| 98. Tapqaaq
"Sand spit or
small island" | 115. "Olsen's Store" |
| 99. "Kaktovik 3"
"Qaaqtuġvik 3" | 116. Igluġruatchiat
"Place of sod
houses" |
| 100. Pivsuk
(Name of person) | |
| 101. Name not known | |

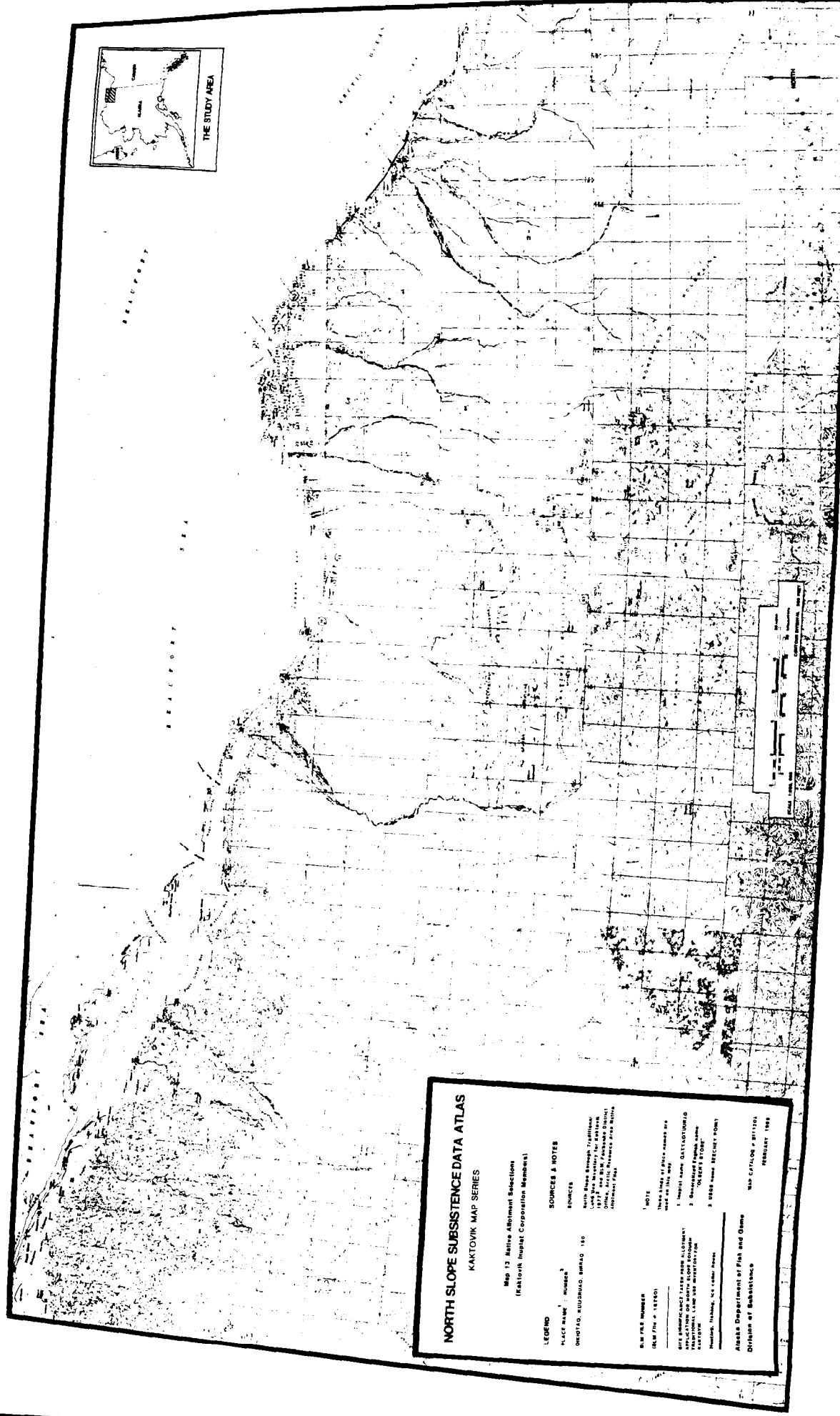
PLACE NAMES continued

- | | |
|--|--|
| 117. Imaignauraq
"place of little water" | 134. "Tulugaq's Portage" |
| 118. Anᖅun
"Pitch" | 135. "Edward Arey's
Portage" |
| 119. Nuvuᖅaq
"Point of land" | 136. "Andrew Akoot-
chook's Portage" |
| 120. Nuvuᖅaqpak
"Big point of land" | 138. Paulaaluk
"Old Soot" |
| 121. Siglualik
"Place with a cellar" | 139. Kuuᖅularuq
"It is flowing
softly" |
| 122. Atchalik
"Place with skin tents?" | 140. Saliᖅutaᖅvik
"Place to go on by" |
| 123. Siku
"Ice" | 141. Paaᖅiilaq
"One with a bad
opening" |
| 124. Piᖅuᖅsraaluk
"Big mound" | 142. Uukuluk
(Meaning unknown) |
| 125. Kuvluuraq
"Little thumb" | 143. Amaalgutilik
"One with something
on its back" |
| 126. Pattaktuq
"He/she/it is
spanking" | 144. Paaᖅtaᖅiik
"Two rivers coming
together" |
| 127. Gordon | 145. Iᖅuinakaak
(Meaning unknown) |
| 128. Ikpegauraq
"Little bank
(bluff)" | 146. "Fish Hole" |
| 129. Kaᖅiqᖅuaᖅpiat
"Way at the end" | 147. Pagniᖅutilik
"Place with bull
caribou" |
| 130. Putuᖅuq
"Big toe" | 148. Imailaq
"Without water" |
| 131. Aᖅaᖅuᖅaᖅauraq
"Little old man" | 149. Atchiligiᖅaq
(Meaning unknown) |
| 132. Maᖅiᖅaaluk
(Meaning unknown) | |
| 133. Sivuᖅaq
"Space in front" | |

PLACE NAMES continued

- | | |
|---|--|
| 150. Qikiqtaq
"Big island" | 158. Igluikuruq
"Leaving a share
