

**SUBSISTENCE USE AREA MAPPING  
IN TEN KOTZEBUE SOUND COMMUNITIES**

**by**

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Several individuals and groups deserve special recognition for their role in making this project a success. Marie Greene, president of Maniilaq Native Association, and the Maniilaq Board of Directors, were instrumental in getting this cooperative project off the ground and in reviewing project progress. Paul Hansen and Duane Kujala of Maniilaq Association helped arrange community meetings and ably assisted in the data gathering and map review process. Barbara Carter of the Division of Subsistence provided valuable assistance to the research effort in the communities of Ambler, Shungnak, and Kobuk. Susan Georgette and Hannah Loon, Division of Subsistence Kotzebue staff assisted with travel arrangements and the final round of map approval meetings in Kiana, Kivalina, Noatak, Noorvik, and Selawik.

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Natural Resources and the National Park Service. Their support in a time of shrinking state budgets helped make this project possible.





## **INTRODUCTION**

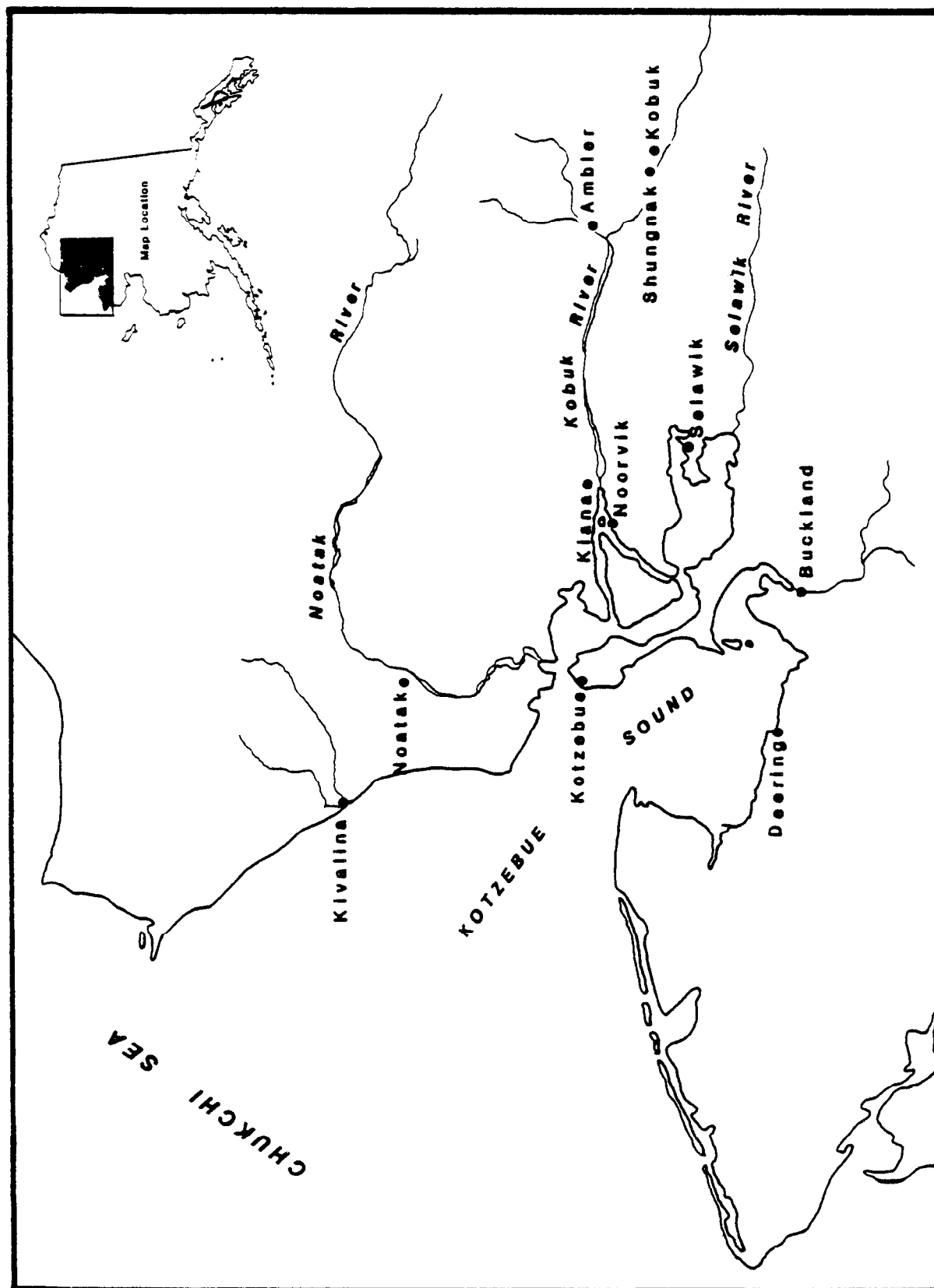
This brief report was written to accompany and describe subsistence land use maps of northwest Alaska produced by the Division of Subsistence and Maniilaq Association. It provides a reference and index for the subsistence land use maps available for ten communities in the Northwest Alaska Native Association (NANA) area from research conducted in 1985 and 1986. It also describes the field and analytical methodology used to generate these maps. For background information and a bibliography of contemporary research on subsistence use of fish and game in the Kotzebue Sound area see Alaska Department of Fish and Game (1986b).

Figure 1 depicts the NANA Region and the location of the ten communities where research took place. Subsistence land use data were collected in 1985 and 1986 as part of a cooperative research effort between the Division of Subsistence, Alaska Department of Fish and Game (ADF&G), and the Maniilaq Association.

### **Purpose**

Mapping of the geographical extent of subsistence land use has been undertaken by the Division of Subsistence, North Slope Borough, and other agencies in numerous communities throughout the state as a means of documenting subsistence use of fish and game. Maps produced through these efforts have proved to be useful in assuring that subsistence activities are given appropriate consideration in land decisions, such as regional land use plans, resource development, and land disposals. Land use maps are also

Figure 1. Map of Kotzebue Sound Area.



valuable for making ANILCA 810 determinations on federally managed lands.

Mapping was undertaken in NANA communities because of pending land use plans in the region and because adequate subsistence land use maps were not available. As part of a separate project to review all extant maps of subsistence for the Bering, Chukchi, and Beaufort seas, all existing land use maps for the NANA region were reviewed by the Division of Subsistence (Coffing, 1985). These included sets of maps found in Anderson et al (1977), Braund and Burnham (1983), Eisler (1978), Foote (1966), Foote and Williamson (1961, 1966), Joint Federal-State Lands Commission (1973-74), Sarrio and Kessel (1966), and Uhl and Uhl (1979).

These earlier sets of maps were developed as part of past research efforts in NANA region communities, used differing methodologies, and were drawn to answer a variety of research questions. In our review we found that none of these sets, however, provided the type or quality of subsistence land use documentation needed at the present time.

Several agencies have stated a need for subsistence land use information for the NANA region. These include the State of Alaska for the Northwest Area Plan, National Park Service for plans for Cape Krusenstern National Monument, Gates of the Arctic National Park, Kobuk Valley National Park, and Noatak National Preserve, and U. S. Fish and Wildlife Service for plans for the Selawik National Wildlife Refuge. Up to date subsistence land use maps also were needed by Maniilaq Association and NANA Regional Corporation as part of the NANA regional strategy being developed by those agencies. In addition, the Division of Subsistence

was interested in adding subsistence land use maps for the NANA Region communities to its growing statewide data base of subsistence use areas.

### **Objective**

The primary objective of the NANA Region subsistence land use mapping project was to produce a set of maps showing the geographic extent of hunting, trapping, fishing, and gathering activities of residents in the communities of Ambler, Buckland, Deering, Kiana, Kivalina, Kobuk, Noatak, Noorvik, Selawik, and Shungnak. The subsistence use areas of Kotzebue residents were not documented as part of this project but will be covered by future research efforts by the Division of Subsistence.

## **METHODOLOGY**

### **General Research Design**

Community understanding and approval of the project and the active participation of residents were essential to the success of the mapping effort. About six months of preparatory work took place before any field mapping was undertaken. Public meetings were held in Kotzebue to discuss possible ways of collecting subsistence land use data before the final research design was developed. The project research design was presented to and approved by the Maniilaq Board of Directors before any field research took place. This board includes representatives from most of the NANA Region villages. In each study community the project design and objectives were presented in public meetings to community Indian

Reorganization Act (IRA) and City Councils by Maniilaq and Division of Subsistence staff. Collection of field data began in a community with the concurrence of these organizations.

The project was divided into two phases. In 1985, the five communities located in closest proximity to large state land holdings were identified for Phase I mapping activities. Phase I communities included Ambler, Buckland, Deering, Kobuk, and Shungnak. In 1986, mapping in the Phase II communities of Kiana, Kivalina, Noatak, Noorvik, and Selawik was undertaken.

Mapped data were collected and reviewed through a series of at least three public meetings in each community and interviews with key respondents. Draft maps were prepared following the first round of meetings and key respondent interviews in each community. In the second round of field research project staff returned to each community with the draft maps. Subsistence land use data were reviewed with the original mappers and interviews were held with key respondents not contacted on the first research round at this time. After the final round of data collection took place and researchers had verified the accuracy and completeness of data, final draft reference maps were prepared. These sets of reference maps were taken back to each community for final revision and formal approval by the City Council or IRA Council. In most cases only minor changes were made at the time of this final review.

## **Data Collection**

The timing of field mapping was coordinated by Maniilaq through City or IRA council staff in each community. When possible, field staff attended regularly scheduled City Council and IRA Council meetings. People were made aware of field mapping in advance through posted meeting notices in each community and announcements on KOTZ radio. In initial meetings, research staff explained the goals and objectives of the mapping research to community members and answered questions. After residents understood the project and agreed to participate, they were asked to outline use areas for specific resource categories.

During community meetings and other formal mapping sessions 1:250,000 scale base maps covering all of northwest Alaska were displayed. Use areas were recorded using colored pens on clear acetate sheets covering the base maps. Because of the extensive geographical area used by NANA residents and the complexity of information, group mapping sessions usually lasted two or three hours. Discussion concerning use areas often took place in Inupiaq and was guided by a bilingual team member. Researchers kept a listing of all persons who provided mapped data. A listing of other community residents who should be contacted was prepared as well.

Following the initial group mapping session, base maps and overlays were left on display, and researchers remained in the community for a period of one to four days to assure that all interested residents had an opportunity to contribute to the mapping effort. Village elders and other individuals who had the reputation of being particularly knowledgeable hunters, trappers, or fishers were individually contacted and encouraged to

examine the mapped data collected and to add information in key respondent interviews. These interviews served to check data already recorded and to incorporate the subsistence use areas of these persons.

Second field mapping visits took place in each community and followed a similar format. If possible, first and second mapping and final review field visits were scheduled weeks or months apart in order to provide individuals who may have been seasonally absent from the community or otherwise unable to attend the first meeting with a chance to participate. At the second mapping session maps from the previous meeting were displayed and reviewed and additions or subtractions made where necessary. Additional key respondent interviews were done at this time. As in the initial research visits, base maps and overlays were left on display, and researchers spent one to four days doing further key respondent mapping and topical interviews.

### **Resource Categories and the Time Period Mapped**

At community mapping sessions the question was posed: "During the time you have been living in (community name), where have you gone to harvest the following subsistence resources?" Resource categories mapped are depicted in Table 1. This was explained and understood to mean that residents would indicate their regular hunting, fishing, trapping, and gathering areas. Areas that were not used for customary and traditional harvesting, for instance, areas visited only once or areas only hunted with friends in another village, were not recorded.