for someone" |
| Kuugruaq
"Big river" | 159. Akutuagtuuq
"Place with big
leaves" |
| Sirraq
"Place where polar
bears come in to
cover themselves up
with snow to have
their cubs" | 160. Qaqliikaak
"Place where snow-
pants are" |
| 151. Qinaq
"Nose" | 161. Kakiyaaq
(Meaning unknown) |
| 152. Isitaq
(Meaning unknown) | 162. Salligutchtit
"Mountains at the
front..." (full
meaning unknown) |
| 153. "Second Paaqtaq"
Second place "let's
to meet someone
coming" | 163. Kuuguraaq Sivugaq
(Meaning unknown) |
| 154. Atchalik
"Place with skin
tents" | 164. Savagvik
"Place of work" |
| 155. Kalugavik
(Meaning unknown) | 165. Nuvugaq
"Point of land" |
| 156. Ulugaq Creek
"Ulugak's creek" | 166. Nuvugaq
(Meaning unknown) |
| 157. Nasigaagvik
"Place of looking
out over the land" | *188. "Drum Island" |

* Place name sites 167 through 187 are located in Canada and are not shown on the place name map in this report.



NORTH SLOPE SUBSISTENCE DATA ATLAS
KAKTOVIK MAP SERIES

Map 13 Native Allotment Selections
(Kaktovik Inupiat Corporation Members)

LEGEND
PLACE NAME NUMBER
ONOTOG, KUDORNOG, NERGO 150

SOURCES & NOTES
SOURCES
North Slope Borough Traditions
1977-78 Survey for the Alaska
State, Arctic Resource Planning
Division, 1981

NOTES
The map of site names are
based on the map
1. Inupiat name, QUTLONOG
2. Generalized English name
"OLBERT STONE"
3. USGS name, BECKLEY POINT

FILE NUMBER
NSM File # 15000

SITE DESCRIPTION (SEE MAP ALLEGY)
INDICATION OF NATIVE SLOPE ECONOMIC
ALLIANCE, LAND USE INFORMATION
KAKTOVIK
NORWEGIAN, TRADING, U.S. COAST GUARD