**Table 1. Species and Resource Categories Mapped in NANA Region Subsistence Use Area Mapping Project, 1985, 1986.**

Bears (brown and black)  
Belukha  
Bowhead whale  
Caribou  
Dall sheep  
Eggs  
Fish (non salmon)  
Furbearers  
Marine invertebrates  
Marine mammals (general)  
Moose  
Plants and berries  
Polar bear  
Salmon  
Seal  
Small game (hare, ptarmigan, grouse)  
Walrus  
Waterfowl  
Wood

The lines on maps generated by these questions represent the outer boundaries of the areas used by community members for the harvest of each resource. The time depth represented is the lifetime of living respondents. For example, the subsistence use area depicted for caribou for each community depicts the area used by members of that community at any time in which they were living in that community. This time period is consistent with other baseline subsistence use area research conducted by the Division of Subsistence throughout the state. The lifetime use pattern evens out natural fluctuations in resource distribution and abundance that affect land use patterns. For example, caribou hunting areas shift from year to year due to changes in migration patterns. Some years may require hunters to shift to other areas to harvest caribou. A shorter mapping timeframe would not include all customary and traditional subsistence use areas by a given community.



The names, ages, and length of residency of respondents attending mapping sessions were collected. Although all adult age groups were represented at most mapping sessions, the oldest age group consistently represented were those with 60 to 70 years residency. The maps, therefore, can be thought of as depicting subsistence use activities during the period ca. 1925 to 1985 or 1986.

### **Map Review Process**

With the completion of two mapping field visits in each community, subsistence land use data were compiled into sets of 1:250,000 scale draft reference maps for each community. Originals of these maps are monochrome transparencies and use distinct line symbols and animal silhouettes to indicate resource specific harvest areas that had been recorded with colored pens during field mapping.

Bluelines of draft reference maps were taken back to each community for final review and approval by the IRA or City councils. Research staff attended regularly scheduled council meetings or requested special meetings for review of our maps. At these meetings research staff asked council members and the public to review the bluelines of draft reference maps and make any corrections that might be needed. Line changes in during final review were minimal. IRA and City councils were also requested to approve the maps by formal resolution.

Approval of the draft maps by formal resolution required that a quorum of either City or IRA council members be present to pass the

resolution. In most communities, resolutions approving the draft maps were obtained by both councils. A copy of the signed and dated resolution for Noatak is reproduced in Figure 2. Following approval of the draft maps, final drafting took place. Final drafting incorporated the changes suggested during the final map review and source material, title block, and qualifier information.

### **Community Mapping Sessions**

Dates of mapping sessions, the researchers involved, community population, and the number of residents contributing to the mapping effort in each community are detailed below.

#### **Ambler**

The 1985 population of Ambler was an estimated 275 persons occupying 61 households. About 35 community residents including elders and many of the most active hunters contributed to the field mapping.

Dates of mapping sessions in Ambler were as follows:

Date	Researchers
5-16-86 1st mapping session.	Schroeder, Carter.
8-21-85 2nd mapping session.	Schroeder.
10-10-85 Final review session.	Andersen, Hildreth, Kujala.

Resolutions approving the maps were passed by the Ambler City Council and Ambler IRA Council on 10-10-85.

Figure 2. Sample Resolution.

Women's Shelter  
P.O. Box 38  
Kotzebue, Alaska 99752  
(907) 442-3969

Public Health Nursing  
P.O. Box 170  
Kotzebue, Alaska 99752  
(907) 442-3313

# Maniilaq Association

P.O. Box 256  
Kotzebue, Alaska 99752  
(907) 442-3311

Senior Citizens' Center  
P.O. Box 260  
Kotzebue, Alaska 99752  
(907) 442-3590 or 3591

Health & Human Services  
F.R. Ferguson Building  
(907) 442-3313 or 3914

## RESOLUTION 86-

### NORTHWEST AREA SUBSISTENCE MAPPING PROJECT

WHEREAS: The Community of NOATAK has been involved in the development of a life time subsistence map; and

WHEREAS: The Elders, Trappers, Hunters and Gatherers have all contributed knowledge of the land in the preparation of these maps; and

WHEREAS: We have participated in preparing and developing the maps of the Northwest Area Subsistence Mapping Project.

NOW, THEREFORE BE IT RESOLVED: That, the Community of NOATAK approve and endorse the maps prepared under the Northwest Area Subsistence Mapping Project, prepared by Maniilaq Association in conjunction with the State of Alaska Department of Fish and Game, Subsistence Division.

[Signature]  
IRA President

[Signature]  
IRA Administrator

[Signature]  
Attest

9-25-86  
Date

#### MEMBER VILLAGES

Ivisaappaat, Nunatchiaq, Innatchiaq, Karyak, Kivaliniq, Laigvik, Qikiqtaruk, Nautaaq, Nuurvik, Akuligaaq, Isinnaq  
Ambler, Buckland, Deering, Kiana, Kivalina, Kobuk, Kotzebue, Noatak, Noorvik, Selawik, Shungnak

## **Buckland**

The 1985 population of Buckland was an estimated 250 persons occupying 55 households. About 19 community residents including elders and many of the most active hunters contributed to the field mapping.

Dates of mapping sessions in Buckland were as follows:

Date	Researchers
6-4-85 1st mapping session.	Andersen, Hildreth, Schroeder.
6-27-85 2nd mapping session.	Andersen, Hildreth.
1-22-86 Final review session.	Andersen, Hildreth.

Resolutions approving the maps were passed by the Buckland City Council and Buckland IRA Council on 1-22-86.

## **Deering**

The 1985 population of Deering was an estimated 140 persons occupying 43 households. About 24 community residents including elders and many of the most active hunters contributed to the field mapping.

Dates of mapping sessions in Deering were as follows:

Date	Researchers
6-6-85 1st mapping session.	Andersen, Hildreth.
6-6-85 2nd mapping session.	Andersen, Hildreth.
10-8-85 Final review session.	Andersen, Hildreth.

Resolutions approving the maps were passed by the Deering City Council and Deering IRA Council on 10-8-85.

## **Kiana**

The 1986 population of Kiana was an estimated 404 persons occupying 80 households. About 23 community residents including elders and many of the most active hunters contributed to the field mapping. Dates of mapping sessions in Kiana were as follows:

Date	Researchers
3-26-86 1st mapping session.	Andersen, Hildreth .
4-24-86 2nd mapping session.	Andersen, Hildreth.
10-24-86 Final review session.	Andersen, Georgette, Hansen.

Resolutions approving the maps were passed by the Kiana City Council and Kiana IRA Council on 11-13-86.

## **Kivalina**

The 1986 population of Kivalina was an estimated 260 persons occupying 73 households. About 16 community residents including elders and many of the most active hunters contributed to the field mapping. Dates of mapping sessions in Kivalina were as follows:

Date	Researchers
2-20-86 1st mapping session.	Andersen.
3-27-86 2nd mapping session.	Andersen, Hildreth.
10-21-86 Final review session.	Andersen, Georgette, Hansen, Loon.

Resolutions approving the maps were passed by the Kivalina City Council and Kivalina IRA Council on 11-5-86.

## **Kobuk**

The 1985 population of Kobuk was an estimated 70 persons occupying 20 households. About 30 community residents contributed to the field mapping including elders and all of the most active hunters and members of all Kobuk households. Dates of mapping sessions in Kobuk were as follows:

Date		Researchers
4-23-85	1st mapping session.	Schroeder, Carter, Hildreth.
5-9-85	2nd mapping session.	Schroeder, Hildreth.
9-17-85	Final review session.	Schroeder

Resolutions approving the maps were passed by the Kobuk City Council and Kobuk IRA Council on 9-19-85.

## **Noatak**

The 1986 population of Noatak was an estimated 304 persons. About 25 community residents including elders and many of the most active hunters contributed to the field mapping. Dates of mapping sessions in Noatak were as follows:

Date		Researchers
4-10-86	1st mapping session.	Schroeder, Hildreth.
6-19-86	2nd mapping session.	Schroeder.
9-26-86	3rd mapping session.	Schroeder.
10-25-86	Final review session.	Schroeder, Georgette, Loon.

Resolutions approving the maps were passed by the Noatak IRA Council on 10-25-86.

### Noorvik

The 1986 population of Noorvik was an estimated 523 persons occupying 62 households. About 27 community residents including elders and many of the most active hunters contributed to the field mapping. Dates of mapping sessions in Noorvik were as follows:

Date	Researchers
3-25-86 1st mapping session.	Andersen, Hildreth.
4-23-86 2nd mapping session.	Andersen, Hildreth.
9-24-86 Review session.	Andersen, Georgette, Loon, Schroeder.
10-23-86 Final review session.	Andersen, Georgette, Hansen.

Resolutions approving the maps were passed by the Noorvik City Council and Noorvik IRA Council on 10-28-86.

### Selawik

The 1986 population of Selawik was an estimated 637 persons occupying 126 households. About 39 community residents including elders and many of the most active hunters contributed to the field mapping. Dates of mapping sessions in Selawik were as follows:

Date	Researchers
2-18-86 1st mapping session.	Andersen, Hildreth.
4-23-86 2nd mapping session.	Andersen Hildreth.
9-23-86 Final review session.	Andersen, Georgette, Loon.

Resolutions approving the maps were passed by the Selawik City Council and Selawik IRA Council on 9-23-86.

### **Shungnak**

The 1985 population of Shungnak was an estimated 225 persons occupying 47 households. About 40 community residents including elders and many of the most active hunters contributed to the field mapping. Dates of mapping sessions in Shungnak were as follows:

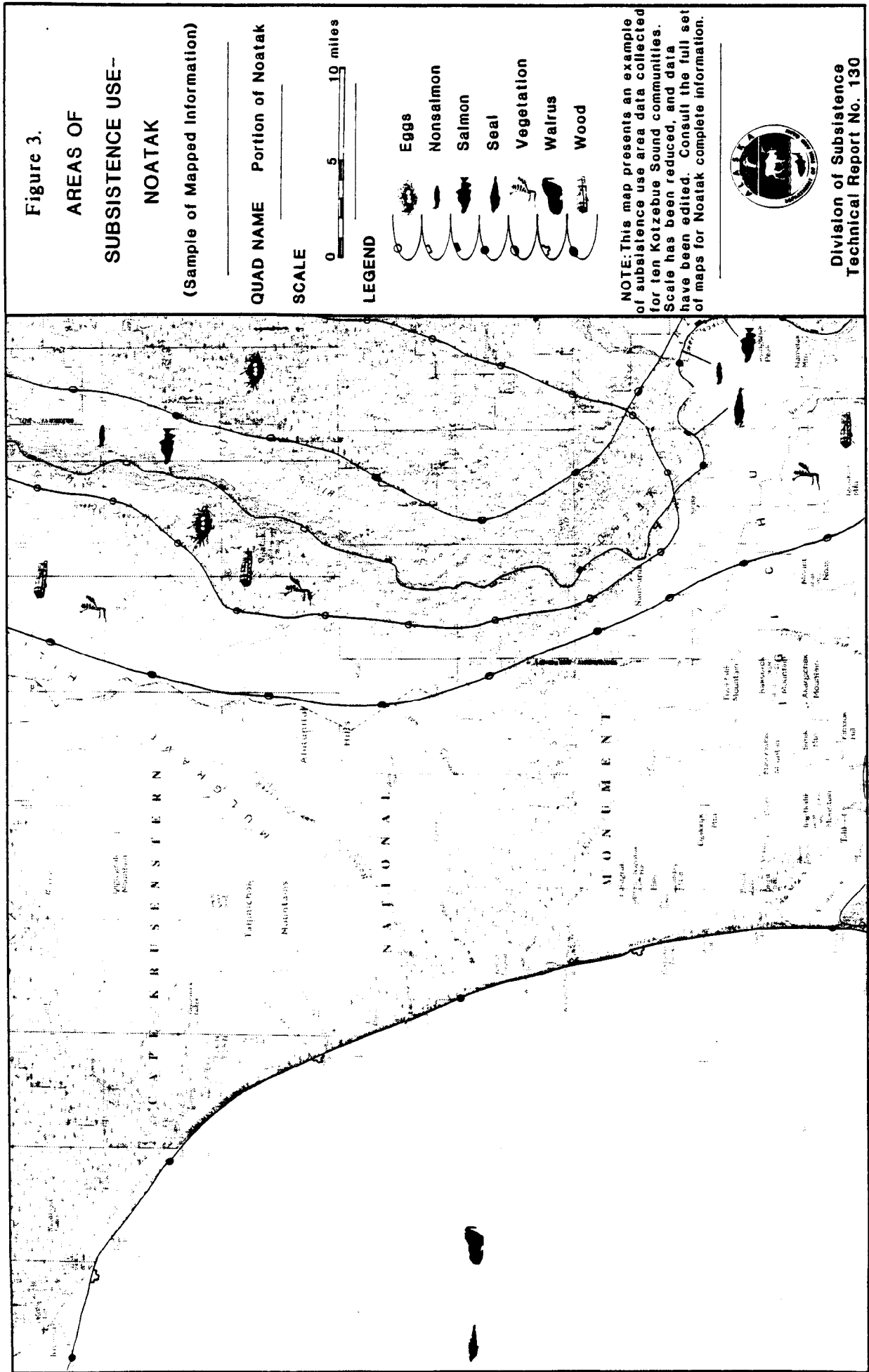
Date	Researchers
4-25-85 1st mapping session.	Schroeder, Carter.
5-13-85 2nd mapping session.	Schroeder, Hildreth.
10-9-85 Final review session.	Andersen, Hildreth, Kujala.