Alaska Department of Fish and Game
Division of Subsistence

MAP CATALOG # 871124
FEBRUARY 1989

Map 13. Native Allotment Selections

NATIVE ALLOTMENT PLACE NAMES - MAP 13

1. Qikiqtaq, Kuugruaq, Sirraq
Hunting, fishing, ice cellar, house
2. Agliqvaḡruk
Sod house, ice cellar, gravesite
3. Agliqvaḡruk
Hunting, fishing, traps, campsite
4. Agliqvaḡruk
Hunting, fishing, ice cellar, house
5. Agliqvaḡruk
Hunting, fishing, campsite
6. Name Not Known
Hunting, fishing, trapping, camps,
cellar, gear
7. Name Not Known
Hunting, fishing, traps, camps,
cellar, gear
8. Name Not Known
Hunting, fishing, campsite
9. Name Not Known
Hunting
10. Kaḡiḡiivik
Hunting, fishing, house, campsite
11. Qattaqtuuraq
Hunting, fishing, wood-gathering,
campsite
12. Nuvuaq
Hunting, fishing, wood-gathering,
campsite
13. Name Not Known
Hunting, fishing, cellar, camps,
tent frame
14. Quḡannaq
Hunting, fishing, house, campsite
15. Sanniḡsaaluk
Hunting, fishing, wood-gathering,
campsite

NATIVE ALLOTMENT PLACE NAMES - cont.

16. Sanniqsaaluk
Hunting, fishing, storage, campsite
17. Sanniqsaaluk
Hunting, fishing, camp, tent frame, cabin
18. Patkutag
Hunting, fishing, storage, campsite
19. Uqpillam Paana
Hunting, fishing, storage, camp
20. Uqpillam Paana
Hunting, fishing, wood-gathering,
cellar, camp
21. Uqpillam Paana
Hunting, fishing, camp, cellar,
tent frame
22. Uqpillam Paana
Hunting, fishing, camp
23. Name Not Known
Hunting, fishing, nets, camps, storage
24. Name Not Known
Hunting, fishing, camps, nets, storage
25. Name Not Known
Hunting, fishing, wood-gathering, campsite
26. Naalagiagvik
Hunting
27. Naalagiagvik
Hunting, fishing, camp
28. Igluqpak
Hunting, fishing, camp, ice cellar
29. Igluqpak
Hunting, fishing, camp, ice cellar
30. Igluqpak
Hunting, fishing, camps, cellar, house
31. Name Not Known
Hunting, fishing, campsite

NATIVE ALLOTMENT PLACE NAMES - cont.

32. Name Not Known
Hunting, fishing, camp
33. Name Not Known
Hunting, fishing, trapping, camp
34. Name Not Known
Hunting, fishing, wood-gathering, camps
36. Name Not Known
Hunting, fishing, camps, house
37. Name Not Known
Hunting, fishing, nets, camps, storage
38. Name Not Known
Hunting, fishing, trapping, camp
39. Niksiksuġvik
Hunting, fishing, fish rack, camp,
house
40. Name Not Known
Hunting, fishing, fish rack, camp, house
41. "Drum Island"
Hunting, fishing, camp, gear
43. "Drum Island"
Hunting, fishing, camp
44. Tapqaq
Hunting, fishing, wood-gathering, camp
45. Name Not Known
Hunting, fishing, trapping, camp
46. Name Not Known
Hunting, fishing, wood-gathering,
cellar, camps
47. Tapqauralik
Hunting, fishing, trapping, camp
48. Tapqauralik
Hunting, fishing, trapping, fish racks
49. Tianuraq
Hunting, fishing, trapping, fish racks

NATIVE ALLOTMENT PLACE NAMES - cont.

50. Tianjuraq
Hunting, fishing, trapping,
berry-picking, house, camp
51. Tianjuraq
Hunting, fishing, camp
52. Name Not Known
Hunting, fishing, trapping, camp
53. Yaigum Tapqara
Hunting, fishing, trapping, camp
54. Tapqauraq
Hunting, fishing, camps,
cabin, tent frames
55. Tapqauraq
Hunting, fishing, camps,
tent frame
56. Nuvuqaq
Hunting, fishing, camp
57. Nuvuqaq
Hunting, fishing, wood-gathering,
camps
59. Nuvuqaq
Hunting, fishing, trapping, camps
cellar, gear
60. Nuvuqaq
Hunting, fishing, camps, cellar,
tent frame
61. Nuvuqaq
Hunting, fishing, camps
62. Name Not Known
Hunting, fishing, wood-gathering,
camps
63. Name Not Known
Hunting and camping site
64. Name Not Known
Hunting, fishing, trapping, camps

NATIVE ALLOTMENT PLACE NAMES - cont.