Resolutions approving the maps were passed by the Shungnak City Council and Shungnak IRA Council on 10-9-85.

### **SUBSISTENCE USE AREA MAPS**

Tables 2 through 14 list the subsistence uses documented and the USGS quads for each of the ten study communities. A total of 141, reference maps using 24 different USGS quad base maps at 1:250,000 scale were completed in this project. Figures 3 and 4 provide examples of mapping detail and format of final products for a portion of the subsistence use areas of Noatak and Selawik respectively.





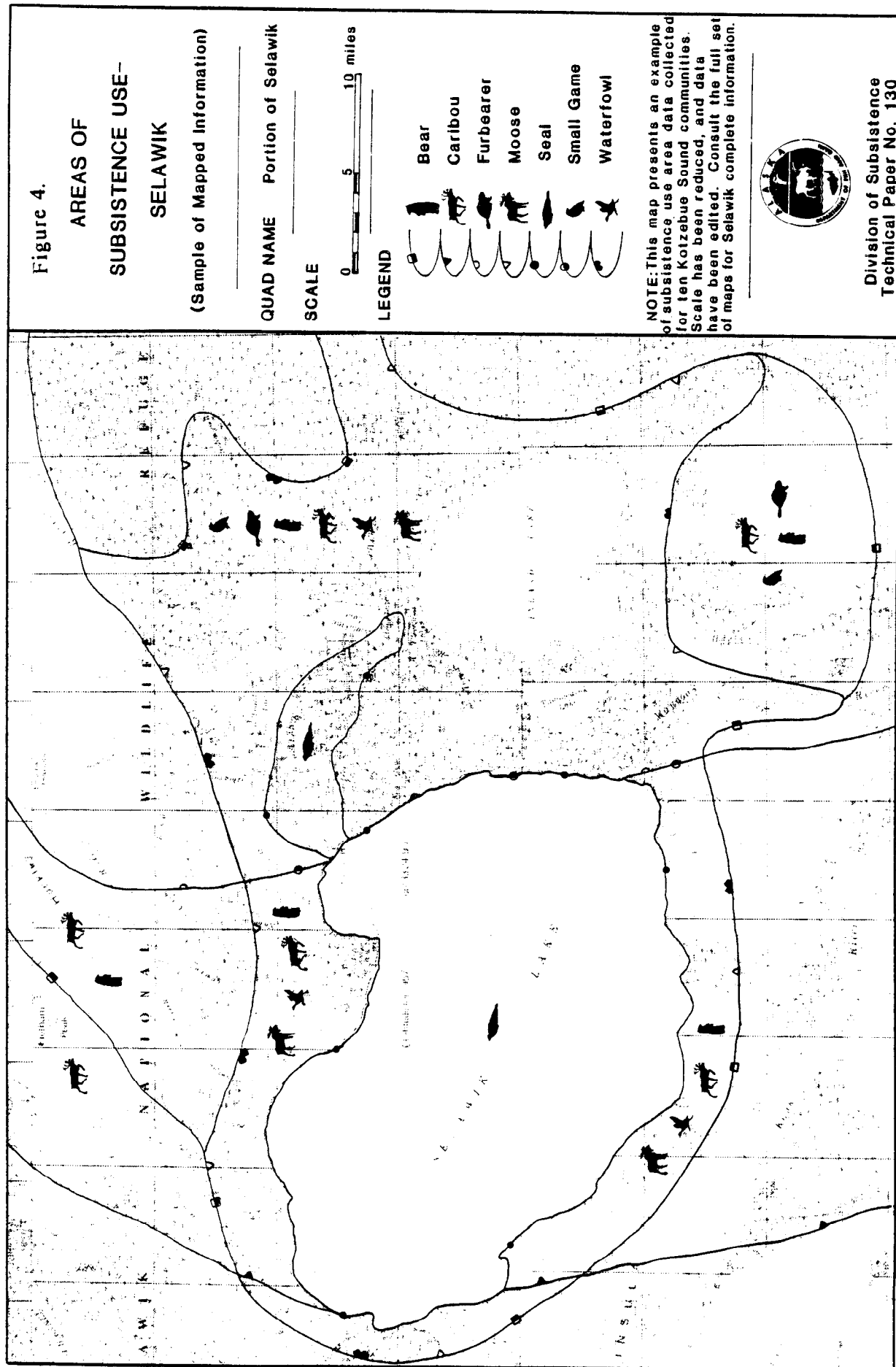


Table 2 lists the number of maps available for each community by quadrangle. Because of the complexity of subsistence use in some areas more than one map for each USGS quad was needed to clearly depict all uses. From 8 to 19 reference maps were required to depict the subsistence use areas of each community. The number of quads needed to record the land use activities in various communities ranged from 8 in Deering and Kivalina to 19 in Ambler. The average community subsistence land use area incorporated 13 quad maps.

Tables 3-14 provide referencing or indexing information for the series of subsistence use area maps. These tables should help the user of reference maps to identify maps with particular subsistence use area data. Tables 3-12 show which resources are harvested on each USGS quad by each community. For example, Table 3 shows that Ambler residents hunt sheep in the Ambler River, Baird Mountains, Howard Pass, and Killik River USGS quads. The specific areas that are used by Ambler residents for this harvest can be seen by looking at the appropriate map.

Table 13 lists the total number of uses recorded on each quad by community. Table 14 shows the number of communities using each quad for each species or resource category. As expected, caribou hunting and furbearer hunting and trapping are the most extensive subsistence harvesting activities. Salmon fishing, seal, walrus, and belukha hunting, and plant gathering show much less areal extensivity. Some harvesting activities occur in only a few quads.

Table 13 shows that, despite the vast area of the NANA region and the large distances separating the ten communities, there are four quads-- Kotzebue, Selawik, Baird Mountains, and Noatak-- which show use by all

ten communities. These quads include many of the key resource harvesting locations in northwest Alaska: coastal marine mammal harvesting areas from Sheshalik to Cape Krusenstern, the caribou crossing at Onion Portage, and productive riverine and lacustrine salmon and freshwater fish harvesting sites.

**Table 2. NANA Region Subsistence Land Use Reference Maps by Community and Quad.**

**AMBLER, 19 Reference Maps.**

Ambler River  
Baird Mts.  
Candle  
DeLong Mts.  
Howard Pass  
Hughes  
Ikpikpuk River  
Kateel River  
Killik River  
Kotzebue  
Lookout Ridge  
Misheguk Mt.  
Noatak  
Point Hope  
Selawik  
Shishmaref  
Shungnak  
Survey Pass  
Utukok River

**BUCKLAND, 14 Reference Maps.**

Ambler River  
Baird Mts.  
Bendeleben  
Candle  
DeLong Mts.  
Howard Pass  
Kateel River  
Kotzebue  
Misheguk Mt.  
Noatak  
Point Hope  
Selawik #1  
Selawik #2  
Shungnak

**DEERING, 8 Reference Maps.**

Baird Mts.  
Bendeleben  
Candle  
Kotzebue  
Noatak  
Selawik  
Shishmaref  
Teller

**KIANA, 12 Reference Maps.**

Ambler River  
Baird Mts. #1  
Baird Mts. #2  
Howard Pass  
Killik River  
Kotzebue  
Lookout Ridge  
Misheguk Mt.  
Noatak  
Selawik #1  
Selawik #2  
Shungnak

**KIVALINA, 13 Reference Maps.**

Baird Mts.  
DeLong Mts. #1  
DeLong Mts. #2  
Kotzebue  
Misheguk Mt.  
Noatak #1  
Noatak #2  
Noatak #3  
Noatak #4  
Point Hope #1  
Point Hope #2  
Selawik  
Shishmaref

**KOBUK, 10 Reference Maps.**

Ambler River  
Baird Mts.  
Howard Pass  
Hughes  
Killik River  
Kotzebue  
Noatak  
Selawik  
Shungnak  
Survey Pass

**NOATAK, 19 Reference Maps.**

Ambler River  
Baird Mts. #1  
Baird Mts. #2  
DeLong Mts.  
Howard Pass  
Killik River  
Kotzebue #1  
Kotzebue #2  
Lookout Ridge

Misheguk Mt. #1  
Misheguk Mt. #2  
Noatak #1  
Noatak #2  
Point Hope  
Point Lay  
Selawik  
Shungnak  
Survey Pass  
Utukok River

**NOORVIK, 16 Reference Maps.**

Ambler River  
Baird Mts. #1  
Baird Mts. #2  
Candle  
DeLong Mts.  
Howard Pass  
Kateel River  
Killik River  
Kotzebue  
Misheguk Mt.  
Noatak  
Point Hope  
Selawik #1  
Selawik #2  
Selawik #3  
Shungnak

**SELAWIK, 15 Reference Maps.**

Ambler River  
Baird Mts.  
Candle  
Howard Pass  
Hughes  
Ikpikpuk River  
Kateel River  
Killik River  
Kotzebue  
Noatak  
Selawik #1  
Selawik #2  
Shungnak #1  
Shungnak #2  
Survey Pass

**SHUNGNAK, 15 Reference Maps.**

Ambler River  
Baird Mts.  
Chandler Lake  
Howard Pass  
Hughes  
Ikpikpuk River  
Killik River  
Kotzebue  
Lookout Ridge  
Misheguk Mt.  
Noatak  
Selawik  
Shungnak  
Survey Pass  
Umiat



Table 3. Ambler Harvest Activities by Quad.

USGS Quad	Resources Harvested											
	Bear	Caribou	Sheep	Fish		Fur- bearers	Marine Mammals	Moose	Plants	Salmon	Small Game	Water- fowl
				Non-Salmon	Salmon							
Ambler River	X	X	X	X	X			X	X	X	X	X
Baird Mountains	X	X	X	X	X			X	X	X	X	X
Candle		X			X						X	
Delong Mountains		X			X						X	
Howard Pass	X	X	X		X						X	X
Hughes	X	X		X	X			X		X	X	X
Ikpikpuk River		X			X						X	
Kateel River		X			X						X	
Killik River		X	X		X			X			X	
Kotzebue				X			X					
Lookout Ridge		X			X						X	
Wisheguk Mtn.	X	X			X						X	
Noatak		X		X	X		X				X	
Point Hope							X					
Selawik		X		X	X		X	X		X	X	X
Shishmaref							X					
Shungnak	X	X		X	X			X	X	X	X	X
Survey Pass	X	X		X	X			X			X	X
Utukok River		X			X						X	

Table 4. Buckland Harvest Activities by Quad.

USGS Quad	Resources Harvested													
	Bear	Belukha	Caribou	Eggs	Fish Non-Salmon	Fur- bearers	Marine Invert.	Moose	Plants	Salmon	Seal	Small Game	Water- fowl	Wood
Ambler River			X											
Baird Mountains			X		X									
Bendeleben	X		X			X						X		
Candle	X	X	X		X	X	X	X	X	X	X	X		X
Delong Mountains			X											X
Howard Pass			X											
Kateel River			X											
Kotzebue		X			X				X		X		X	
Misheguk Mtn.			X											
Noatak		X	X		X									
Point Hope		X												
Selawik	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Shungnak			X											

Table 5. Deering Harvest Activities by Quad.