65. Name Not Known
Hunting, fishing, camp, gear
66. Uqsruqtalik
Hunting, fishing, trapping, cabin,
smoke house
67. Uqsruqtalik
Hunting, fishing, trapping, cabin,
smoke house
68. Name Not Known
Hunting, fishing, trapping, fish racks
69. Puukak
Hunting, fishing, wood-gathering, camps
70. Puukak
Hunting, fishing, trapping,
berry-picking, house, camp
71. "Olsen's Store"
Hunting, fishing, camps, house
72. "Olsen's Store"
Hunting, fishing, house, campsite
73. Anᖃun
Hunting
74. Anᖃun
Hunting, fishing, skin tent
75. Anᖃun
Hunting, fishing, skin tent
76. Nuvuᖅaq
Hunting, fishing, berry-picking,
camp, cabin
77. Atchalik
Hunting, fishing, camp
78. Piᖃuqsraaluk
Hunting, fishing, berry-picking,
camp, cabin
79. Maᖃiᖅaaluk
Hunting, fishing, berry-picking,
camp, cabin

NATIVE ALLOTMENT PLACE NAMES - cont.

80. Name Not Known
Hunting, fishing, camp
81. Name Not Known
Hunting, fishing, trapping,
berry-picking, cellar
82. Name Not Known
Hunting, fishing, camp
83. Name Not Known
Hunting, fishing, camp
84. Name Not Known
Hunting, fishing, trapping,
berry-picking, cellar
85. Sallitchit Iqaluitch
Hunting, fishing, trapping, camps
86. Sallitchit Iqaluitch
Hunting, fishing, camps
87. Sallitchit Iqaluitch
Hunting, fishing, camps
88. Siiqsifñiq
Hunting, fishing, camps, cellar, gear
89. Niaquqtuñuiqsaañvik
Hunting, fishing, camps, cellar,
tent frame
90. Arctic Creek
Hunting, fishing, camps, cellar,
gear
91. Qayyaag
Hunting, fishing, camps
92. Name Not Known
93. Anayuqaksrakuvik
Hunting, fishing, camp, tent
frame, cabin
94. Anayuqaksrakuvik
Hunting, fishing, camps

NATIVE ALLOTMENT PLACE NAMES - cont.

95. Anayuqaksrakuvik
Hunting, fishing, trapping,
berry-picking, cellar
96. Anayuqaksrakuvik
Hunting, fishing, camp, tent
frame, cabin
97. Aaquaksrakuvik
Hunting, fishing, camps
98. Aqviquraq, Iqaluṅniagvik,
Niksiksuḡvik
Hunting, fishing, trapping, camp
99. Aqviquraq, Iqaluṅniagvik,
Niksiksuḡvik
Hunting, fishing, camp, nets,
storage
100. Uqpillaq Lake
Hunting, fishing, berry-picking,
camp.
101. Uqpillaq Lake
Hunting, fishing, trapping,
berry-picking, house, camp
102. Uqpillaq Lake
Hunting, fishing, camps
103. Uqpillaq Lake
Hunting, fishing, trapping, camp
104. Name Not Known
Hunting, fishing
105. Name Not Known
Hunting, fishing, camp
106. Anigaganig, Kuḡuluuraq
Hunting, fishing, trapping, camp
107. Anigaganig, Kuḡuluuraq
Hunting, fishing, trapping, camp
108. Name Not Known
Hunting, fishing, berry-picking,
camp, cabin

NATIVE ALLOTMENT PLACE NAMES - cont.

- 109. Igluqpauraq
Hunting, fishing, camp,
tent frame, cabin
- 110. Name Not Known
Hunting, fishing, camp
- 111. Name Not Known
Hunting, fishing, trapping, camp
- 112. Name Not Known
Hunting, fishing, camp, net, storage
- 113. Name Not Known
Hunting, fishing, trapping, camps
- 114. Paaqta
Hunting, fishing, camp
- 115. Kaŋi
Hunting, fishing, trapping, camp
- 116. Kaŋi
Hunting, fishing, camp