USGS Quad	<u>Resources Harvested</u>										
	Bear	Belukha	Caribou	Eggs	Fish		Fur- bearers	Marine Invert.	Moose	Plants	Salmon
					Non-Salmon	Salmon					
Baird Mountains			X		X						
Bendeleben	X		X		X	X	X		X	X	X
Candle	X		X		X		X		X	X	
Kotzebue	X		X	X	X	X	X	X	X	X	X
Noatak			X		X						
Selawik	X	X	X	X	X		X			X	X
Shishmaref	X						X		X	X	
Teller	X						X		X	X	

Table 6. Kiana Harvest Activities by Quad.

USGS Quad	Resources Harvested													
	Bear	Belukha	Caribou	Sheep	Eggs	Fish Non-Salmon	Fur- bearers	Moose	Plants	Salmon	Seal	Small Game	Water- fowl	Wood
Ambler River	X		X	X		X	X	X	X	X		X	X	
Baird Mountains	X		X	X		X	X	X	X	X		X	X	X
Howard Pass	X		X				X					X		
Killik River	X		X				X					X		
Kotzebue		X				X			X	X	X			
Lookout Ridge	X		X				X					X		
Misheguk Mtn.	X		X				X					X		
Noatak	X	X	X	X			X		X		X	X		
Selawik	X	X	X		X	X	X	X	X	X	X	X	X	X
Shungnak	X		X			X	X					X		

Table 7. Kivalina Harvest Activities by Quad.

USGS Quad	<u>Resources Harvested</u>																
	Bear	Belukha	Bowhead	Caribou	Sheep	Eggs	Fish	Fur- bearers	Marine Invert.	Moose	Plants	Polar Bear	Seal	Small Game	Walrus	Water- fowl	Wood
Baird Mountains	X			X				X									
DeLong Mountains	X			X	X		X	X		X				X			
Kotzebue																	
Misheguk Mtn.	X	X	X	X			X	X				X	X			X	X
Noatak	X	X	X	X	X		X	X		X				X			
Point Hope	X	X	X	X		X				X	X	X	X	X	X	X	X
Selawik								X		X	X	X	X	X	X	X	X
Shishmaref							X				X	X					

Table 8. Kobuk Harvest Activities by Quad.

USGS Quad	<u>Resources Harvested</u>										
	Bear	Caribou	Sheep	Fish Non-Salmon	Fur- bearers	Marine Mammals	Moose	Plants	Salmon	Small Game	Water- fowl
Ambler River	X	X	X	X	X		X	X	X	X	X
Baird Mountains		X									
Howard Pass	.	X	X		X						
Hughes	X	X	X	X	X		X	X	X	X	X
Killik River		X	X		X						
Kotzebue						X					
Noatak						X					
Selawik		X				X					
Shungnak	X	X	X	X	X		X	X	X	X	X
Survey Pass	X	X	X	X	X		X	X	X	X	X

Table 9. Noatak Harvest Activities by Quad.

USGS Quad	Resources Harvested																
	Bear	Belukha/ Bowhead Whale	Caribou	Sheep	Eggs	Fish Non-Salmon	Fur- bearers	Marine Invert.	Moose	Plants	Polar Bear	Salmon	Seal	Small Game	Walrus	Water- fowl	Wood
Ambler River			X				X							X			
Baird Mountains	X		X	X		X	X		X	X		X		X			
Delong Mountains	X		X	X			X		X					X		X	
Howard Pass			X				X							X			
Killik River			X											X			
Kotzebue	X	X	X		X	X	X	X	X	X			X	X	X		
Lookout Ridge							X							X		X	
Misheguk Mtn.	X		X	X		X	X		X			X		X			
Noatak	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Point Hope		X	X				X							X			
Point Lay			X				X							X			
Selawik		X	X				X						X	X			
Shungnak			X														
Survey Pass			X														
Utukok River			X				X										X

Table 10. Noorvik Harvest Activities by Quad.

USGS Quad	Resources Harvested																		
	Bear	Belukha	Caribou	Sheep	Eggs	Non-Salmon			Fur-bearers			Moose	Plants	Salmon	Seal	Small Game	Walrus	Water-fowl	Wood
						Fish	Fur	Plant											
Ambler River	X		X					X	X		X								
Baird Mountains	X		X	X	X	X			X	X			X					X	
Candle			X					X	X										
Delong Mountains			X	X				X	X										
Howard Pass			X					X	X										
Kateel River			X					X	X										
Killik River									X								X		
Kotzebue		X				X							X						
Misheguk Mtn.			X					X	X				X						
Noatak		X	X	X					X				X						
Point Hope		X			X						X		X					X	
Selawik	X	X	X													X			
Shungnak	X		X						X									X	



Table 11. Selawik Harvest Activities by Quad.

USGS Quad	<u>Resources Harvested</u>											
	Bear	Belukha	Caribou	Fish	Fur- Non-Salmon bearers	Moose	Plants	Salmon	Seal	Small Game	Water- fowl	Wood
Ambler River			X									
Baird Mountains									X			
Candle			X	X	X					X		
Howard Pass			X									
Hughes					X					X		
Ikpikpak River			X									
Kateel River				X	X					X		
Killik River			X									
Kotzebue				X				X	X			
Noatak								X	X			
Selawik	X	X	X	X	X	X	X		X	X	X	X
Shungnak	X		X	X	X	X	X			X	X	
Survey Pass			X									X

Table 12. Shungnak Harvest Activities by Quad.

USGS Quad	Resources Harvested										
	Bear	Caribou	Sheep	Fish Non-Salmon	Fur- bearers	Marine Mammals	Moose	Plants	Salmon	Small Game	Water- fowl
Ambler River	X	X	X	X	X		X	X	X	X	X
Baird Mountains	X	X		X	X				X	X	
Chandler Lake		X									
Howard Pass	X	X	X		X					X	
Hughes	X	X		X	X		X	X	X	X	X
Ikpikuk River		X									
Killik River	X	X	X		X					X	
Kotzebue						X					
Lookout Ridge		X									
Misheguk Mtn.		X			X						
Noatak						X					
Selawik	X	X			X	X				X	
Shungnak	X	X		X	X		X	X	X	X	X
Survey Pass	X	X	X	X	X		X	X	X	X	X
Uniat		X									

Table 13. Number of Resource Categories Used on Each Quad By MANA Region Communities.

USGS Quad	Ambler	Buckland	Deering	Kiana Kivilina	Kobuk	Noatak	Noorvik	Selawik	Shungnak	Number of Communities Using Each Quad	Total Resource Categories Used Per Quad
Ambler River	10	1		10	10	3	5	1	10	8	50
Baird Mountains	10	2	2	11	4	1	9	12	1	10	58
Bendeleben		4	10							2	14
Candle	3	13	7				2	4		5	29
Chandler Lake									1	1	1
Delong Mountains	3	1		10		7	3			5	24
Howard Pass	6	1		4	3	3	2	1	5	8	25
Hughes	8				10			2	9	4	29
Ikpikpuk River	3							1	1	3	5
Kateel River	3	1					2	3		4	9
Killik River	5			4	3	1	1	1	5	7	20
Kotzebue	2	5	13	5	1	13	6	3	1	10	57
Lookout Ridge	3			4		2			1	4	10
Misheguk Mtn.	4	1		4		8	2		2	7	25
Noatak	5	3	2	8	1	18	8	2	1	10	65
Point Hope	1	1		13		5	1			5	21
Point Lay						3				1	3
Selawik	8	14	11	13	2	4	13	11	5	10	82
Shishmaref	1		3	1						3	5
Shungnak	9	1		5	10	1	4	9	9	8	48
Survey Pass	7				10	1		1	10	5	29
Teller			3							1	3
Uniat									1	1	1
Utukok River	3					3				2	6
Total Quads Used	19	13	8	10	8	15	13	13	15		
Total Resource Categories Used	94	48	51	68	59	80	61	40	67		

Table 14 Number of NANA Region Communities' Using Each Quad, by Resource.

USGS Quad	Bear	Caribou	Fur- bearers	Moose	Small Game	Sheep	Water- fowl	Eggs	Salmon	Fish-non	Marine	Plants	Wood	Marine	Belukha	Boathead	Polar	Seal	Walrus
Ambler River	5	8	6	5	5	4	4	4	4	4		5							
Baird Mountains	6	9	6	4	5	4	3	1	5	7		4	2					2	
Bendeleben	2	2	2	1	2		1		1	1		1	1						
Candle	2	5	5	1	4		2		1	3		1	2	1		1		1	
Chandler Lake		1																	
Delong Mountains	2	5	4	2	3	3	2			1		1	1						
Howard Pass	3	8	6		4	3	1												
Hughes	3	3	4	3	4	1	3		3	3		2							
Ikpikpak River		3	1		1														
Kateel River		3	3		2					1									
Killik River	2	6	5	1	3	3													
Kotzebue	2	2	2	2	2		3	2	4	8	3	6	1	3	5	1	1	7	3
Lookout Ridge	1	3	3		3														
Misheguk Mtn.	4	7	6	1	4	1			1	1									
Noatak	3	7	5	2	4	4	2	2	3	6	2	4	2	3	5	2	2	5	2
Point Hope	1	2	2	1	2		1	1				1	1	1	4	2	2	1	1
Point Lay		1	1		1														
Selawik	6	8	7	5	8		6	4	4	7	1	6	5	3	1	1		6	
Shishmaref	1		1		1							1		1					
Shungnak	6	8	6	4	5	1	5		3	5		4	1						
Survey Pass	3	5	3	3	3	2	3	2	2	3		2							
Teller	1		1		1														
Umiat		1																	
Utukok River		2	2		2														
Total Quads Used	18	22	22	17	22	10	13	5	11	13	4	13	9	5	5	4	2	6	3

## USE OF THE MAPPED INFORMATION

Reference maps produced by this research project are available to assist land planners and management agencies in determining where residents of NANA communities harvest specific resources and which communities are likely to be affected by developments or policy changes on NANA region lands. Maps for Phase I communities were completed in time to be incorporated in the Alaska Department of Natural Resource area planning for northwest Alaska, the Alaska Department of Fish and Game's Alaska Habitat Management Guide map atlas for the arctic region (1986), and the *Selawik National Wildlife Refuge Comprehensive Conservation Plan (draft)* compiled by U.S. Fish and Wildlife Service (1986).

Agency users of these maps are cautioned against using them as the sole basis for making land use determinations. While we are confident that these maps depict the areas used by community residents for customary and traditional subsistence hunting, fishing, and gathering, it is possible that additional areas have also been used which are not depicted on these reference maps. Some areas may have been omitted inadvertently because the research methodology followed did not permit exhaustive recording of all areas ever used by each harvester. Other areas may have received some use but are not depicted because they were not considered by village residents for inclusion at the time of the research.

The maps do not provide information on the more dynamic aspects of land use such as access corridors, exact harvest locations and kill sites, or areas that are used more heavily than others over time. Mapping attributes

such as these would likely result in a more time-specific subset of the larger land use areas we have documented.

Finally, it should be remembered that subsistence land use maps represent only one aspect of a complex and dynamic socioeconomic system functioning in rural Alaska. Resident experts have volunteered their time and knowledge of local land use patterns to produce these maps. In return, they have asked that interpretation of the mapped data for land planning, land management, and policy development be done in conjunction with visits to local communities and meetings with community leaders.

As a matter of practice, Maniilaq Association and the Division of Subsistence will notify each community of requests for copies of maps of their subsistence use areas.

### AVAILABILITY OF THE MAPS

The *Subsistence Use Area Map Atlas for Ten Kotzebue Sound Communities* (Schroeder *et al*, 1987) contains the complete set of reference maps produced in this research. Selected reference maps may be available upon request. Requests for maps or information may be addressed to:

Maniilaq Association  
P.O. Box 256  
Kotzebue Alaska 99752

Division of Subsistence  
Alaska Department of Fish and Game  
Box 3-2000  
Juneau, AK 99802

Division of Subsistence  
Alaska Department of Fish and Game  
Box 686  
Kotzebue, AK 99752

Maps are on file at the Juneau, Fairbanks, and Kotzebue offices of the Alaska Department of Fish and Game, Division of Subsistence.

Communities will be notified of agency requests to obtain and access land use maps.

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